WAIOT 4th Congress

World Association against Infection in Orthopaedics and Trauma

Program and Abstracts

July 23 (Wed) - 24 (Thu), 2025

PACIFICO Yokohama, Yokohama, Japan

Yutaka Inaba M.D., Ph.D.
Dept. of Orthopaedic Surgery
Yokohama City University

https://site.convention.co.jp/waiot2025/

WAIOT

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SHARING EXPERTISE

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Congress President
Yutaka Inaba M.D., Ph.D.
(Department of Orthopaedic Surgery, Yokohama City University)

CONTENTS

Dear Colleagues and Friends,

It is a great honor and pleasure to welcome you to the 4th Congress of the World Association against Infection in Orthopaedics and Trauma (WAIOT), to be held on July 23–24, 2025, at the Pacifico Yokohama Conference Center, Japan.

This is the first time WAIOT will be held in Japan, and we are delighted to host this global meeting in Yokohama, Japan's second-largest city, known for its rich history and international outlook. Since opening its port in 1859, Yokohama has symbolized innovation, cultural exchange, and openness–qualities we value in international medical collaboration. I sincerely hope this inspiring setting will enhance your experience and encourage many participants to join from around the world.

The theme of the congress, "Global Collaboration Against Musculoskeletal Infection: Innovation, Evidence, and Equity," reflects the growing need for unified, multidisciplinary strategies to address complex challenges in orthopaedic and trauma-related infections. As these infections evolve in response to new technologies, antibiotic resistance, and demographic changes, collaboration across borders becomes essential.

The congress will feature renowned international speakers, interactive sessions, and state-of-the-art research on a wide range of topics including prevention, diagnosis, treatment, and digital innovations. We aim to create a dynamic environment where clinicians, researchers, and industry professionals can share knowledge and advance patient care together.

In addition to academic enrichment, I encourage you to explore the cultural beauty of Yokohama–whether strolling through the Minato Mirai district, enjoying local cuisine, or visiting its historic landmarks. We hope your time here will be both professionally rewarding and personally memorable.

I would like to thank the WAIOT leadership, scientific committee, organizing team, and our partners and sponsors for their dedication and support. This meeting is a reflection of our shared mission: to advance global standards in orthopaedic infection care and improve outcomes for patients worldwide.

Let us come together in Yokohama to exchange ideas, build partnerships, and shape the future of this vital field. I look forward to welcoming you in person.

Warm regards,

Yutaka Inaba, MD, PhD
Professor and Chairman, Department of Orthopaedic Surgery
Yokohama City University
Congress President, 4th WAIOT Meeting

Greetings From The WAIOT President

Ladies and gentlemen, welcome to Yokohama, Japan. This is the fourth annual meeting of WAIOT and the first to be held in Japan. Dr. Yutaka Inaba, Professor and Chairman of Orthopaedic Surgery at Yokohama City University School of Medicine, has made elaborate preparations as the President of the congress. I would like to express my deepest gratitude to Prof. Inaba and all those involved. The conference program is excellent, and in addition, the sponsor events and social events are expected to deepen the interaction among the participants. We hope that this conference will lead to further progress in the field of orthopedic infectious diseases and improve your daily practice.

WAIOT is a relatively young organization with many members around the world. I have great expectations that WAIOT will be a driving force in the fight against infectious diseases in the field of orthopedics. The presence of WAIOT is increasing day by day, as evidenced by our participation in the International Consensus Meeting in Istanbul this May and the WAIOT-SICOT Joint Symposium at SICOT in Madrid, Spain, this September. I am confident that WAIOT will continue to lead the field of infectious diseases in orthopedics from the aspects of both basic and clinical research.

The historical background of Yokohama is that the port was opened to foreign trade in 1868, and the city rapidly transformed into an international city. Prior to the opening of the port, Yokohama was a local Japanese city influenced by the period of national isolation and had little contact with foreign countries. There are many cultural events and facilities with international influences, especially tourist attractions such as the Minato Mirai district. It is also the site of many international events. Western influences can be seen in the architecture. For example, the Yokohama Red Brick Warehouse and the Yokohama Landmark Tower are iconic buildings that combine modern design with historical background. A stroll along Yamate is also recommended, especially with its many Western-style buildings with foreign influences.

Also located in the neighboring town is Kamakura City, which is said to be the origin of samurai (Kamakura-Bushi). Kamakura is a historical and scenic city located in the west to Yokohama. Some of its distinctive features are as follows. Kamakura is famous as the place where the Kamakura Shogunate was established and is dotted with numerous temples and shrines (e.g., Tsurugaoka Hachimangu Shrine, Hase Temple, and the Great Buddha). Surrounded by both sea and mountains, visitors can enjoy the Shonan coastline and seasonal scenery. It is also known as a place of particularly beautiful autumn leaves and cherry blossoms. Kamakura Daibutsu (Great Buddha), the old townscape, and walking trails are attractive sightseeing spots. The whole town has an atmosphere as if you have time-traveled back to the old days. Its easy accessibility is also a selling point; it is only a 30-minute train ride from Yokohama, making it a perfect spot for a short trip. Overall, you can spend a relaxing time in a place that combines historical heritage and natural beauty. Please enjoy Yokohama and Kamakura.

I hope you all have a great time at WAIOT's annual meeting.

Hiroyuki Tsuchiya, MD, PhD
The Director of Yokohama Sakae Kyosai Hospital
Emeritus Professor of Kanazawa University, Japan
WAIOT President

■Congress President

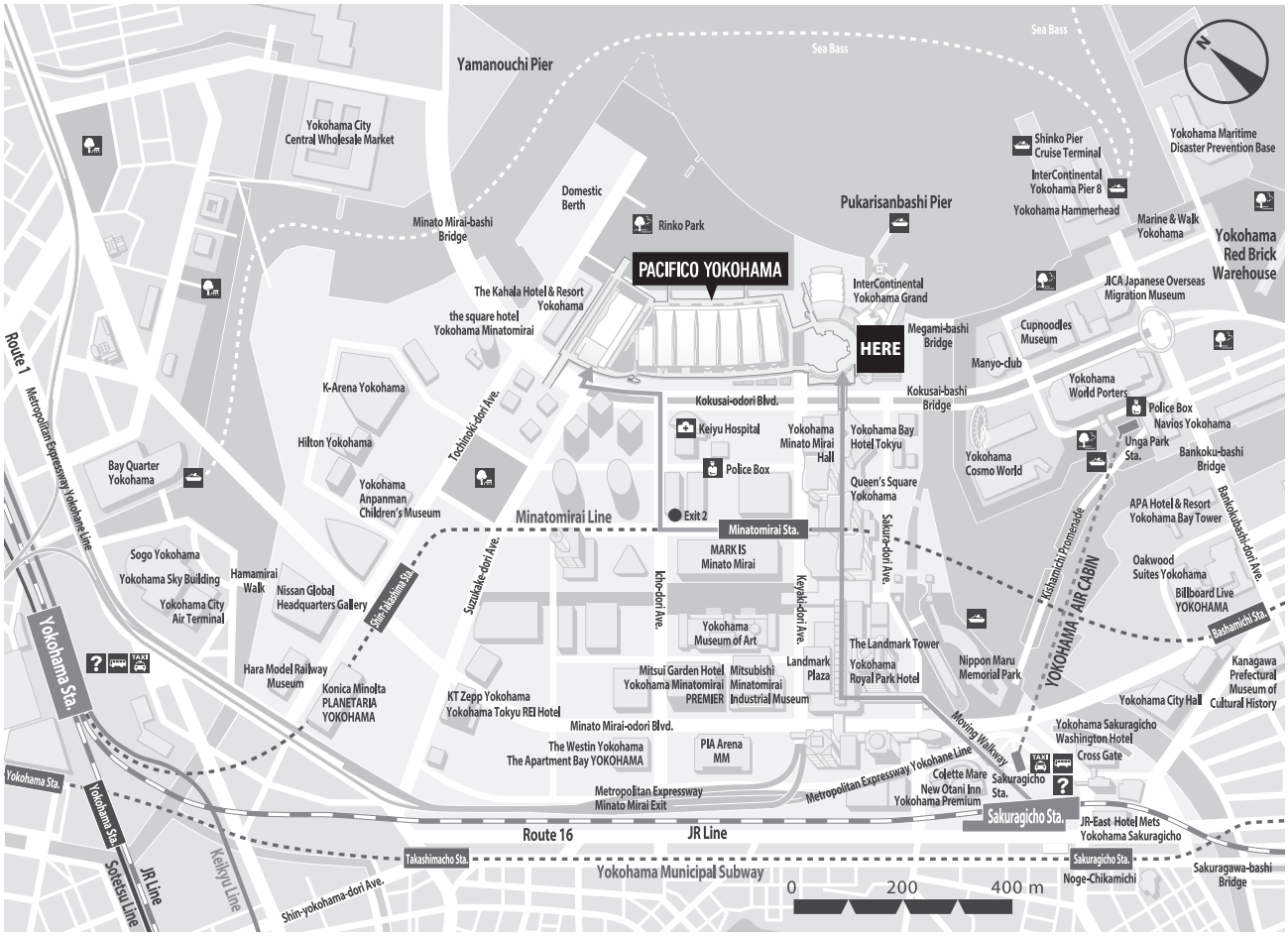
Yutaka Inaba (Department of Orthopaedic Surgery, Yokohama City University)

■Dates

July 23(Wed.)-24(Thu.), 2025

■Venue

PACIFICO Yokohama
1-1-1 Minato Mirai, Nishi-ku, Yokohama 220-0012, Japan



■Social Gathering for All Participants

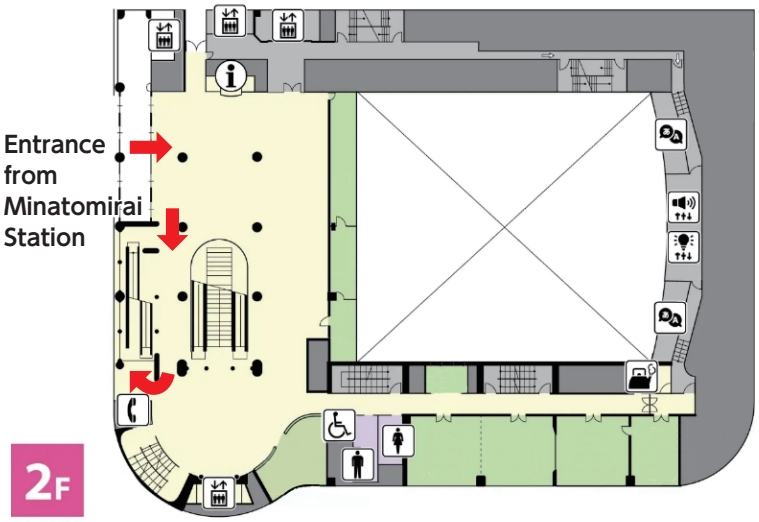
July 23 (Wed.) 19:00-21:00
Ristorante ATTIMO
https://www.pacifico.co.jp/english/shop/attimo
Fee: Free of charge
* 5min walk from the congress venue

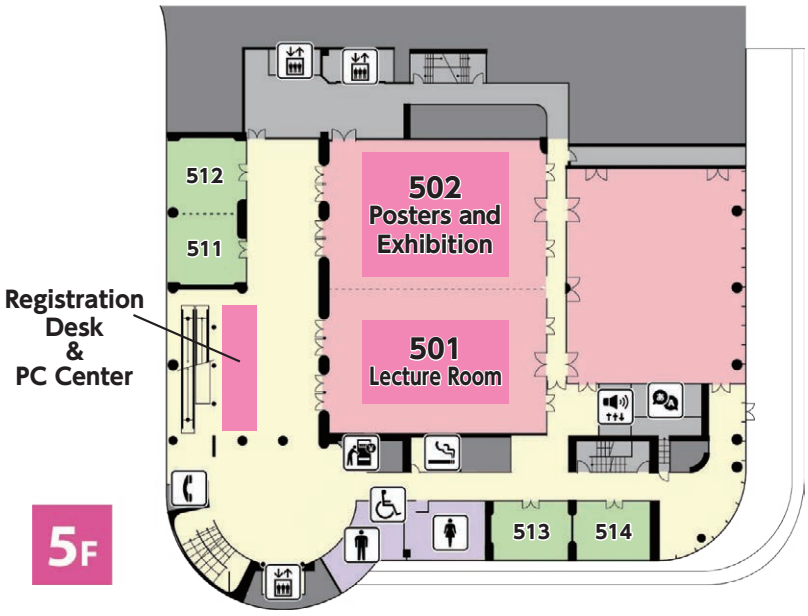
■Congress Secretariat

Japan Convention Services, Inc.
Daido Seimei Kasumigaseki Building 14F 1-4-2
Kasumigaseki, Chiyoda-ku, Tokyo 100-0013, Japan
Email: waiot2025@convention.co.jp

To The Inter Continental Yokohama Grand Hotel

To The Inter Continental Yokohama Grand Hotel





DAY1 July 23 (Wed.)

Room 501

Opening Ceremony 8:30 - 8:40

Free Paper Session 1
8:40 - 10:10
Prevention & Diagnosis
Chairs: Hiroyuki Ike, Akira Morita
Speakers: Shu Takagawa, Daisuke Inoue, Yohei Kumabe, Shinji Miwa, Narumi Ueda, Vikas Madhav Agashe, Vikas Madhav Agashe, Carlo Luca Romanò, Aditya Agarwal

Free Paper Session 2
10:20 - 11:30
Lower Extremity 1
Chairs: Shunsuke Takahara, Masahiro Matsumoto
Speakers: Mohamed Mahmoud Fadel, Mohamed Mahmoud Fadel, Toshifumi Hikichi, Oleg Podkosov, Oleg Podkosov, Osman Abdellah Mohamed

Luncheon Seminar 1
11:40 - 12:40
Chair: Yutaka Inaba
Speaker: Hiroyuki Tsuchiya
【Zimmer Biomet G.K.】

Award Session 1
12:50 - 14:05
Chairs: Hiroyuki Tsuchiya, Yutaka Inaba
Speakers: Masaya Ueno, Fabiana Giarritiello, Hideki Kamijo, Yuta Hieda, Shunsuke Takahara

Award Session 2
14:15 - 15:30
Chairs: Yutaka Inaba, Carlo L. Romanò
Speakers: Nikolay Nabatchikov, MD. MOFAKHKHARUL BARI, Toshiharu Shirai, Anatolii Sergeevich Sudnitsyn, Takeshi Morii

Free Paper Session 3
16:00 - 16:50
Osteomyelitis
Chairs: Katsufumi Uchiyama, Shiro Kajiyama
Speakers: Chingiz Alizade, Chingiz Alizade, MD. MOFAKHKHARUL BARI, A. M. Shayan Bari, Mohamed Mahmoud Fadel

Evening Seminar
17:00 - 18:00
Chair: Katsufumi Uchiyama
Speaker: Hyonmin Choe
【bioMérieux Japan Ltd.】

General Assembly
18:10 - 18:50

Social Gathering (Award Ceremony)
19:00 - 21:00
Ristorante ATTIMO

Room 502

Poster Mounting
8:00 - 12:00

Poster Viewing
12:00 - 15:30

Poster Discussion (Coffee Break)
15:30 - 16:00

Poster Viewing
16:00 - 18:00

DAY2 July 24 (Thu.)

Room 501

Morning Seminar
8:30 - 9:30
Chair: Kenichi Oe
Speaker: Masaya Ueno
【KYOCERA Corporation】

Free Paper Session 4
9:40 - 11:00
Hip & Periprosthetic Joint Infection (PJI)
Chairs: Walter Parizzia, Naomi Kobayashi
Speakers: Osman Abdellah Mohamed, Yusuke Nakagawa, Tsunehito Ishida, Osman Abdellah Mohamed, Makoto Kitade, Carlo Luca Romanò, Keisuke Oe

Free Paper Session 5
11:10 - 12:20
Lower Extremity 2
Chairs: Guenter Lob, Shuntaro Nejima
Speakers: MD. MOFAKHKHARUL BARI, MD. MOFAKHKHARUL BARI, Tsukasa Fujieda, SHAROF MAZHIDOVICH DAVIROV, SHAROF MAZHIDOVICH DAVIROV, Ahmad S. Allam, Ahmad S. Allam

Luncheon Seminar 2
12:30 - 13:30
Prevention and Treatment of Orthopaedic Infection: Current Situation in Japan
Chair: Hyonmin Choe
Speakers: Koji Yamada, Masahiro Matsumoto
【Johnson & Johnson】

Free Paper Session 6
13:40 - 14:40
Basic Research
Chairs: Mohamed Mahmoud Fadel, Shota Higashihira
Speakers: German Jorge Viale, Musashi Ima, Akira Morita, Randy Buzisa Mbuku, Jonathan, Masashi Shimoda

Free Paper Session 7
15:10 - 16:00
Spine & Tumor & Soft Tissue Infections
Chairs: Chingiz Alizade, Daisuke Inoue
Speakers: Permsak Paholpak, Atsushi Mihara, Hideaki Imabayashi, GAMAL ELMASHAD, Saori Yoshida

Free Paper Session 8
16:10 - 17:00
Fracture Related Infection (FRI)
Chairs: Akihiro Maruo, Kazuma Miyatake
Speakers: Ahmed Mahmoud Hefeda, Ryota Nishida, RAMA KARTHEEK RANDHI, Ibrahim Elsayed Abuomira, Akihiro Maruo

Closing Ceremony 17:00 - 17:10

Room 502

Poster Viewing
8:00 - 14:40

Poster Discussion (Coffee Break)
14:40 - 15:10

Poster Removal
15:10 - 17:00

■Registration Fee

	Early May 30 - June 30 (JST)	Regular July 1 - 24 (JST)
General	65,000JPY (≒450USD)	75,000JPY (≒500USD)
Students, Residents and fellows	30,000JPY (≒200USD)	40,000JPY (≒250USD)

■Registration Desk

Place:
Foyer, 5th floor of the Pacifico Yokohama Conference Center
Time:
July 23(Wed.) 7:30-17:00
July 24(Thu.) 7:30-16:00
Please download your registration confirmation from the online service counter and present it at the registration desk.

■Name Badges

Please wear your name badges during the meeting for identification and security purposes.

■Smoking

Please use the designated smoking areas. Kindly note that smoking outside of the designated area is prohibited in Yokohama -even outside of the buildings.

■No Photos, No Audio Recording

Photos and audio recording are prohibited inside the lecture room.

■Mobile Phones

Please set the mobile phones to the silent mode during the sessions.

■Cloak

Place:
Room 502, 5th floor of the Pacifico Yokohama Conference Center
Time:
July 23 (Wed.) 7:30-19:00
July 24 (Thu.) 7:30-17:15

■Lunch

Lunch box will be provided at Luncheon Seminars.
Kindly note that the number of the lunch boxes is limited and it will be served first-come, first-served basis.

日本整形外科学会教育研修単位
(For the Members of the Japanese Orthopaedic Association)

次頁の講演は、日本整形外科学会教育研修単位が認められております。（各１単位）

※本学会での取得可能単位数の上限は、１日２単位、会期中合計４単位です。

※ライブ、オンデマンドなどWEBを使っての配信はございませんので、現地受講のみとなります。

※単位申込は、学会ホームページ＞「PROGRAM」＞「単位申込はこちら」ボタンよりお願いいたします。

【単位取得について】

1．講演開始10分前から開始後10分までに、会員QRコードを講演会場入口のQRコードリーダーにかざして出席登録を行ってください。10分を過ぎた場合や手続きが完了していない場合、途中退場された場合は、単位取得はできません。
※日整会会員QRコードをお忘れの方は、スタッフへお申し出ください。

2．学会終了から10日程度で、日整会ホームページの取得単位確認画面の単位振替システムでご自身の取得状況を確認できます。

3．研修手帳をお持ちの方も、会員QRコードで出席確認を行うため、日整会ホームページの会員専用ページの単位取得履歴に記録が残ります。このため、受講証明印を受ける必要はありません。該当する必須分野のページに必要事項を記入し、受講証明印の欄に「会員カード」または「HP参照」と記入してください。更新時には、ホームページ上の取得履歴と照合いたします。

【ご注意】

1．会場には講演開始後10分以内に入場してください。それ以降に入場されても受講単位は認められません。また途中退場される場合も受講単位は認められません。

2．受講料は講演中止などの理由以外では払い戻しいたしません。また受講取り消し・変更の手続きや領収書の再発行はいたしません。

3．2015年（平成27年）１月１日より、日本整形外科学会教育研修講演における単位取得が完全デジタル化されております。教育研修講演の単位取得にあたっては、会員QRコードが必要になりますので、必ずご持参ください。

4．本会はクレジットカード決済のみとなります。現金はご使用いただけませんので、ご了承ください。

5．単位の必須分野番号を受講当日に選択することはできません。後日、日本整形外科学会会員専用ページ内の「単位振替システム」を利用して、ご自身でご希望の必須分野番号への振り替えをお願いいたします。

日本整形外科学会教育研修単位一覧
(For the Members of the Japanese Orthopaedic Association)

日　時		セッション名	演者名	演　題　名	共催企業名	日整会単位 必須分野
7月23日 (水)	11:40 〜 12:40	ランチョン セミナー 1	土屋 弘行	My Heritage and Innovation in Orthopedic Surgery: "My Dream, Dare & Do" - And to the Future -	ジンマー・バイオメット 合同会社	1,6
	17:00 〜 18:00	イブニング セミナー	崔　賢民	Molecular Approaches for Rapid Etiological Diagnosis in Orthopedic Infections	ビオメリュー・ジャパン 株式会社	1,6
7月24日 (木)	8:30 〜 9:30	モーニング セミナー	上野 雅也	Silver-Coated Implants for Orthopaedic Implant-Associated Infections: Current Status and Future Directions	京セラ株式会社	6,11
	12:30 〜 13:30	ランチョン セミナー 2	山田 浩司	SSI prevention. What is on the horizon	ジョンソン・エンド・ ジョンソン株式会社	2,6
			松本 匡洋	Infection Control in Orthopaedic Trauma: From Principles to Practice		

■For Chairpersons

1. All chairpersons are requested to be seated on the Next Chairpersons Seat in the lecture room, no later than 15 min. prior to the session starts.
2. Session composition is to be controlled by the chairpersons. Chairpersons are asked to ensure all sessions start and finish punctually as scheduled. Additional remarks, discussions and proceedings will be left entirely up to chairpersons' decisions.
3. In case that the previous session finished earlier than scheduled, please wait to commence your session until the scheduled time comes.

■For Speakers

1. The allocated time is 6 minutes for presentation and 4 minutes for questions and answers in the Free Paper Session, and 8 minutes for presentation and 4 minutes for questions and answers in the Award Session. All speakers are asked to keep to the allocated presentation time.
2. The 2nd slide should be the COI disclosure in your presentation.
3. Audio-Visual Materials
   1) Please save your data in USB memory device and deliver it to the PC Center.
   2) Please review your data at the PC Center, and check whether all the data are shown properly.
   3) Even if you use your own PC, you are required to check your presentation data at the PC Center and bring your PC to the operation desk in the session room no later than 30 min. prior to the session starts. Following the conclusion of your session, we will return your PC at the operation desk. Please come to the operation desk promptly to claim your PC.
   4) When you are next one in line to give your presentation, please be seated on the Next Speakers Seat.
4. The PC Center will be open during the following hours. Speakers are requested to present their data at least 45 min. prior to their presentation starts. If your session is the first one in the morning of July 24, you are advised to bring your presentation data the day before the session is scheduled.

■PC Center

Place:
Foyer, 5th floor of Pacifico Yokohama Conference Center
Time:
July 23(Wed.) 7:30-17:00
July 24(Thu.) 7:30-16:00

■Guidelines for Oral Presentations

All the oral presentations are to be made on the PC, and all the speakers are requested to make their presentation data in English. Please save your presentation data following the guidelines below and save on a USB flash drive. Windows is the only operating system available for the presentations. If you have prepared the presentation data on a Macintosh, you are advised to bring your own PC.

For smooth progression of the sessions, speakers are requested to follow the guidelines.

•The 4th Congress of the WAIOT2025 will not be responsible for any troubles caused by the operation or actions that do not follow the guidelines.

■OS and Applications

OS: Windows 10

Applications: PowerPoint 2021

■Monitor Size (Resolution)

Full HD（1920×1080）

*Please check in advance that all the data appear properly under the specified conditions.

■Backup Data

Please bring backup data to the meeting site if possible.

■Font

Please use default-setting fonts of Windows 10.

■Movies

For those who wish to show a movie, it is recommended to bring their own PC to run the presentation slide.

Movies should be prepared in Windows Media Player for Windows users.

Movie data should be saved in the same folder as your presentation data.

*Note for video files

For Windows users, please bring a video file that can be played using a codec that can operate on a 10 operating system and Windows Media Player 12 in their default settings (video files are recommended to be mp4 or WMV formatted).

■Screen Ratio

16:9

■Presentation in the Session Rooms

An LCD monitor, a keyboard and a mouse are available on the podium. When you come up to the stage, your first slide will be projected on the screen automatically. Any following operations must be self-operated by the speaker. For those who wish to have an operator for PC handlings, please ask for it at PC Center. Please refrain from using Presenter view.

■Data Deletion

All data saved into the server will be completely deleted upon the completion of this conference.

■For Speakers Bringing Their Own PC

Even if you use your own PC, you are required to check your presentation data at the PC Center and bring your PC to the operation desk in the session room no later than 30 min. prior to the session starts.

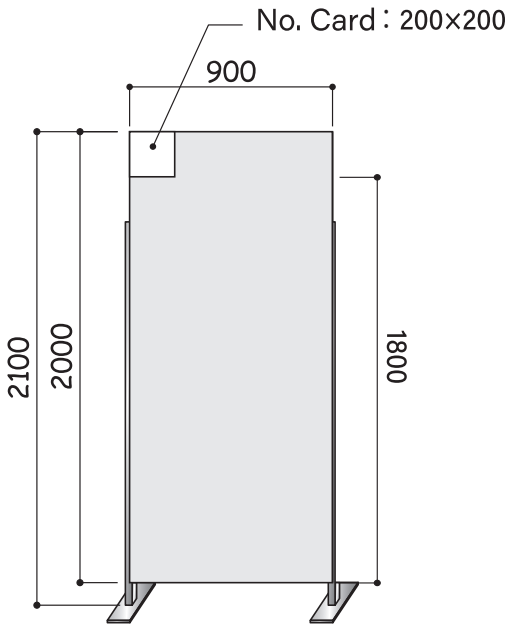
* Please bring an AC adapter for your PC.
* Only HDMI is available for cable connection on site. Make sure your own machine supports this type of connection or prepare a right connector to hook up your laptop. Please cancel your screen saver, power saving, and password setting in advance.
* Please prepare backup data with USB flash drive.

■Schedule

•Mounting
July 23 (Wed.) 8:00-12:00
•Discussion (Coffee Break)
July 23 (Wed.) 15:30-16:00
July 24 (Thu.) 14:40-15:10
•Removal
July 24 (Thu.) 15:10-17:00

■For Speakers

1. Please prepare posters in English.
2. The poster should contain the COI disclosure statement.
3. Poster presenters are not assigned a presentation time. Please stand by your poster during the coffee break for the discussion with the other participants.
4. Presenters are requested to mount their posters on the assigned board.
   Poster panels are 200 cm high × 90 cm wide. Please refer to the diagram and use large-sized characters for easy reading.
5. Any posters remaining on the panels after the removal time will be discarded by the secretariat.



Committees

President	**Yutaka Inaba**	Department of Orthopedic Surgery, Yokohama City University
Secretary General	**Hyonmin Choe**	Department of Orthopedic Surgery, Yokohama City University
Program Committee	**Daisuke Himeno**	Department of Orthopedic Surgery, Chiba Nishi General Hospital
	Hiroyuki Ike	Department of Orthopedic Surgery, Yokohama City University
	Takashi Imagama	Department of Orthopedic Surgery, Yamaguchi University Graduate School of Medicine
	Daisuke Inoue	Department of Orthopedic Surgery, Kanazawa University
	Yohei Ito	Department of Orthopedic Surgery, Yokohama City University
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	Naomi Kobayashi	Department of Orthopedic Surgery, Yokohama City University Medical Center
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	Masahiro Matsumoto	Department of Advanced Emergency Medicine, Yokohama City University Medical Center
	Kenichi Oe	Department of Orthopedic Surgery, Kansai Medical University
	Shunsuke Takahara	Department of Orthopedic Surgery, Hyogo Prefectural Kakogawa Medical Center
	Toshiyuki Tateiwa	Department of Orthopedic Surgery, Tokyo Medical University
	Katsufumi Uchiyama	Department of Patient Safety and Healthcare Administration, School of Medicine, Kitasato Univ.
	Koji Yamada	Mizonokuchi Orthopaedics

We would like to express our sincere gratitude to the following companies and organizations for their sponsorship and cooperation in hosting the WAIOT 4th Congress.

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Yokohama Foundation for the Advancement of Medical Science

Program

DAY 1 July 23 (Wed.)

Free Paper Session 1

Room 501

8:40 - 10:10

Prevention & Diagnosis

Chairs: Hiroyuki Ike (Department of Orthopaedic Surgery, Yokohama City University, Japan)
Akira Morita (Department of Orthopaedic Surgery, Yokohama City University, Japan)

FP1-1 The incidence for surgical site infection after medial open wedge high tibial osteotomy and hybrid closed wedge high tibial osteotomy up to one year postoperatively

Shu Takagawa (Yokohama City University Medical Center, Japan / Yokohama Minami Kyosai Hospital, Japan)

FP1-2 Do Elevated Preoperative Serum Inflammatory Markers Influence Surgical Site Or Periprosthetic Joint Infections Following Primary Total Hip Arthroplasty?

Daisuke Inoue (Kanazawa University Hospital, Japan)

FP1-3 Evaluation of Treatment Outcomes for Periprosthetic Joint Infection Using the PJI-TNM Classification

Yohei Kumabe (Kobe University Graduate School of Medicine, Department of Orthopaedic Surgery, Japan)

FP1-4 Development and validation of a nomogram to predict surgical-site infection after soft-tissue sarcoma resection

Shinji Miwa (Kanazawa University, Graduate School of Medical Sciences, Japan)

FP1-5 Evaluation of the BioFire® Joint Infection Panel for Rapid Detection of Pathogens Associated with Joint Infections

Narumi Ueda (Department of Orthopedic Surgery, Japanese Red Cross Wakayama Medical Center, Japan)

FP1-6 BioFire JI in Orthopaedic infections: Can we expand the indications and is there a need to broaden the pathogen spectrum in India

Vikas Madhav Agashe (P.D.Hinduja Hospital and Research Center, India)

FP1-7 All inclusive Culture Protocol in Osteoarticular Infections exposes Dark Realities

Vikas Madhav Agashe (P.D.Hinduja Hospital and Research Center, India)

FP1-8 Chemical Anti-Biofilm Pre-Treatment of Samples: A Simple and Effective New Approach to Cultural Examination

Carlo Luca Romanò (Romano Institute, Albania)

FP1-9 Understanding and Practices of Orthopaedic Surgery Residency Trainees in Infection Control: Antibiotic Use, Wound Care, Early Intervention Strategies, and Barriers to Surgical Safety

Aditya Agarwal (Grant Government Medical College, India)

Free Paper Session 2

Room 501

10:20 - 11:30

Lower Extremity 1

Chairs: Shunsuke Takahara (Hyogo Prefectural Kakogawa Medical Center, Japan)
Masahiro Matsumoto (Advanced Critical Care and Emergency Center, Yokohama City University Medical Center, Japan)

FP2-1 Infected diabetic foot philosophy of surgery

Mohamed Mahmoud Fadel (Orthopedic and Trauma Surgery, Minia University Hospital, Egypt)

FP2-2 ORTHOPLASTIC ILIZAROV ASSISTED TECHNIQUE (OIAT) for leg bone defect reconstruction (BDR)

Mohamed Mahmoud Fadel (Orthopaedic Surgery, Minia University Hospital, Egypt)

FP2-3 Withdrawn

FP2-4 Which Method Is Safer for Treating Infected Tibial Non-Unions with Bone Defects? A Meta-Analysis Comparing Bone Transport and Masquelet Technique

Toshifumi Hikichi (Yokohama Sakae Kyosai Hospital, Japan)

FP2-5 One-stage replacement of soft tissue defects in patients with chronic osteomyelitis of the leg bones. Problems and prospects

Oleg Podkosov (Botkin Hospital, Russia)

FP2-6 Membrane technique in the treatment of chronic osteomyelitis of the bones of the extremities

Oleg Podkosov (Botkin Hospital, Russia)

FP2-7 Fixator-Assisted Lengthening Over an Intramedullary Nail after resection of long segment chronic osteomyelitis femur

Osman Abdellah Mohamed (Osman Abdellah Mohamed, Egypt)

Luncheon Seminar 1

Room 501

11:40-12:40

Chair: Yutaka Inaba (Department of Orthopaedic Surgery, Yokohama City University Hospital, Japan)

LS1 My Heritage and Innovation in Orthopedic Surgery: "My Dream, Dare & Do"- And to the Future-

Hiroyuki Tsuchiya (Yokohama Sakae Kyosai Hospital, Yokohama, Japan / Department of Orthopedic Surgery, Kanazawa University, Japan)

Sponsored by Zimmer Biomet G.K.

Award Session 1

Room 501

12:50 - 14:05

Chairs: Hiroyuki Tsuchiya (Yokohama Sakae Kyosai Hospital, Japan)
Yutaka Inaba (Yokohama City University, Japan)

AW1-1 Complications of Cementless Antibacterial Artificial Hip Joints: A Safety Evaluation of Silver-HA Coated Implants

Masaya Ueno (Department of Orthopaedic Surgery, Faculty of Medicine, Saga University, Japan)

AW1-2 Antibiofilm Chemical Pretreatment of Samples and Low Grade Infection in Osteosynthesis: Preliminary Report from a Multicenter Italian Study

Fabiana Giarritiello (Department of Medicine and Health Sciences "V. Tiberio", University of Molise, Italy / Romano Institute, Albania)

AW1-3 Prospective randomized study on effect of disinfectants on suture contamination in arthroscopic rotator cuff repair

Hideki Kamijo (Sports Medicine & Joint Center, Funabashi Orthopaedic Hospital, Japan)

AW1-4 Withdrawn

AW1-5 Investigation of 2836 Samples of PCR Genetic Diagnosis for Bone and Soft Tissue Infections

Yuta Hieda (Yokohama City University Hospital, Japan)

AW1-6 Withdrawn

AW1-7 Efficacy of Continuous Local Antibiotic Perfusion (CLAP) for Fracture-related Infections: A Multi-center Retrospective Cohort Study

Shunsuke Takahara (Department of Orthopaedic Surgery, Hyogo Prefectural Kakogawa Medical Center, Japan)

Award Session 2

Room 501

14:15 - 15:30

Chairs: Yutaka Inaba (Yokohama City University, Japan)
Carlo L. Romanò (Romano Institute, Albania)

AW2-1 Laser technologies in the treatment of pin-track osteomyelitis

Nikolay Nabatchikov (Botkin Hospital, Russia)

AW2-3 The Role of ILIZAROV in Managing Infected Large Gap Non-Unions of the Femur

MD. MOFAKHKHARUL BARI (Bari-Ilizarov Orthopaedic Centre, Bangladesh)

AW2-4 Iodine-coated implants in prevention and treatment of surgical site infections for compromised hosts

Toshiharu Shirai (Yokohama Sakae Kyosai Hospital, Japan)

AW2-5 Analysis of Ilizarov method for the treatment of patients with diabetic Charcot foot complicated by infection

Anatolii Sergeevich Sudnitsyn (FSBI "National Ilizarov Medical Research Centre for Traumatology and Ortopaedics" Ministry Healthcare, Russia)

AW2-6 Japanese Database of Surgical site infection following arthroplasty and spinal instrumentation -process of development and present status-

Takeshi Morii (Department of Orthopaedic Surgery, Kyorin University, Japan)

Free Paper Session 3

Room 501

16:00 - 16:50

Osteomyelitis

Chairs: Katsufumi Uchiyama (Department of Patient Safety and Healthcare Administration, School of Medicine, Kitasato University, Japan)
Shiro Kajiyama (Nagasaki University Hospital, Japan)

FP3-1 Acute Hematogenous Osteomyelitis - Etiology and Pathogenesis

Chingiz Alizade (HB Guven Clinic, Azerbaijan)

FP3-2 Analysis of known theories of acute hematogenous osteomyelitis from the perspective of modern scientific advancements

Chingiz Alizade (HB Guven Clinic, Azerbaijan)

FP3-3 From Prevention to Complication: The Challenges of Managing Bone Infection

MD. MOFAKHKHARUL BARI (Bari-Ilizarov Orthopaedic Centre, Bangladesh)

FP3-4 The Role of ILIZAROV in Managing Infected Large Gap Non-Unions of the Humerus

A. M. Shayan Bari (Bari-Ilizarov Orthopaedic Centre, Bangladesh)

FP3-5 Infected nonunion femur bone defect, different options

Mohamed Mahmoud Fadel (Orthopaedic Surgery, Minia University Hospital, Egypt)

Evening Seminar

Room 501

17:00-18:00

Chair: Katsufumi Uchiyama (Department of Patient Safety and Healthcare Administration, Kitasato University School of Medicine, Japan)

ES Molecular Approaches for Rapid Etiological Diagnosis in Orthopedic Infections

Hyonmin Choe (Department of Orthopaedic Surgery, Yokohama City University, Japan)

Sponsored by bioMérieux Japan Ltd.

DAY 2 July 24 (Thu.)

Morning Seminar

Room 501

8:30-9:30

Chair: Kenichi Oe (Department of Orthopaedic Surgery, Kansai Medical University, Japan)

MS Silver-Coated Implants for Orthopaedic Implant-Associated Infections: Current Status and Future Directions

Masaya Ueno (Department of Orthopedic Surgery, Faculty of Medicine, Saga University, Japan)

Sponsored by KYOCERA Corporation

Free Paper Session 4

Room 501

9:40 - 11:00

Hip & Periprosthetic Joint Infection (PJI)

Chairs: Walter Parizzia (Hospital Universitario Austral, Argentina)
Naomi Kobayashi (Yokohama City University Medical Center, Japan)

FP4-1 Early Surgical Management of Septic Hip Arthritis in infant un expected results

Osman Abdellah Mohamed (Osman Abdellah Mohamed, Egypt)

FP4-2 Withdrawn

FP4-3 Favorable Clinical Outcomes of Five Cases Using Antibiotics-Loaded Mega-Cement Spacers for Refractory Periprosthetic Joint Infections of the Knee Arthroplasty

Yusuke Nakagawa (Institute of Science Tokyo, Japan)

FP4-4 Outcomes following debridement, antibiotics and implant retention (DAIR) for periprosthetic joint infection after total hip arthroplasty

Tsunehito Ishida (Department of Orhopedic Surgery, Tokyo Medical University, Japan)

FP4-5 Post infected THR
Pelvic Support Osteotomy

Osman Abdellah Mohamed (Osman Abdellah Mohamed, Egypt)

FP4-6 Two cases of rheumatoid arthritis that could be treated periprosthetic infections which developed during the use of biologics without implant removal

Makoto Kitade (University of Fukui, Japan)

FP4-7 A Fully Resorbable Anti-Bacterial Hydrogel Coating for Implants: A Ten Years Experience

Carlo Luca Romanò (Romano Institute, Albania)

FP4-8 Evaluation of the Efficacy of Continuous Local Antibiotic Perfusion (CLAP) for PJI -CLAP vs. Non CLAP-

Keisuke Oe (Kobe University Graduate School of Medicine, Department of Orthopaedic Surgery, Japan)

Free Paper Session 5

Room 501

11:10 - 12:20

Lower Extremity 2

Chairs: Guenter Lob (Emeritus University of Munich, Germany)
Shuntaro Nejima (Yokohama City University, Japan)

FP5-1 Treatment Of Deformities Due to Metabolic Disease

MD. MOFAKHKHARUL BARI (Bari-Ilizarov Orthopaedic Centre, Bangladesh)

FP5-2 The ILIZAROV Technique in Chronic Osteomyelitis: Effective Infection Control and Bone Reconstruction

MD. MOFAKHKHARUL BARI (Bari-Ilizarov Orthopaedic Centre, Bangladesh)

FP5-3 Septic arthritis of the ankle and subtalar joint managed with Continuous Local Antibiotics Perfusion (CLAP) : A case report

Tsukasa Fujieda (Department of Orthopaedic Surgery, Yokohama Sakae Kyosai Hospital, Japan)

FP5-4 TREATMENT OF A PATIENT WITH EXTENSIVE POST-OSTEOMYELITIC DEFECTS OF THE TIBIAL BONE TISSUE IN CHILDREN

SHAROF MAZHIDOVICH DAVIROV (Samarkand Branch of the Republican Specialized Scientific and Practical Medical Center for Traumatology and Orthopedics, Uzbekistan)

FP5-5 LENGTHENING OF THE TIBIA WITH POSTOSTEOMYELITIC EXTENSIVE BONE DEFECTS USING THE ILIZAROV APPARATUS USING A NEW DISTRACTION DEVICE

SHAROF MAZHIDOVICH DAVIROV (Samarkand Branch of the Republican Specialized Scientific and Practical Medical Center for Traumatology and Orthopedics, Uzbekistan)

FP5-6 TEWNTY YEARS POST COMPRESSION ARTHRODESIS IN INFECTED DIABETIC CHARCOT ANKLE JOINT

Ahmad S. Allam (Banha University, Egypt)

FP5-7 Bridging Infected Long Tibial Defects Via Using Mono-lateral Frames

Ahmad S. Allam (Banha University, Egypt)

Luncheon Seminar 2

Room 501

12:30-13:30

Prevention and Treatment of Orthopaedic Infection: Current Situation in Japan

Chair: Hyonmin Choe (Department Orthopaedic Surgery, Yokohama City University Hospital, Japan)

LS2-1 SSI prevention. What is on the horizon

Koji Yamada (Mizonoguchi Orthopaedic Surgery Hospital, Japan)

LS2-2 Infection Control in Orthopaedic Trauma: From Principles to Practice

Masahiro Matsumoto (Advanced Critical Care and Emergency Center, Yokohama City University Medical Center, Japan)

Sponsored by Johnson & Johnson

Free Paper Session 6

Room 501

13:40 - 14:40

Basic Research

Chairs: Mohamed Mahmoud Fadel (Minia University Hospital, Egypt)
Shota Higashihira (Yokohama City University Medical Center, Japan)

FP6-1 Effect of hydrogen peroxide and povidone iodine on Staphylococcus aureus biofilms on orthopedic biomaterials. In vitro study

German Jorge Viale (British Hospital of Buenos Aires, Argentina)

FP6-2 Optimal Diluted Povidone-Iodine Solution for Preventing Periprosthetic Joint Infection

Musashi Ima (Department of Orthopaedic Surgery School of Medical Sciences Kanazawa University, Japan)

FP6-3 Halicin combinations with conventional antibiotics are more effective than monotherapy against both planktonic and biofilm residing Staphylococcus aureus

Akira Morita (Department of Orthopaedics Surgery, Yokohama City University, Japan)

FP6-4 Enzymes and local vancomycin enhance systemic therapy against MRSA biofilm in an implant infection model

Randy Buzisa Mbuku (NMSK Laboratory (IREC/UCLouvain) , Belgium)

FP6-5 Influences of High-dose Gentamicin Exposure on Human Articular Chondrocyte

Jonathan (Department of Orthopaedic Surgery, Graduate School of Medicine, Kobe University, Japan)

FP6-6 Bactericidal Effect and Impact on Osteoblasts of the Absorbable Local Hemostatic Agent Surgicel Powder

Masashi Shimoda (Department of Orthopedic Surgery, Yokohama City University, Japan / Kanagawa Rehabilitation Hospital, Japan)

Free Paper Session 7

Room 501

15:10 - 16:00

Spine & Tumor & Soft Tissue Infections

Chairs: Chingiz Alizade (HB Guven Clinica, Azerbaijan)
Daisuke Inoue (Kanazawa University, Japan)

FP7-1 Decreased infection and wound complication in total sacrectomy by using one-stage Hemi-TRAM flap

Permsak Paholpak (Faculty of Medicine, Khon Kaen University, Thailand)

FP7-2 Characteristics and treatment of postoperative infections in malignant musculoskeletal tumor surgery

Atsushi Mihara (Yamaguchi University, Japan)

FP7-3 Application of Continuous Local Antibiotic Perfusion (CLAP) Therapy for Spinal Infections: Focus on Cases Requiring Multiple CLAP Procedures

Hideaki Imabayashi (Tokyo Saiseikai Central Hospital, Japan)

FP7-4 Post arthroscopic Surgical thigh muscles Infections. A case reports

GAMAL ELMASHAD (CONSULTANT ORTHOPEDIC (FACHARZ) , Egypt)

FP7-5 Treatment of refractory bone and soft tissue infections Using Continuous local antibiotic perfusion: a case series

Saori Yoshida (Yokohama Municipal Citizen’s Hospital, Japan)

Free Paper Session 8

Room 501

16:10 - 17:00

Fracture Related Infection (FRI)

Chairs: Akihiro Maruo (Harima Himeji General Medical Center, Japan)
Kazuma Miyatake (Yokohama City University, Japan)

FP8-1 How can a simple fracture make a disaster ?

Ahmed Mahmoud Hefeda (Orthopedic Surgery, Helwan University, Egypt)

FP8-2 Relationship between the clinical outcomes of fracture-related infection (FRI) cases and FRI classification

Ryota Nishida (Kobe University Graduate School of Medicine, Japan)

FP8-3 Outcome Of Debridement Without Entral Or Parenteral Antibiotics In The Management Of Fracture-Related Infection Or Osteomyelitis

RAMA KARTHEEK RANDHI (SRI SAI KRISHNA HOSPTIAL, India)

FP8-4 Local application of calcium sulphate impregnated with vancomycin and tobramycin in the treatment of chronic osteomyelitis

Ibrahim Elsayed Abuomira (Al-Azher University, Egypt)

FP8-5 Outcomes of Continuous Local Antibiotic Perfusion in Fracture-Related Infections Based on Infection Stage: Toward a Sustaining Implant Strategy

Akihiro Maruo (Harima Himeji General Medical Center, Japan)

Poster Presentation

Room 502 Viewing Time: DAY1: July 23 (Wed.) 12:00 - 15:30, 16:00 - 18:00
DAY2: July 24 (Thu.) 8:00 - 14:40

P-1 Isolated Tuberculosis Tenosynovitis with Multiple Rice Bodies of the Extensor Tendons in The Wrist: A Case Report

MAGDALEN ANTHONY (HOSPITAL TENGKU AMPUAN RAHIMAH KLANG, Malaysia)

P-2 Use of MicroDTTect and Blood Culture Media with Resins for Diagnosing Chronic Periprosthetic Infections in Patients with Antibiotic-Loaded Temporary Spacers and antibiotic treatments

Fabiana Giarritiello (Department of Medicine and Health Sciences "V. Tiberio", University of Molise, Italy / Romano Institute, Albania)

P-3 Rapid Etiological Diagnosis of Periprosthetic Joint Infection Using Combination of Automated Multiplex and MRSA-Specific PCR

Hyonmin Choe (Yokohama City University, Japan)

P-4 Usefulness of the Myeloperoxidase Point-of-Care Test for Diagnosis of Periprosthetic Joint Infection

Shinsuke Ikeda (Department of Orthopaedic Surgery, Yokohama General Hospital, Japan)

P-5 Antimicrobial Effects of Intraoperative Wound Irrigation with Povidone-Iodine and Hypochlorous Acid for Prevention of Periprosthetic Joint Infection: An In Vitro Study

Iku Tomonaga (Department of Orthopaedic Surgery, Graduate School of Biomedical Sciences, Nagasaki University, Japan)

P-6 Efficacy of Continuous Local Antibiotics Perfusion (CLAP) Therapy for Fracture-Related Infection: A Case Series

Iku Tomonaga (Trauma Center, Nagasaki University Hospital, Japan)

P-7 Successful Management of Emphysematous Osteomyelitis After an Open Pelvic Fracture Using Continuous Local Antibiotics Perfusion (CLAP): A Case Report

Shunsuke Takahara (Department of Orthopaedic Surgery, Hyogo Prefectural Kakogawa Medical Center, Japan)

P-8 Clinical Outcomes of External Locking Compression Plate Fixation for Open Lower Extremity Fractures: A Case Series Study

Mohammad Fakoor (Department of Orthopedics and Traumatology, Faculty of Medicine, Ahvaz Jundishapur University of Medical Sciences, Iran)

P-9 Effects of high antibiotic concentrations applied in a continuous local antibiotic perfusion therapy on human umbilical vein endothelial cells

Genta Fukumoto (Department of Orthopaedic Surgery, Kobe University Graduate School of Medicine, Japan)

P-10 Effective Use of Ultrasound-Guided Aspiration and Lavage for Lower Leg Soft Tissue Infection Caused by Group A Streptococcus in a Professional Rugby Player

Yohei Kusaba (Department of Orthopaedic Surgery, Yokohama City University, Japan)

P-11 Clinical outcomes of Continuous Local Antibiotics Perfusion (CLAP) for finger osteomyelitis: A case series

Yu Fujiwara (Department of Orthopaedic Surgery, Hyogo Prefectural Kakogawa Medical Center, Japan)

P-12 Treatment of Infection after Knee Osteotomy with Continuous Local Antibiotic Perfusion (CLAP): Report of Four cases

Ayako Nomura (Yokohama City University, Japan)

P-13 Evaluation of the effects of high-concentration antibiotics on rat femur using the iMAP model

Yuya Yamamoto (Kobe University Graduate School of Medicine, Japan)

P-14 A Modified Induced Membrane Technique for the Forearm Infected Segmental Bone Loss

Ahmad S. Allam (Banha University, Egypt)

P-15 HYDATID DISEASE OF THE FLEXOR SYNOVIAL SHEETH OF THE FOREARM & THE HAND, A CASE REPORT

Ahmad S. Allam (Banha University, Egypt)

Abstracts

Award Session
Free Paper Session
Sponsored Seminar

AW1-1

Complications of Cementless Antibacterial Artificial Hip Joints: A Safety Evaluation of Silver-HA Coated Implants

Masaya Ueno[1], Shunsuke Kawano[2], Hiroshi Miyamoto[3], Masanori Fujii[1], Tadatsugu Morimoto[1]

[1]Department of Orthopaedic Surgery, Faculty of Medicine, Saga University, [2]Research Center for Arthroplasty, Faculty of Medicine, Saga University, [3]Department of Pathology and Microbiology, Faculty of Medicine, Saga University

Background: Total hip arthroplasty (THA) is one of the most successful surgeries of the 20th century; however, complications such as infection, fracture, dislocation, and implant loosening continue to challenge long-term outcomes. Conventional hydroxyapatite (HA)-coated implants have been the standard, but the introduction of silver-HA (Ag-HA) coatings offers antibacterial properties that may further reduce complication rates. Although silver toxicity is a known concern with elevated blood silver levels linked to systemic adverse effects-experimental studies have shown that low concentrations (approximately 3% silver) do not impair cell adhesion, differentiation, or osteoconductivity compared to standard HA. Therefore, a clinical evaluation of Ag-HA coated cementless implants in THA is warranted.

Purpose: This study aimed to investigate the complication rate of cementless antibacterial artificial hip joints using Ag-HA coated implants and to assess their safety relative to conventional HA-coated implants.

Materials and Methods: A retrospective analysis was performed on 1,389 hips that underwent primary cementless THA at our institution between May 2014 and June 2023. All procedures employed a standardized posterolateral approach with ceramic-on-polyethylene bearings. Patients were divided into two cohorts: the HA group (n = 827 hips, using Kyocera PerFix series) and the Ag-HA group (n = 562 hips, utilizing a similarly designed antibacterial Ag-HA coated implant). Cases with mixed coatings performed between April 2016 and March 2019 were excluded. Patient demographics, complication rates, and reoperation rates were compared between the groups using appropriate statistical analyses.

Results: The overall complication rate was significantly lower in the Ag-HA group at 2.5% (14 hips) compared to 4.6% (38 hips) in the HA group ($p = 0.0444$). While there was a trend toward lower rates of individual complications and reoperations in the Ag-HA group, these differences did not achieve statistical significance. Importantly, no clinical signs of silver toxicity were observed in any patients.

Conclusion: Ag-HA coated cementless antibacterial artificial hip joints appear to be an effective option for reducing complications in THA, with safety comparable to conventional HA-coated implants. Although the follow-up period for the Ag-HA group was relatively short, the absence of silver-related adverse events supports the potential of Ag-HA implants in clinical practice. Further multicenter studies with longer follow-up are recommended to validate these promising findings.

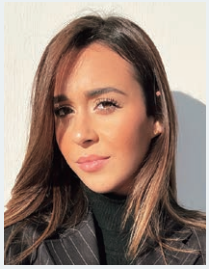
[Curriculum Vitae]
Masaya Ueno, MD, PhD
Associate Professor of Orthopaedic Surgery at Saga University, specializing in hip arthroplasty and bone infection management. He earned his MD in 2006 and PhD in 2017 from Saga University, with advanced training as a Visiting Scholar at Stanford University (2018-2020). Dr. Ueno leads JSPS-funded research on 3D cell culture models for osteomyelitis treatment (2021-2024) and stem cell-based bone regeneration (2024-2027).

He pioneered silver nanoparticle-coated hip implants, which earned the Japan Advanced Technology Special Prize in 2016. Dr. Ueno has developed XR-integrated surgical training protocols.

He is actively involved in global orthopaedic education, having been selected as a Travel Fellow at the Hospital for Special Surgery (2024), and his ongoing research on bone infection management continues to advance the field.

Dr. Ueno's work has made significant contributions to orthopaedic surgery and patient care, particularly in the areas of infection prevention and regenerative medicine.

AW1-2



Antibiofilm Chemical Pretreatment of Samples and Low Grade Infection in Osteosynthesis: Preliminary Report from a Multicenter Italian Study

Fabiana Giarritiello[1,2], Stefano Giannotti[3,4], Elisa Troiano[3], Fabrizio Fascione[5], Lorenzo Drago[6,7], Carlo Luca Romano[2]

[1]Department of Medicine and Health Sciences "V. Tiberio", University of Molise, [2]Romano Institute, 1001 Tirana, [3]Section of Orthopaedics and Traumatology, Department of Medicine Surgery and Neurosciences, University of Siena, [4]Section of Orthopaedics and Traumatology, Azienda Ospedaliera Universitaria Senese; Siena, [5]Orthopaedic and Traumatology Unit, Department of Medicine and Science of Aging, University G. "d'Annunzio" of Chieti-Pescara, Chieti, [6]Clinical Microbiology and Microbiome Laboratory, Department of Biomedical Sciences for Health, University of Milan, 20133 Milan, [7]UOC Laboratory of Clinical Medicine with Specialized Areas, IRCCS MultiMedica, 20138 Milan

Background

Fracture Related Infections (FRI) pose significant challenges in post osteosynthesis management, with an estimated incidence ranging from 1 to 25 (value express in percentage) in open fractures. Accurate diagnosis remains difficult due to the lack of validated reference standards and the influence of biofilm formation, which can lead to both false negative and false positive culture results.

Purpose

The primary objective of this study is to prospectively compare the performance of the MicroDTTect device, a fully closed commercial system with chemical antibiofilm pre treatment, against traditional tissue culture techniques in patients undergoing osteosynthesis hardware removal with negative preoperative laboratory tests and no signs of acute inflammation.

Methods

This two center prospective observational study, initiated in 2023, included 31 adult patients undergoing osteosynthesis hardware removal. For each patient, samples were analyzed using both traditional tissue cultures and MicroDTTect examination. The results were compared in terms of sensitivity, specificity, and accuracy to evaluate the diagnostic performance of the two methodologies.

Results

Antibiofilm pretreatment with MicroDTTect demonstrated higher specificity (100 vs. 77.27), sensitivity (77.78 vs. 66.67), negative predictive value (91.67 vs. 85.00), and overall accuracy (93.55 vs. 74.19) compared to tissue cultures. Additionally, the likelihood of obtaining false negative results was lower with MicroDTTect (Negative Likelihood Ratio: 0.22) than with tissue cultures (0.43).

Conclusion

The preliminary findings of this two center study indicate that MicroDTTect's antibiofilm pretreatment provides greater accuracy in identifying pathogens in low grade FRI. If confirmed in larger patient cohorts, these results highlight the need for incorporating antibiofilm techniques and closed system diagnostic tools in patients undergoing osteosynthesis material removal.

[Curriculum Vitae]

I am Fabiana Giarritiello, a Biomedical Engineer and PhD candidate in Technology and Innovation in Medicine at the University of Molise, Italy. My research focuses on bacterial biofilms, antimicrobial resistance, and the integration of machine learning in medical diagnostics, particularly in the microbiological diagnosis of orthopedic infections. I have conducted research at IRCCS MultiMedica in Milan, specializing in microbiological diagnostics, Next-Generation Sequencing (NGS), and automated bacterial identification systems. My work has resulted in multiple peer-reviewed publications, including studies on chemical antibiofilm strategies, host-microbiota interactions, and antimicrobial resistance in diabetic foot infections. I am currently leading further investigations on innovative antibiofilm compounds and advanced diagnostic methodologies. Passionate about translational medicine, I aim to bridge computational tools with clinical applications to enhance precision medicine approaches. I will complete my PhD in November 2025.

AW1-3

Prospective randomized study on effect of disinfectants on suture contamination in arthroscopic rotator cuff repair

Hideki Kamijo, Keisuke Matsuki, Norimasa Takahashi, Shota Hoshika, Tomoyuki Matsuba, Tomoshige Tamaki

Sports Medicine & Joint Center, Funabashi Orthopaedic Hospital

Background

Sutures are considered as a source of infection after arthroscopic rotator cuff repair, specifically Cutibacterium acnes (C. acnes) infection. There is no consensus on the selection of disinfectants for preventing infection after rotator cuff repair.

Purpose

This prospective randomized comparative study aimed to evaluate disinfectants' effectiveness in preventing suture contamination in arthroscopic rotator cuff repair.

Materials and Methods

The subjects were 150 male patients with scheduled arthroscopic rotator cuff repair between July 2021 and October 2022. Patients were randomly assigned to three disinfectant groups: povidone-iodine (P), alcohol-containing povidone-iodine (AP), and oranexidine gluconate (O). To minimize surgical time variability, surgeons were categorized into three groups (A, shortest; B, intermediate; C, longest) based on their average surgical time, and one of the disinfectants was randomly assigned in each group.

Sutures from the last knot were cultured both aerobically and anaerobically for up to three weeks. The positive rates of C. acnes and miscellaneous bacteria were compared between the disinfectants and the surgeon groups. Repair integrity was evaluated on MRI at postoperative one year, and its relationship with bacterial contamination was also assessed.

Results

C. acnes was detected in 92 shoulders (61%), and miscellaneous bacteria in 34 shoulders (23%) with coagulase-negative Staphylococcus predominated. The positive rates of C. acnes were 60%, 58%, and 66% in Groups P, AP, and O, respectively. There was no significant difference between the groups. The positive rate of miscellaneous bacteria was lower in Group AP (14%) than in P (20%) and O (34%). Logistic regression analysis demonstrated that Group O had a higher risk of miscellaneous bacteria contamination than Group AP (odds ratio, 3.96; 95% CI, 1.35-11.60; P=0.01).

In comparison between the surgeon groups, the positive rate of C. acnes was significantly lower in Group A (52%) than Groups B (74%) and C (73%, P=0.03). Logistic regression analysis indicated that Group B had a higher risk of C. acnes contamination than Group A (odds ratio, 2.97; 95% CI, 1.14-7.75; P=0.03).

No significant relationship was seen between bacterial contamination and retear. No symptomatic infections were observed in postoperative one year.

Conclusion

C. acnes was the most frequently detected bacterium in suture contamination. No significant difference was detected in C. acnes contamination between the disinfectants, while oranexidine gluconate was associated with a higher risk of miscellaneous bacteria contamination. Longer surgical time was associated with a higher incidence of C. acnes contamination.

[Curriculum Vitae]
Education
April 2001 - March 2007 Jichi Medical University, School of Medicine, Tochigi, Japan

Honors
2019 ICSES (international congress of shoulder and elbow surgery) poster award
2023 the 50th annual meeting of Japan shoulder society: best abstract

Clinical and Research Societies
Japan Shoulder Society: Member
The Japanese Orthopaedic Society of Sports Medicine: Member
Japanese Orthopaedic Association: Member
Japan Elbow Society: Member
Japanese Society for Study of Bone and Joint Infections: Member

Professional Experience

April 2018 – Present
Orthopaedic Surgeon, Sports Medicine and Joint Center, Funabashi Orthopaedic Hospital, Chiba, Japan

April 2015 – March 2018
Orthopaedic Surgeon, Minobusan Hospital, Yamanashi, Japan

April 2014 – March 2015
Orthopaedic Surgeon, Kyushu Rosai Hospital, Fukuoka, Japan

April 2011 – March 2014
Medicine Doctor, Kawasakichoritsu Hospital, Fukuoka, Japan

April 2009 – March 2011
Orthopaedic Surgeon, Shiokawa Hospital, Yamanashi, Japan

April 2007 – March 2009
Junior Resident, Yamashi Prefectural Hospital, Yamanashi, Japan

AW1-4

Withdrawn

AW1-5

Investigation of 2836 Samples of PCR Genetic Diagnosis for Bone and Soft Tissue Infections

Yuta Hieda[1], Hyonmin Choe[1], Masashi Shimoda[1], Koki Abe[1], Hiroyuki Ike[1], Hironori Yamane[1], Hiroto Kohno[1], Naomi Kobayashi[2], Yutaka Inaba[1]

[1]Yokohama City University Hospital, [2]Yokohama City University Medical Center

Background: Rapid genetic diagnosis with polymerase chain reaction (PCR) assay targeting bacterial-specific 16srRNA genes has been reported to be effective in diagnosis for bone and soft tissue infections. However, few studies have been reported about the accuracy of different types of samples and collection sites in PCR diagnosis. The purpose of this study was to compare previous PCR assay results with bacterial culture assay results, and to consider the characteristics of PCR diagnosis in clinical practice in terms of sample condition, collection site, and bacterial species.

Materials and Methods: A total of 2836 samples (904 patients) from 2013 to 2024 were included, with bacterial culture and PCR assays performed at the same time. The sensitivity and specificity of PCR assay results to bacterial culture assay were estimated retrospectively. The type of sample condition was classified as puncture fluid or tissue sample, and the location of collection was classified as hip, knee, or spine. The sensitivity of PCR assay was also evaluated for samples that were positive for methicillin-susceptible *Staphylococcus aureus* and methicillin-resistant *Staphylococcus aureus* in bacterial culture assay. Samples for which detailed data could not be collected from medical records were excluded.

Results: Of the 2836 samples, 609 (21.5%) were positive for bacterial culture, and the sensitivity and specificity of PCR diagnosis were 80.8% and 85.2%. The sensitivity and specificity of puncture fluid (1375 samples) and tissue samples (1409 samples) were 73.9% and 87.1%, and 85.7% and 84.8%. For samples collected by hip (1127 samples), knee (320 samples), and spine (186 samples) the sensitivity was 77.4%, 86.4%, and 91.0%, and the specificity was 89.3%, 87.4%, and 68.9%. The sensitivity of PCR diagnosis in methicillin-susceptible *Staphylococcus aureus* (143 samples) and methicillin-resistant *Staphylococcus aureus* (213 samples) positive samples was 86.8% and 77.9%.

Discussion: Sensitivity was high for puncture fluid samples and spine samples and for samples identified with methicillin-susceptible *Staphylococcus aureus*, and specificity was high for samples collected from the hip joints. In contrast, for tissue samples with low sensitivity or the samples collected by spine with low specificity, it is necessary to understand the probability of the PCR assay before treating patients with bone and soft tissue infections.

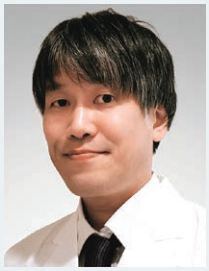
Conclusion: It was suggested that the advantages and disadvantages of PCR assays should be understood and that PCR assays should be combined with bacterial culture tests for clinical diagnosis.

[Curriculum Vitae]
Mar 2018. Graduated from School of Medicine, Yokohama City University
Oct 2022. Best presentation award in Japanese Society for Study of Bone and Joint Infections. 2022.
Oct 2022. Best resident award in Japanese Society for Joint Diseases. 2022.
Mar 2025. Doctor of Philosophy in Medicine, Yokohama City University

AW1-6

Withdrawn

AW1-7



Efficacy of Continuous Local Antibiotic Perfusion (CLAP) for Fracture-related Infections: A Multi-center Retrospective Cohort Study

Shunsuke Takahara[1], Yukichi Zenke[2], Daisuke Himeno[3], Shinnosuke Yamashita[4], Masahiro Matsumoto[5], Yasuaki Yamakawa[6], Hokuto Morii[7], Keisuke Oe[8], Takahiro Niikura[9], Akihiro Maruo[10]

[1]Department of Orthopaedic Surgery, Hyogo Prefectural Kakogawa Medical Center,
[2]Trauma Reconstruction Center, University of Occupational and Environmental Health Hospital,
[3]Department of Orthopaedic Surgery, Chiba Emergency and Psychiatric Medical Center, [4]Department of Orthopaedic Surgery, Kobe City Medical Center General Hospital, [5]Advanced Critical Care and Emergency Center, Yokohama City University Medical Center, [6]Department of Orthopaedic Surgery, Kochi Health Sciences Center, [7]Department of Emergency and Critical Care Medicine, Saitama Medical Center, Saitama Medical University, [8]Department of Orthopaedic Surgery, Kobe University Graduate School of Medicine, [9]Department of Orthopaedic Surgery, Hyogo Prefectural Nishinomiya Hospital, [10]Department of Orthopaedic Surgery, Hyogo Prefectural Harima-Himeji General Medical Center

Background: Fracture-related infections (FRI) remain a challenging problem in orthopedic trauma surgery. In recent years, continuous local antibiotic perfusion (CLAP), which involves the direct infusion of a highly concentrated gentamicin solution into infected intra-medullary canals and/or soft tissues, has emerged as a promising treatment that offers potential advantages over traditional local antibiotic delivery.
Purpose: This study aimed to evaluate the efficacy of CLAP in patients with FRI.
Material and Methods: This retrospective cohort study was conducted at ten institutions and included 169 patients who underwent surgical treatment for FRI between 2019 and 2022 with a follow–up period of at least one year. The mean age of the patients was 53.1 years (range: 13–90 years). The primary outcome was the success rate of infection control, and the secondary outcomes included the recurrence rate and incidence of acute kidney injury (AKI). Patients were divided into two groups based on whether CLAP was performed: CLAP group and non–CLAP group. Univariate analysis was conducted to compare variables between the two groups. Multivariate analysis was performed with primary and secondary outcomes as dependent variables.
Results: The success rate was significantly higher in the CLAP group than that in the non-CLAP group (86% vs. 71%, p = 0.03). The recurrence rate was significantly higher in the non–CLAP group (13% vs. 32%, p = 0.003). There was no significant difference in the incidence of AKI between the two groups (p = 0.6). In multivariate analysis, CLAP was significantly associated with the success rate of infection control (OR 3.6, 95% CI: 1.37–9.42, p = 0.01). Furthermore, CLAP was associated with a lower rate of recurrence (OR 3.4, 95% CI: 1.47–7.77, p = 0.004). Regarding adverse effects, CLAP was not significantly associated with AKI (OR 1.76, 95% CI: 0.513–6.030, p = 0.37).
Conclusion: In this multi–center study of 169 FRI cases, CLAP was associated with a higher success rate of infection control and a lower recurrence rate without increasing adverse events.

[Curriculum Vitae]
Shunsuke Takahara, MD, PhD
Current Position: Chief Orthopedic Surgeon, Hyogo Prefectural Kakogawa Medical Center, Kakogawa, Japan

Education and Professional Background
2005: Graduated from Kobe University School of Medicine
2013-2017: Kobe University Graduate School of Medicine, (Orthopedic Surgery)
2017-Present: Chief Orthopedic Surgeon, Hyogo Prefectural Kakogawa Medical Center

Specialties
Orthopedic Trauma
Emergency Trauma
Rheumatoid Arthritis

Positions of Responsibility
Councilor: Japanese Orthopaedic Trauma Association
Senior Member: AO Trauma Japan
Committee Member: Special Committee on AI Promotion, Japanese Association for Acute Medicine
Steering Committee Member: CLAP Research Group

Awards
2020: Best Presentation Award, 43rd Annual Meeting of the Japanese Society of Bone and Joint Infection
2024: Academic Award, 50th Annual Meeting of the Japanese Society for Fracture Repair

AW2-1

Laser technologies in the treatment of pin-track osteomyelitis

Nikolay Nabatchikov[1], Oleg Podkosov[1,2], Aleksei Shabunin[1], Mikhail Parshikov[2], Aleksei Lychagin[3]

[1]Botkin Hospital, [2]Russian University of Medicine, [3]Sechenov University

Relevance: Currently, the problem of treating pin-track osteomyelitis of bones is still a hot topic for discussion. The search for the optimal treatment method is relevant not only from the medical side, but also from the social side, since infected lesions are the second most common reason for lower limb amputation. The traditional method of treatment involves radical osteonecrosequestrectomy to the level of healthy tissue. However, this technique has a number of disadvantages, including: invasiveness of the intervention, which is, in one way or another, an injury to soft tissues; depending on the size of the sequestrum, the scope of the surgical intervention may be small and the bone defect may not be of great functional significance, but with large sizes of the lesion, the scope of the intervention can be increased to segmental bone resection, which in turn will lead to the formation of a bone defect-diastasis, which significantly increases the duration of treatment and rehabilitation. Currently, there is no algorithm for the management and treatment of patients with infected lesions of the distal tibia.

Objective: To improve the treatment results for patients with pin-track osteomyelitis by including laser osteoperforation in the treatment complex

Materials and methods: As part of a clinical study, 20 people with pin-track osteomyelitis were operated on. These patients made up the main study group, in which laser osteoperforation was performed. The other 20 patients made up the control group, in which traditional surgical treatment was performed - osteonecrosectomy. Antibacterial therapy was carried out in the pre-, intra- and postoperative periods

Results: When analyzing the results, it was revealed that in 19 cases out of 20 (95%) within 12 months after laser osteoperforation, there was no diagnosed case of exacerbation of pin-track osteomyelitis. In the control group, only in 5 cases out of 20 within 12 months after the operation, no signs of exacerbation of pin-track osteomyelitis were detected.

Conclusions: As a result of the study, the following conclusions can be made:

- the use of laser osteoperforation reduces the frequency of exacerbations of pin-track osteomyelitis by almost 4 times
- Laser osteoperforation is an effective minimally invasive method for the treatment of pin-track osteomyelitis

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[Curriculum Vitae]

Orthopedic-traumatologist of the purulent traumatology department of Botkin Hospital

AW2-3

The Role of ILIZAROV in Managing Infected Large Gap Non-Unions of the Femur

MD. MOFAKHKHARUL BARI

Bari-Ilizarov Orthopaedic Centre

Background

Infected large-gap non-union of the femur is one of the most difficult orthopedic conditions to treat. It presents multiple challenges, including persistent infection, significant bone loss, limb shortening, poor soft tissue coverage, and complex deformities. Conventional methods often fail to achieve full healing in these cases, making the Ilizarov technique a valuable alternative.

Purpose

This study evaluates the outcomes of the Ilizarov method in managing infected femoral non-unions with large bone defects, focusing on infection control, bone transport, and functional recovery without the use of bone grafting.

Materials and Methods

Between 1990 and 2023, 545 patients with infected big-gap femoral non-unions were treated using the Ilizarov technique. Of these, 55 cases without active discharge were managed with an Ilizarov ring fixator alone, while 200 cases with draining infection underwent surgical debridement followed by Ilizarov bone transport. Bone transport was performed in 200 cases to bridge defects ranging from 2.5 cm to 27 cm, including 90 cases of bifocal transport. No bone grafting was used to achieve union.

Results

All cases healed successfully with the Ilizarov method. In five patients, a second application of the fixator was required to ensure complete union, resulting in a 100% success rate. The technique effectively restored bone continuity, corrected limb shortening, and managed infection without the need for additional grafting procedures.

Conclusion

The Ilizarov technique, when applied in a systematic, stepwise manner, is highly effective in treating infected large-gap non-unions of the femur. Unlike conventional approaches, which struggle with such complex cases, the Ilizarov method reliably achieves full bone healing and functional restoration within 1 or 2 years.

[Curriculum Vitae]
Qualifications:
Doctor of Medicine (MD) Kiev
MS (Ortho & Trauma)- Kiev
Ph.D. (Ortho & Reconstructive Surgery) Tashkent
3 times Post-Doctoral Fellowship on Illzarov Technique- RISC, RTO, Kurgan, Russia
Volkov Oganesyan Fellow, CITO-Moscow
WHO Fellow Reconstructive Surgery-Chennai

Present Working Places:
・Prof. Ph.D., Chief Consultant Bari-Ilizarov Orthopaedic Centre, Dhaka, Bangladesh.
・Visiting Prof. of BIRDEM (Bangladesh Institute of Research and Rehabilitation in Diabetes) and BIHS (Bangladesh Institute of Health Science)
・Visiting and Honored prof. of Russian Ilizarov Scientific Centre, Kurgan.
・Prof. of Weifang Medical University, China.

Published articles:
■ 106 International articles published.
■ 8 Books published since 2006.

Reviewer:

・PhD Thesis 9
・DSC Thesis 6
・International Article 37

AW2-4

Iodine-coated implants in prevention and treatment of surgical site infections for compromised hosts

Toshiharu Shirai, Hiroyuki Tsuchiya

Yokohama Sakae Kyosai Hospital

Background

Surgical site infection is a common complication following orthopaedic implantations for the compromised host. We developed iodine coating for titanium implants to reduce implant-relate infection, and conducted a prospective clinical research. We will report the final results in this study.

Patients and Methods

This study was approved by the institutional review board at our University. Between July 2008 and July 2017, a total of 653 patients with postoperative infection or compromised status were treated using iodine-loaded titanium implants. The mean age of the patients was 48.6 years (range, 4-90 years). The mean follow-up period was 41.7 months. Three hundred seventy-seven patients were male and 276 were female. In 477 patients, iodine-supported implants were used to prevent infection, such as in compromised status, and in 176 patients, to treat active infection (one-stage surgery: 89 patients, two-stage: 87 patients). In the limbs and pelvis, the primary diagnoses included 161 cases of tumor, deformity/ shortening in 92, pseudarthrosis in 47, fracture in 42, infected TKA in 32, osteoarthritis in 25, pyogenic arthritis in 21, infected THA in 20, and osteomyelitis in six. In the spinal cases, there were 136 cases of tumor, 36 cases of pyogenic spondylitis, and 35 cases of degeneration.

Results

The total number of infected cases was 45 cases (6.8%). The infection rate of limb osteomyelitis was highest at 50%, followed by purulent spondylitis 16.6%, infected TKA 15.6%, extremity/pelvic tumor 11.8%, spinal degeneration 5.7%, infected THA 5.0%, pyogenic arthritis 4.7%, pseudarthrosis 4.2%, osteoarthritis 4.0%, spinal tumors 3.6%, deformity / shortening and fractures 0%. The mean time to onset of infection after implantation was 12 months. The total infection rate of cases used for prophylactic purposes was 3.7%, and most of these infections occurred in tumor cases (limb/pelvic tumor 8%, spinal tumor 4%). The total infection rate of cases aimed at treating infection was 15.3%, and there was no difference between one-stage replacement (14.6%) and two-stage (16.0%). Osteomyelitis of the extremities was highest at 75% followed by limb/pelvic tumors at 34.7%, purulent spondylitis at 16.6% and infected TKA at 15.6%. There were 13 cases of infection in spinal surgery, all of which were cured by DAIR or one-stage surgery using iodine-coated instruments.

Conclusions

Because the infection rate of iodine-coated implants used for compromised hosts is low compared to other methods, postoperative infection is more easily controlled.

[Curriculum Vitae]
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TEL: +81-45-891-2171 FAX: +81-45-895-8351 E-mail: shi-ra-e@koto.kpu-m.ac.jp

EDUCATION:
Apr. 1990- Mar. 1996 Kanazawa University School of Medicine
Sep. 2017- Dec. 2017 Medical University of Vienna

LICENSURE & CERTIFICATION:
1996 Medical License (No. 379374)
2003 Medical specialist of orthopedics
2005 Medical specialist of spinal disease
2015 General Clinical Oncologist (Japanese Board of Cancer Therapy)
2018 Medical specialist of rehabilitation medicine
2019 Medical specialist of musculoskeletal oncology

POST-GRADUATE EXPERIENCE:
1996 Medical doctor, Department of Orthopedic Surgery, Kanazawa University
1997 Medical doctor, Orthopedics Department, Yokohama Sakaekyosai Hospital
2002 Medical doctor, Department of Orthopedic Surgery, Kanazawa University
2005 Medical doctor, Orthopedics Department, Kanazawa Medical Center
2007 Assistant Professor, Department of Orthopedic Surgery, Kanazawa University
2011 Associate Professor, Department of Orthopaedics, Kyoto Prefectural University of Medicine
2025 Executive Manager, Orthopaedic Surgery, Yokohama Sakae Kyosai Hospital

MEMBERSHIPS:
1, Internal Society of Limb Salvage
2, The Japanese Orthopaedic Association, representative
3, Japanese Musculoskeletal Oncology Group, secretary
4, Japanese Society of Clinical Oncology
5, The Japanese Association of Rehabilitation Medicine
6, Japanese Hip Society

MAJOR RESEARCH INTERESTS:
Development of antibacterial implants

AWARD:
2012 Technology Prize of The Surface Finishing Society
2012 The Best Poster Award of Japanese Musculoskeletal Oncology Meeting
2014 26th SICOT Triennial World CongressThe Best SICOT Oral Presentation Award
2016-2017 The Best Doctors in Japan
2018 American Academy of Orthopaedic Surgeons 2018 Annual Meeting: Highlight
2018-2019 The Best Doctors in Japan
2020-2021 The Best Doctors in Japan
2022 The Best Discussant Award of Japanese Musculoskeletal Oncology Meeting
2022-2023 The Best Doctors in Japan
2024-2025 The Best Doctors in Japan

AW2-5

Analysis of Ilizarov method for the treatment of patients with diabetic Charcot foot complicated by infection

Anatolii Sergeevich Sudnitsyn

FSBI "National Ilizarov Medical Research Centre for Traumatology and Ortopaedics" Ministry Healthcare

Objective of the study:
Comparative analysis of bone quality and Ilizarov fixator layout variant for the treatment patients with infected diabetic Charcot foot.

Materials and Methods:
Analysis of radiographs and clinical course of the reparative process of 249 cases (mean age 59.4 years) with infected diabetic Charcot foot was treated at the Bone Infection Department of Ilizarov Scientific Center of Orthopedy from 2017 to 2024. Patients were divided into 2 groups according to the type of external fixation device arrangement (spoke arrangement - SA; hybrid arrangement - HA). The radiographs obtained in Jpeg format were analyzed using specialized software "Hi - scene" designed for reading and computer processing of digital results of X-ray examination.

Results:
Comparison of the results of the optical X-ray bone density indices obtained in our study of patients with infected diabetic Charcot foot showed a significant decrease of the optical bone density both before and after treatment. The treatment results achieved bone fusion at the joint and increased the duration of fixation in the p/o period of the GA group in 75% and in the SA group in 56% of cases.

Conclusions:
Our study showed a decrease in optical and densitometric bone density in cases with diabetic Charcot neuro-osteoarthropathy complicated by chronic osteomyelitis compared with the normal. At the same time, the using of hybrid Ilizarov device qualitatively increases the duration of fixation and improves the efficiency of treatment patients with infected diabetic Charcot foot.

[Curriculum Vitae]
Work experience

From 2013 working in Russian Ilizarov Scientific Center for Restorative Traumatology and Orthopedic of the Ministry of Health, Bone Infection Orthopedic Department.
From 2020 Head of Scientific Bone Infection Department in National Ilizarov Medical Research Center for Traumatology and Orthopedic Ministry Healthcare, Russian Federation.

Professional surgical skills

Surgical experience: from 2013 to 2024 years was done more than 2236 orthopedic reconstructive operations, with using different types of bone fixators, especially Ilizarov technique.
Deformity correction and limb lengthening by Ilitharov technique, treatment of osteomyelitis, diabetes, Charcot feet, multycomponent foot and ankle deformities.

Other information

Author 40 articles in Russian and international journals. ORCID: 0000-0002-2602-2457. Scopus Author ID: 57195315430.

AW2-6

Japanese Database of Surgical site infection following arthroplasty and spinal instrumentation -process of development and present status-

Takeshi Morii[1], Kazuhiko Matsushita[2], Yutaka Inaba[3], Hiroyuki Oka[4], Tomohiro Shinozaki[5], Toshiyuki Tateiwa[6], Toshinori Masaoka[6], Kazumasa Konishi[1], Koji Yamada[7], Kengo Yamamoto[6], Shoichi Ichimura[8]

[1]Department of Orthopaedic Surgery, Kyorin University, [2]Department of Orthopaedic Surgery, St. Marianna University., [3]Department of Orthopedic Surgery, School of Medicine Medical Course, Yokohama City University., [4]Graduate School of Medicine, The University of Tokyo., [5]Tokyo University of Science, Faculty of Engineering, Information Engineering Department., [6]Department of Orthopaedic Surgery, Tokyo Medical University., [7]Nakanoshima Orthopaedics., [8]Department of Orthopaedic Surgery, Kyorin University Suginami Hospital.

Background. Since the conclusion of the Japanese Orthopaedic Association (JOA) project study on surgical site infections (SSI) in 2006, Japan has lacked a survey to assess the actual status of SSI following arthroplasty and spinal instrumentation surgery. Hence in 2015, the Japanese Society for Study of Bone and Joint Infections (JSSBJI) initiated a multicenter prospective cohort observational study. This study, named the J-DOS (Japanese Database of SSI following Arthroplasty and Spinal Instrumentation), began patient registration in 2021.

Subjects. The purpose of this presentation is to report on the planning process, progress, and current registration status of J-DOS, first prospective cohort observational study on SSI in orthopaedic surgery in Japan.

Methods. We provide an overview of the concept, protocol development process, and study design of the J-DOS, along with the current registration status.

Results. The planning of J-DOS dates back to 2015, during which investigation items were determined based on the prior research. The key features of this study include: a prospective study design; the development of a web-based registration system; the participation of orthopaedic surgeons specializing in spinal and joint surgery, medical statistics experts, and computer software engineers from the planning stage. The primary outcome is incidence of SSI within 90 days postoperatively in arthroplasty and spinal instrumentation. The study collects data on the following items: basic patient information; surgery-related information (surgical procedure, nasal decolonization, preoperative skin preparation, duration of surgery, blood loss, transfusion, type and duration of prophylactic antibiotics, disinfection methods, use of adhesive drapes, use of povidone-iodine irrigation, use of antimicrobial sutures, etc.); postoperative information (drain and urinary catheter retention periods, postoperative blood glucose levels, etc.). As of December 2024, 3,564 cases have been registered. Among them, 2,059 cases (57.7%) have complete data entry (1,509 arthroplasty cases and 550 spinal instrumentation cases). A total of 34 institutions have participated in the study, with the number of registered cases per facility ranging from 0 to 389 cases (mean: 73.5 cases, median: 18.5 cases).

Discussion. The current number of registered cases remains insufficient to reliably estimate SSI incidence rates and identify risk factors. Facilities with missing data should be encouraged to complete their registrations. Additionally, the study scope is being expanded beyond JSSBJI-affiliated facilities to include over 2,000 JOA-certified training hospitals across Japan. With the system fully operational, an increase in case registrations will allow for a more comprehensive understanding of SSI in Japan.

[Curriculum Vitae]
1991: Graduated from Keio University School of Medicine
1991: Resident, Department of Orthopedic Surgery, Keio University School of Medicine
1996: Assistant, Department of Orthopedic Surgery, Keio University School of Medicine
2001 –2003: Visiting Research Fellow, Massachusetts General Hospital and Harvard Medical School, USA
2001: Awarded Doctor of Medicine (M.D., Ph.D.)
2004: Assistant, Department of Orthopedic Surgery, Keio University School of Medicine
2006: Lecturer, Department of Orthopedic Surgery, Kyorin University School of Medicine
2010: Associate Professor, Department of Orthopedic Surgery, Kyorin University School of Medicine
2018: Clinical Professor, Department of Orthopedic Surgery, Kyorin University School of Medicine
2022: Professor, Department of Orthopedic Surgery, Kyorin University School of Medicine

FP1-1

The incidence for surgical site infection after medial open wedge high tibial osteotomy and hybrid closed wedge high tibial osteotomy up to one year postoperatively

Shu Takagawa[1,3], Naomi Kobayashi[1], Yohei Yukizawa[1], Ayahiro Kadowaki[1], Shota Higashihira[1], Yutaka Inaba[2]

[1]Yokohama City University Medical Center, [2]Yokohama City University, [3]Yokohama Minami Kyosai Hospital

Background
Surgical site infection (SSI) after around knee osteotomy is a devastating complication that may require further surgery and infection prevention strategy is essential for improving treatment outcomes. This study aimed to investigate in detail of SSI following around knee osteotomy.
Methods
We reviewed 300 cases of open-wedge high tibial osteotomy (OWHTO) and hybrid closed-wedge high tibial osteotomy (CWHTO) performed at our institution between January 2013 and December 2023. The incidence, onset timing, pathogenic bacteria, and clinical course of SSI within one year postoperatively were analyzed.
Results
A total of 14 cases of SSI were identified. Among 221 OWHTO cases, 9 infections occurred (4%), with 3 superficial and 6 deep infections. Among 79 CWHTO cases, 5 infections occurred (6%), with 2 superficial and 3 deep infections. The most common causative organism was methicillin-sensitive Staphylococcus aureus (MSSA) in 35% of cases. Infection onset varied from 1 week to 10 months postoperatively, but most frequently occurred as surgical wound infections around 2 weeks postoperatively. No cases of multidrug-resistant bacteria were observed. Regarding treatment, 8 cases (57%) were managed successfully with oral antibiotics alone, while 4 cases (28%) required surgical intervention, including irrigation and debridement or early implant removal, to achieve infection resolution.
Conclusion
SSI after around knee osteotomy occurs at a certain frequency, highlighting the necessity of enhanced infection prevention and treatment strategies.

[Curriculum Vitae]
2005: Graduated from Shinshu University School of Medicine
2005: Clinical Training Center, Shinshu University School of Medicine
2007: Department of Orthopedic Surgery, Kanagawa Prefectural Ashigarakami Hospital
2009: Enrolled in the Graduate School of Medicine, Yokohama City University
2013: Completed Graduate School of Medicine, Yokohama City University
2013: Department of Orthopedic Surgery, Yokohama City University Hospital
2014: Department of Orthopedic Surgery, Yokohama Municipal Citizen‘s Hospital
2017: Department of Orthopedic Surgery, Yokohama City University Medical Center
2025: Department of Orthopaedic Surgery, Yokohama minami kyousai hospital

FP1-2

Do Elevated Preoperative Serum Inflammatory Markers Influence Surgical Site Or Periprosthetic Joint Infections Following Primary Total Hip Arthroplasty?

Daisuke Inoue, Tamon Kabata, Yu Yanagi, Musashi Ima, Takahiro Iyobe, Naoya Fujimaru, Keisuke Sano, Rin Maeda, Satoru Demura

Kanazawa University Hospital

Background

Orthopedic surgeons must recognize the preoperative patient risk factors for SSI/PJI before primary THA. Hence, routine preoperative laboratory tests are commonly performed to assess a patient general condition. The presence of active inflammation, by evaluating CRP and ESR can be detected using inflammatory laboratory tests.

To our knowledge, no previous study has thoroughly identified the relationship between the incidence of SSI/PJI after primary THA and the elevated levels of preoperative inflammatory markers.

Purpose

We aimed to investigate whether elevated preoperative serum inflammatory markers influence SSI/PJI after primary THA.

Material and Methods

In this retrospective single-institution study, 1115 patients who underwent primary THA were enrolled. Cases of SSI/PJI were identified. The enrolled patients were classified into three groups. Group 1 both CRP ≤ 0.3 mg/dL and ESR ≤ 20 mm/h, Group 2 either 0.3 mg/dL < CRP < 1.0 mg/dL or ESR>20 mm/h, and Group 3 both CRP ≥ 1.0 mg/dL and ESR >20 mm/h. Multivariate analysis was performed to calculate the hazard ratio for the incidence of SSI/PJI among the three groups.

The patients in Group 3 were propensity score-matched with those in Groups 1 and 2 using 1vs 2 nearest neighbor matching for age, sex, body mass index, American Society of Anesthesiologists Physical Status, hip disorder etiology, and past history of autoimmune diseases. After matching, we compared the incidence rates of SSIs/PJIs among the three groups.

Results

Overall, 18 cases, including SSI in eight hips and PJI in 10 hips, were included. Multivariate analysis revealed that elevated preoperative ESR and CRP levels were independent risk factors for SSI/PJI in this cohort.

After propensity score-matching for patient factors, the incidence rates of SSI/PJI were four hips in Group 3, one hip in Group 1, and four hips in Group 2. A significant difference was noted in the incidence rate of SSI/PJI between Groups 3 and 1, while no significant difference was observed between Groups 2 and 1.

Conclusions

Elevated preoperative serum inflammatory markers may increase the incidence of SSI/PJI following primary THA. Surgeons should recognize patients with Group3 as high-risk group of SSI/PJI.

[Curriculum Vitae]

2019- : Assistant professor, Department of Orthopedics Surgery, Kanazawa University.
2018-2019 : Research Fellow, Department of Orthopedics Surgery, Rothman Institute at Thomas Jefferson University
2016-2018 : Collaboration researcher, Department of Orthopedics Surgery, Kanazawa University.
2013-2016 : Orthopedic doctor, Department of Orthopedics Surgery, Kanazawa University.
2012-2013 : Resident doctor, Department of Orthopedic Surgery, Japanese Community Healthcare Organization Kanazawa Hospital, Kanazawa.
2011-2012 : Resident doctor, Department of Orthopedic Surgery, Toyama City Hospital, Toyama.
2009-2011 : Junior resident doctor, Department of Orthopedic Surgery, Kanazawa University.

FP1-3

Evaluation of Treatment Outcomes for Periprosthetic Joint Infection Using the PJI-TNM Classification

Yohei Kumabe, Tomoaki Fukui, Yutaka Matsumiya, Tomoyuki Matsumoto, Shinya Hayashi, Keisuke Oe, Ryosuke Kuroda

Kobe University Graduate School of Medicine, Department of Orthopaedic Surgery

Background

Periprosthetic joint infection (PJI) is a serious complication that requires appropriate diagnosis and treatment. Recently, the PJI-TNM classification has been proposed to systematically assess the pathophysiology of PJI. This classification consists of three elements: tissue and implant condition (T), pathogen characteristics (N), and systemic status (M). However, its clinical validity has not been fully evaluated. This study retrospectively analyzed the relationship between the PJI-TNM classification and treatment outcomes in PJI surgical cases at our institution.

Methods

We reviewed PJI surgical cases performed at our institution between April 2016 and July 2024, with a follow-up period of at least six months (TKA: 29 cases, UKA: 3 cases, THA: 36 cases, BHA: 6 cases). Treatment success was defined as cases that did not require additional surgery for infection. We examined the relationship between treatment outcomes and each factor of the PJI-TNM classification (T, N, and M). Additionally, we analyzed factors such as soft tissue damage, primary vs. revision surgery, and the presence of multiple comorbidities. Statistical analyses were conducted using the chi-square test or Fisher's exact test.

Results

A significant association was found between the T factor (tissue and implant condition) and treatment outcomes ($p=0.028$). However, no significant associations were observed for the N ($p=0.574$) or M ($p=0.969$) factors. Among other factors, the presence of soft tissue damage requiring plastic surgery ($p=0.047$), primary vs. revision surgery ($p=0.0237$), and atopic dermatitis ($p=0.022$) showed significant differences in treatment outcomes.

Discussion

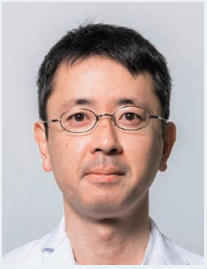
This study suggests that the T factor in the PJI-TNM classification may influence treatment outcomes, whereas the N and M factors have limited associations. The M factor, which utilizes the Charlson Comorbidity Index (CCI) as a prognostic indicator, may require modification to better assess systemic status specific to PJI. Additionally, factors not included in the PJI-TNM classification, such as atopic dermatitis, may also impact treatment outcomes. Further prospective studies with a larger sample size are needed to validate and refine the PJI-TNM classification.

[Curriculum Vitae]

2023-present: Kobe University Graduate School of Medicine, Department of Orthopaedic Surgery
2021-2022: Research fellow at Zurich University Hospital, Department of Trauma
2016-2020: Graduate student at Kobe University Graduate school of medicine, Department of Orthoapedic Surgery
2012-2016: Senior Residency Program of Kobe University, Department of Orthopaedic Surgery
2010-2012: Junior Residency Program of Kobe University Hospital

FP1-4

Development and validation of a nomogram to predict surgical-site infection after soft-tissue sarcoma resection



Shinji Miwa, Katsuhiro Hayashi, Yuta Taniguchi, Hirotaka Yonezawa, Sei Morinaga, Satoru Demura

Kanazawa University, Graduate School of Medical Sciences

Background: Surgical-site infection (SSI) after soft-tissue sarcoma (STS) resection is a serious complication. The purposes of this retrospective study were to investigate the risk factors for SSI after STS resection and to develop a nomogram that allows patient-specific risk assessment.

Methods: In this study, 547 patients with STS who underwent tumor resection between 2005 and 2021 were divided into development cohort and validation cohort. In the development cohort of 402 patients, the least absolute shrinkage and selection operator (LASSO) regression model was used to screen possible risk factors of SSI. To select risk factors and construct the prediction nomogram, multivariate logistic regression was used. The predictive power of the nomogram was evaluated by receiver operating curve (ROC) analysis in the validation cohort of 145 patients.

Results: LASSO regression analysis selected possible risk factors for SSI, including age, diabetes, operative time, skin graft or flap, resected tumor size, smoking, and radiation therapy. Multivariate analysis revealed that age, diabetes, smoking during the previous year, operative time, and radiation therapy, were independent risk factors for SSI. A nomogram was developed based on the results of multivariate logistic regression analysis. In the development cohort, the incidence of SSI was 4.5% in low-risk group (risk score < 6.89) and 26.6% in high-risk group (risk score > 6.89; $p < 0.001$). In the validation cohort, the incidence of SSI was 2.0% in low-risk group and 15.9% in high-risk group ($p = 0.004$).

Conclusions: Our nomogram will enable surgeons to assess the risk of SSI in patients with STS. In patients with high-risk of SSI, frequent monitoring and aggressive interventions should be considered to prevent SSI.

[Curriculum Vitae]

Shinji Miwa, M.D., Ph.D., is an assistant professor in the Department of Orthopedic Surgery, Graduate School of Medical Sciences, Kanazawa University. He is a surgical oncologist specializing in bone and soft tissue sarcomas, and specializes in the treatment of benign and malignant musculoskeletal tumors in patients of all ages. He graduated from Kanazawa University Medical School in 2003. Between 2012 and 2014, he investigated tumor-targeting bacterial therapy for cancer, in vivo imaging of cancer metastasis, and image-guided tumor surgery, at University of California, San Diego. He has played an important role in the development of immunotherapy for sarcomas. He has published over 120 peer-reviewed articles on bone and soft tissue tumors. His research interests are dendritic cells-based immunotherapy, risk factors for surgical site infection, diagnosis of bone and soft tissue tumors using PET-CT, radiological evaluation of chemotherapy for bone and soft tissue sarcomas, fluorescence imaging of cancer metastasis, image-guided tumor surgery, and biological reconstruction after resection of bone tumors.

FP1-5

Evaluation of the BioFire® Joint Infection Panel for Rapid Detection of Pathogens Associated with Joint Infections

Narumi Ueda[1], Yasushi Nakamori[2,3], Kazuyuki Okuda[2], Hirokazu Iida[4], Tetsuro Sugiura[5], Takanori Saito[6]

[1]Department of Orthopedic Surgery, Japanese Red Cross Wakayama Medical Center,
[2]Department of Genome Analysis Center, Kansai Medical University Medical Center, Kansai Medical University,
[3]Department of Emergency and Critical Care Medicine, Kansai Medical University Medical Center,
[4]Department of Rehabilitation, Kansai Medical University, [5]Department of Medicine II, Kansai Medical University Medical Center,
[6]Department of Orthopedic Surgery Kansai Medical University

Background: Rapid identification of the causative microorganisms of septic arthritis including periprosthetic joint infections is essential for successful treatment. However, the test results of culture-based techniques have not yet been reported at an appropriate time. In contrast, the BIOFIRE Joint Infection Panel (JI panel), a fully automated multiplex PCR method, can rapidly detect pathogens and antimicrobial resistance genes in the synovial joints in patients with acute osteoarticular infections (OIs). Accordingly, this study aimed to evaluate the diagnostic accuracy of the JI panel in identifying causative pathogens in patients with OIs.
Methods: Synovial fluid samples were collected from patients with suspected OIs. Fifty-five samples from 49 patients were analyzed. The JI panel results were compared with those obtained using conventional culture methods.
Results: The sensitivities of JI panel and culture for detecting microorganisms were 55 and 60%, respectively, while the specificities were both 100%. For patients with OIs (n = 23) and positive culture or JI panel, the agreement rate between JI panel and culture was 65%. In five samples (22%), culture was positive, but JI panel was negative. In three of the five JI panel-negative specimens (13%), the bacteria identified in culture were not included in the panel design. Three culture-negative specimens were JI panel-positive. Significantly higher sensitivity (70% vs 55%; P = 0.008) was observed with combined JI panel and culture than with JI panel alone.
Conclusions: JI panel is a useful technique to identify causative bacteria rapidly and automatically, but the combination of JI panel and culture methods is recommended because some pathogens are not included in JI panel.

[Curriculum Vitae]
PREVIOUS PROFESSIONAL POSITIONS AND APPOINTMENTS Clinical:

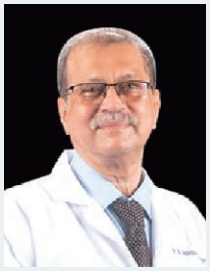
2006.4-	Kyoto City Hospital (resident)
2008.4-	Japanese Red Cross Wakayama Medical Center, Dept. of Orthopedics Surgery
2012.4 –	Assistant Professor of Orthopedics Surgery, Kansai medical University.
2021.11-	Deputy director of Genome Analysis Center and Assistant Professor. of Orthopedics Surgery
2025.4-	Deputy director of Orthopedics Surgery, Japanese Red Cross Wakayama Medical Center.

HONORS and AWARDS:
1. Incentive Award of Japan Orthopaedics and Traumatology Research Foundation 2014.
2. Excellent paper award, Orthopaedic Surgery and Traumatology 2016.
3. Academic Encouragement Award of Japanese Society for Study of Bone and Joint Infections 2019.

PATENT APPLICATION:
1. Japanese Patent 7549834.
2. Japanese Patent Application 2024–071261.

RESEARCH GRANT (Principal Investigators):
1-3. 2017/04, 2020/04, 2023/04,The Grants-in-Aid for Scientific Research of Japan Society for the Promotion of Science, 17K16707, 20K18045. 23K08641.
4. 2023-2025/03, Japan Agency for Medical Research and Development Translational Research Grant A (Kyoto Univ. based)

FP1-6



BioFire JI in Orthopaedic infections: Can we expand the indications and is there a need to broaden the pathogen spectrum in India

Vikas Madhav Agashe [1], Aditya Menon [1], Ayesha Sunavala [1], Umang Agrawal [1], Camilla Rodriques [1]

[1]P.D.Hinduja Hospital and Research Center, [2]Dr Agashes Multispeciality hospital, M.N.Road, Kurla, Mumbai 400070

Background The BioFire Joint Infection panel (JI panel) provides rapid microbial diagnosis and resistance pattern identification within hours. Its use is currently limited to diagnosing periprosthetic joint infections (PJI) and native septic arthritis (SA) (on-label indications). The panel detects only a limited number of microorganisms (on-panel pathogens). Thus a major limitation is its inability to identify certain microbes, particularly coagulase-negative staphylococci (CoNS).

Purpose The aim is to determine if JI panel serves as a value addition in every instance of osteoarticular and soft tissue infections (OASTI) treated by orthopaedic surgeons.

Material and Methods

This study retrospectively examines OASTI infection cases from June 2023 to December 31, 2024. We included confirmed cases where liquid pus could be collected. Cases were categorized into A) PJI and native septic arthritis(SA) (on label indications) and B) other infected conditions managed by orthopaedic surgeons (off label indications).

Our sampling protocol, in place for five years, achieves a culture yield of approximately 90%. All tissue samples undergo aerobic and anaerobic bacterial cultures, TB (MGIT and L.J.), fungal cultures, and histopathology. Additionally infective fluid samples are placed in Blood Culture Bactec bottles (aerobic, anaerobic and myco- f lytic); and also sent for JI panel analysis.NTM PCR has been incorporated in the last six months.

The primary objective was to evaluate the positivity and failure rate of JI panel for both on label and off label indications. A secondary aim was to determine the occurrence of Off panel pathogens (limitation).

Results: 36 patients had On label indications and 71 off label. JI panel alone successfully identified pathogens in 83 instances. The combined (JI panel + Cultures) pathogen identification rate was 97.2% (104/ 107).

JI panel was positive in 61.1% (22/ 36) On label indications.Of the negative 14 cases, 10 grew off panel pathogens including 4 NTM but only one CoNS,(Limitation).Failure was observed in 4 who grew on panel pathogens on cultures(Failure); Thus On Panel Pathogen pick up was 84.6% (20/24).

Pathogen pick up was 85.9% (61/ 71) in off label indications.On Panel Pathogen Pick up in off label indications were 95.3% (61/ 64).

Conclusion. BioFire JI panels applications can be broadened to encompass all OASTI causes. Nonetheless, India experiences a notable occurrence of pathogens not included in the Panel, so expanding it would be highly beneficial. Culture studies still remain the definitive method for microbial diagnosis.

[Curriculum Vitae]
Career highlights
Dr A.K.Saha Oration, West Bengal Orthopaedic Association 2025
Best Paper award, 3rd congress WAIOT(World association against infection in Orthopaedics and Trauma) at Miami ,USA Sept 2024
Veteran Surgeon Forum award, Western India Ortho Association conference Dec 2023
AAIS Ortho excellence Award 2023
Awardee – Golden Jubilee Oration,IOA, IOACON 2019
Affiliations
Head ,Bone infection unit and Consultant Orthopedic surgeon, P.D. Hinduja Hospital ,Mumbai
Consultant Orthopedic surgeon, Dr Agashes Maternity & Surgical Nursing home , Mumbai, India
Academic Activities
International Faculty at WAIOT congress AO Course Davos , American Association of Orthopaedic surgeons(AAOS) , Asia Pacific Orthopaedic Association conference(APOA) SICOT,
National Faculty at IOACON , WIROC ,MOA,Traumacon , AO courses & Many National conferences
Special Interests – Orthopaedic Infections , Trauma, Non unions,Metabolic Bone diseases/Osteoporosis

FP1-7

All inclusive Culture Protocol in Osteoarticular Infections exposes Dark Realities

Vikas Madhav Agashe [1], Aditya Menon [1], Ayesha Sunavala [1], Umang Agrawal [1], Camilla Rodriques [1], Anjali Shetty [1], Shaoli Basu [1]

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Background The culture yield for Osteoarticular and Soft Tissue infections (OASTI) is between 50% and 70%. Consequently, in many cases, the culture and resistance patterns remain undisclosed.

Purpose:
Primary Objective: Evaluating the efficacy of a systematic protocol on Pathogen Identification (PI) rates in OASTI.
Secondary Goals: Evaluating microbial results and antimicrobial resistance (AMR).

Material and methods- This study was a prospective cross-sectional analysis of OASTI patients treated at a tertiary care centre. An "all-inclusive" MDT (orthopaedic, infectious diseases and microbiology) protocol with pre, intra, and postoperative guidelines was established. Surgery was conducted after an Antibiotic free period (AFP), except when life, limb, or implants were at risk. The chief surgeon selected appropriate tissue or fluid samples and ensured proper containment. All tissue samples underwent aerobic and anaerobic bacterial cultures, TB (MGIT and L.J.), fungal cultures, and histopathology. Infectious fluid samples were placed in Blood Culture Bactec bottles (aerobic, anaerobic, and myco-lytic) and additionally sent for JI panel analysis since few months. Extended incubation was performed in certain cases.NTM PCR has been included in the protocol for six months

Results
The study included 342 participants (mean age= 50, M: F= 231:111), observed from August, 2020 to December 2024. Fracture-related infections were the commonest etiology (n= 75). 129 had co-morbidities (Commonest- Diabetes mellitus, n=91). The mean time to presentation after onset of symptoms was 233 days (median= 45). Implants or foreign surgical materials were present in 105 patients. An AFP was observed in 198 patients, while 144 underwent surgery while on antibiotics. Patients had mean 1.7 surgeries under our care (1 to 17).

The PI rate was 92.9% (318/ 342 cases). A total of 481 pathogens were identified, staphylococcus aureus being the commonest (n= 95). There were 40 rare pathogens (non-tuberculous mycobacteria= 17, fungi= 23).
Only 92 patients had pan- susceptible pathogens, while 210 exhibited resistance to at least one drug.

Conclusion
We exceeded typical protocols by using Bactec and the Biofire JI panel, along with fungal and bacterial cultures in addition.We ensured an antibiotic-free period and collected numerous samples. This lead to high culture yields. , allowed detection of high resistance levels and uncommon organisms, aiding suitable antimicrobial selection. Identifying pan-susceptible pathogens was equally essential to prevent unnecessary use of costly "high-end" antimicrobials & avoiding side effects. Our enhanced yield uncovered significant issues and improved patient outcomes for the future.

[Curriculum Vitae]
Career highlights
Dr A.K.Saha Oration, West Bengal Orthopaedic Association 2025
Best Paper award, 3rd congress WAIOT(World association against infection in Orthopaedics and Trauma) at Miami ,USA Sept 2024
Veteran Surgeon Forum award, Western India Ortho Association conference Dec 2023
AAIS Ortho excellence Award 2023
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Affiliations
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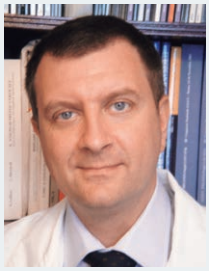
Academic Activities
International Faculty at WAIOT congress AO Course Davos , American Association of Orthopaedic surgeons(AAOS) , Asia Pacific Orthopaedic Association conference(APOA) SICOT,
National Faculty at IOACON , WIROC ,MOA,Traumacon , AO courses & Many National conferences
Special Interests – Orthopaedic Infections , Trauma, Non unions,Metabolic Bone diseases/Osteoporosis

FP1-8



Chemical Anti-Biofilm Pre-Treatment of Samples: A Simple and Effective New Approach to Cultural Examination

Carlo Luca Romanò[1], Lorenzo Drago[2,3], Maria Paola Bonomo[4], Fabiana Giarritiello[5]

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Background: Accurate diagnosis of implant-associated infections in orthopaedics is often hindered by bacterial biofilms that shield pathogens from conventional culture methods. These biofilms, formed on the surface of prosthetic materials and tissues, reduce culture sensitivity and contribute to false-negative results.

Purpose: This presentation explores the innovative application of dithiothreitol (DTT), a thiol-based reducing agent, as a chemical anti-biofilm pre-treatment to enhance the diagnostic yield of microbiological cultures from orthopedic samples.

Material and Methods: Per standard protocols, tissue or explant samples are incubated in 0.1% DTT (≈25 mM) for 15 minutes at room temperature, then vortexed and cultured. DTT pretreatment can be applied both to prosthetic material and periprosthetic tissue, as shown by various studies.

Results: DTT treatment increases sensitivity—up to 85% in some series—without impairing microbial viability. Advantages include its relative low-cost, the possible implementation in all hospitals without the need for specific equipment, and the applicability to all types of explanted materials (fluids, tissues, metallic and polymeric implants), making the procedure less operator-dependent, more streamlined, and reducing cross-contamination from manual handling. Care must be taken to respect concentration and contact-time parameters, as excessive exposure can have bactericidal effects.

To further standardize and secure this workflow and minimize contamination, completely closed systems, like MicroDTTect®, integrate DTT elution within a sterile, single-use, specifically designed closed cartridge: implants or tissues are loaded intra-operatively, sealed, transported and then processed without any open handling, yielding up to 98 % diagnostic sensitivity and specificity while minimizing hands-on time, contamination risk and logistical complexity.

Conclusion: In conclusion, DTT represents a practical and impactful advancement in the microbiological diagnosis of implant-related infections. By breaking down biofilms prior to culture, this approach bridges a critical diagnostic gap in orthopedic infection management and can be readily implemented across microbiology laboratories with minimal adaptation.

Carlo L Romanò is currently a free consultant in orthopaedic surgery and founder and CEO of the Romano Institute, based in Tirana, Albania.
He served as adjunct Professor of Orthopedics at the University of Milan, founder and Director of the Center of Reconstructive Surgery and Osteoarticular Infection and of the Milano Biofilm Center at the Research Orthopedic Institute Galeazzi in Milan, Italy.
Co-founder and currently Secretary General of the World Association against Infection in Orthopedics and Trauma, he is past-President of the European Bone and Joint Infection Society and co-founder and past-President of the Italian Study Group on Osteoarticular Infections.

FP1-9

Understanding and Practices of Orthopaedic Surgery Residency Trainees in Infection Control: Antibiotic Use, Wound Care, Early Intervention Strategies, and Barriers to Surgical Safety

Aditya Agarwal[1], Sangeet Gawhale[1], Nadir Shah[1]

[1]Grant Government Medical College, Mumbai, [2]All India Institute of Medical Sciences, New Delhi

Background

Orthopedic infections remain a significant challenge, often leading to prolonged morbidity and increased healthcare costs. Despite established guidelines, variability in antibiotic use, wound care, and early infection intervention persists among orthopedic residents. Identifying gaps in knowledge and adherence to best practices is crucial for improving infection control and patient outcomes.

Purpose

This study aims to assess orthopedic residents' understanding and compliance with evidence-based guidelines on antibiotic prophylaxis, wound management, and early intervention strategies in infection control. The findings will help identify key barriers and opportunities for standardizing infection prevention protocols.

Material and Methods

A cross-sectional survey was conducted among resident Orthopaedic Surgery Residency Trainees across multiple institutions. The questionnaire included sections on demographics, training background, knowledge of surgical safety and infection control guidelines, compliance with antibiotic protocols, and perceived barriers. Responses were collected using a Likert scale, multiple-choice questions, and open-ended items. Descriptive statistics and comparative analyses were performed to assess trends and associations.

Results

The study identified gaps in adherence to evidence-based antibiotic protocols, with variations in prolonged prophylaxis and debridement timing. Institutional policies and resource availability influenced infection management practices, and concerns about AMR were prevalent among participants. Preliminary findings indicate variability in antibiotic selection and duration, with inconsistencies in wound irrigation preferences and early intervention strategies. While most surgeons recognize guideline recommendations, practical adherence remains suboptimal. The use of local antibiotic applications varied widely, reflecting uncertainty regarding their efficacy. Compliance with the WHO Surgical Safety Checklist is limited, Institutional variability in wound inspection timing and postoperative antibiotic duration was noted, emphasizing the need for standardized protocols.

Conclusion

The study highlights gaps in knowledge and adherence to infection control guidelines among orthopedic residents. While awareness of best practices exists, barriers such as institutional norms, time constraints, and hierarchical influences impact compliance. Standardized training programs and improved integration of infection control protocols into daily surgical workflows are essential for enhancing patient safety.

[Curriculum Vitae]

Dr. Aditya Agarwal is a final-year Orthopaedic resident at Grant Government Medical College, Mumbai. He graduated at AIIMS, New Delhi, where he developed a strong foundation in research and public health. His exposure to institutions like SEARCH Gadchiroli, JSS Bilaspur, and The Spine Foundation has shaped his approach to musculoskeletal care, integrating clinical excellence with grassroots healthcare delivery.

Dr. Agarwal was among the Top 3 Final Winners at the 11th National TYSA Orthopaedics Quiz, Ahmedabad, and received the Prof. V. Ramalingaswami Award as the best intern in Community Medicine at AIIMS Delhi. He is an NTSE Scholar (2014) and served as the Founding Co-secretary of The Scientific Society, AIIMS New Delhi, 2018. He has authored Chapter – 'COVID-19 and Medical Education' in the book COVID-19: A View from the Margins (2022). He is also a member of organizations like the Bombay Orthopaedic Society and World Orthopaedic Concern (WOC).

Dr. Agarwal's vision extends beyond surgery—he is committed to improving orthopedic education, trauma & surgical infections, and addressing disparities in healthcare access.

FP2-1

Infected diabetic foot philosophy of surgery

Mohamed Mahmoud Fadel[1], Shawkat Ghazal Hafez [2], Suhail Masadeh[3]

[1]Orthopedic and Trauma Surgery, Minia University Hospital, Minya, [2]Shawkat Ghazal Hafez , [3]Suhail Masadeh

Background Charcot foot and ankle considered one of the common and compromising complication of DM. The condition is more complicated if infected. Mid foot affection involve tarsometatarsal and naviculocuniform joints. This may cause collapse that leads to fixed deformity, rocker bottom and valgus angulation. It is considered 60 % of Charcot foot and ankle.

Purpose We aim to assess use of single stage correction and maintenance of Charcot mid foot affection of tarsometatarsal and naviculocuniform joints.

Patients and methods We treated 11 patients using this proposal, according to presence of infected ulcer, osteomyelitis or not, and soft tissue tightens or not. 6 cases managed by internal fixation, 3 cases managed by internal fixation (IF) and external fixation (EF), and 2 cases exestictomy only was done. In most of these cases Tendo Achilles lengthening or gastrocnemius recession had been done.

Results Though difficulties in management procedures, follow up, soft tissue complications, the results were no flaps or amputation in any one. The conditions of our cases have been discussed and compared with other literatures.

Conclusion We conclude that in our cases that one stage technique with simple fixation, IF, EF, or combined is valuable and successful in management of Charcot foot and avoid amputations.

In infected diabetic foot philosophy of surgery we recommend one stage Charcot midfoot management

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[Curriculum Vitae]
Prof. Mohamed Fadel, MD
Limb Reconstructive Surgery and Correction of Deformity Center (LRS)
Nasr City, Cairo, Egypt
Consultant of LRS in Adults and Pediatric Orthopaedics
Minia University Hospital, El Minya, Egypt
Honorary Chairman LRS Unit
Executive Board Member of EOA www.eoa.org.eg
Member of ASAMI International
ASAMI, Egypt Board Member
Founder of ASAMI Arabs / LRS.AAA
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SICOT Computers & Enabling Technologies Subspecialty Committee Member
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LRS.PD page https://www.facebook.com/LRS.PD/

FP2-2

ORTHOPLASTIC ILIZAROV ASSISTED TECHNIQUE (OIAT) for leg bone defect reconstruction (BDR)

Mohamed Mahmoud Fadel

Orthopaedic Surgery, Minia University Hospital

Background Many conventional methods are used for bone defect reconstruction in leg. The need for plastic or microvascular consultation is a major obstacle.

Purpose We discuss use of orthoplastic skills using fibula Ilizarov assisted technique (FIAT) in (BDR). It is derived from our practical experience.

Patients and Methods Our study includes bone defect due to infected nonunion of tibia in patients received between September 2015 and 2020. We treated 43 cases of post traumatic bone defect due to infected tibia shaft.

Technique

Infected site The wound was debrided and excision of the sinus was performed. The bone was explored, debrided, sequestrectomy was removed, and local antibiotic was added, if financially possible.

Ilizarov external fixator (IEF) To close different size of defects, IEF was applied, then

acute compression in some case,

compression followed by distraction compensating lengthening,

gradual compression followed by distraction corticotomy compensating lengthening,

bone transport using gradual compression with distraction at the corticotomy site,

bone transport using gradual compression with distraction at 2 corticotomy sites,

free vascularized fibular graft,

free nonvascularized fibular graft,

and Ilizarov assisted fibula transportation.

Osteotomy was performed percutaneously, metaphyseal area proximally or distally using multiple drills and osteotome for lengthening or bone transport technique. During follow up, patients were evaluated according to the ASAMI criteria of bone healing improvement.

Results Patients: All treated 43 cases were followed for at least two years. Their average age was 30 years (range: 18: 62). There were 6 females. Patients presented with discharging sinus in 27 cases, intermittent discharging sinus in 8 cases, and past history of infection less than 6 months in 8 patients. There was past history of more than 2 previous surgical attempts for management in all cases. Nonunion was associated with stiff ankle in 21 cases.

Different techniques were used e.g.

monofocal technique in 14,

bifocal bone transport in 21 (one with acute docking), and

other techniques in 8.

Complications The main complications included pin tract infection in 9 cases, ankle stiffness in 15 cases and refracture after frame removal in one case. The complications did not preclude the surgical outcome.

Conclusion We concluded the Ilizarov external fixator is effective in management of bone defect pre or post debridement of infected nonunion of the tibia shaft. It provides advantages of many variable technique post Ilizarov application following acute docking, lengthening, and correction of deformity.

[Curriculum Vitae]
Prof. Mohamed Fadel, MD
Limb Reconstructive Surgery and Correction of Deformity Center (LRS)
Nasr City, Cairo, Egypt
Consultant of LRS in Adults and Pediatric Orthopaedics
Minia University Hospital, El Minya, Egypt
Honorary Chairman LRS Unit
Executive Board Member of EOA www.eoa.org.eg
Member of ASAMI International
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Member of IFPOS
Active Member of SICOT www.sicot.org
SICOT Computers & Enabling Technologies Subspecialty Committee Member
WAIOT Vice President and Director of Africa www.waiot.org
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LRS.PD https://www.facebook.com/groups/234866163237322/
LRS.PD page https://www.facebook.com/LRS.PD/

FP2-3

Withdrawn

FP2-4

Which Method Is Safer for Treating Infected Tibial Non-Unions with Bone Defects? A Meta-Analysis Comparing Bone Transport and Masquelet Technique

Toshifumi Hikichi, Hideki Tsubouchi, Kentaro Igarashi, Makoto Handa, Tsukasa Fujieda, Takahito Shinbo, Tsuyoshi Tokita, Hiroyuki Tsuchiya

Yokohama Sakae Kyosai Hospital

background: Tibial bone defects are frequently treated using either the bone transport method or the Masquelet technique. Previous meta-analyses have reported no significant differences between these two methods in lower limb bone defects generally. However, managing tibial defects complicated by infection may present greater challenges compared to femoral defects or defects without infection. This meta-analysis aimed to compare the effectiveness and complication rates associated with these two techniques specifically for infected tibial defects.**Methods:** A systematic review and meta-analysis were conducted, including studies comparing bone transport and the Masquelet technique for reconstructing tibial bone defects. Primary outcomes were bone healing time and complication rates (nonunion, delayed union/nonunion, deep infection, and residual deformity). Statistical heterogeneity was assessed using the I2 statistic, and the ROBINS-I tool was used to evaluate the risk of bias.**Results:** Five studies were included, involving 50 participants for continuous outcomes and 120 participants for dichotomous outcomes. The mean difference in bone healing time favored the transport method by 4.16 weeks; however, this result was not statistically significant (95% CI: -0.78 to 9.09, p = 0.10). Significant heterogeneity was observed (I2 = 75%). Dichotomous outcomes revealed significantly lower rates of nonunion (OR 0.26, 95% CI: 0.10-0.73, p = 0.01), delayed union/nonunion (OR 0.29, 95% CI: 0.11-0.76, p = 0.01), and deep infection (OR 0.29, 95% CI: 0.10-0.81, p = 0.02) in the bone transport group. Rates of residual deformity were not significantly different between groups (OR 0.18, 95% CI: 0.03-1.22, p = 0.08).**Conclusion:** Current evidence suggests that bone transport may offer advantages over the Masquelet technique in treating infected tibial bone defects, specifically regarding lower rates of nonunion, delayed union, and deep infection. However, the high heterogeneity and risk of bias highlight the need for further well-designed comparative studies.

[Curriculum Vitae]
Orthopedic Surgeon in Yokohama Sakae Kyosai Hospital, Kanagawa, Japan
Graduated from Kanazawa University
Board-certified Orthopedic Surgeon
Certified Specialist in Foot Surgery
Specializing in Foot and Ankle Surgery, Limb Reconstruction

FP2-5

One-stage replacement of soft tissue defects in patients with chronic osteomyelitis of the leg bones. Problems and prospects

Oleg Podkosov[1], Aleksei Shabunin[1], Mikhail Parshikov[2], Nikolay Nabatchikov[1], Said Abidzhba[1]

[1]Botkin Hospital, [2]Russian Univesity of Medicine

Introduction: Chronic limb osteomyelitis is a topical issue in modern traumatology and orthopedics. One of the significant problems in the treatment of chronic limb osteomyelitis is soft tissue defects. Subsequently, such defects complicate the choice of further treatment tactics. Also, a very important problem is not only cosmetic and aesthetic discomfort for the patient and the need for constant dressings, but also the presence of additional entry points for the progression of the infectious process of soft tissues and tibia bones, which in turn increases the risk of relapse of the inflammatory process and the duration of treatment for patients.

Purpose: To improve the treatment results for patients with chronic osteomyelitis of the tibia bones and soft tissue defects. **Materials and methods:** The study involved 100 patients diagnosed with osteomyelitis of the tibia bones; a prerequisite for inclusion in the study was the presence of a soft tissue defect. Patients were randomly divided into 2 equal groups of 50 people. In the main group, patients underwent radical surgical treatment (RST) of the osteomyelitis focus with a one-stage replacement of the soft tissue defect with a non-free skin flap. In the control group, patients underwent only RST without replacement. Wound defects in the control group were treated openly. **Results:** In the main group, 19 (38%) replacements were performed using a non-free gastrocnemius flap, 16 (32%) replacements were performed using a non-free sural flap on the proximal pedicle, 8 (16%) replacements were performed using a non-free sural flap on the distal pedicle, and 7 (14%) replacements were performed using a non-free supramalleolar flap. As a result of the study, 4 relapses of the inflammatory process (8%) were recorded in the main group, while 20 relapses (40%) were recorded in the control group. No complications were observed in either group. **Conclusion:** In conclusion, the following conclusions can be made:

1. One-stage replacement of soft tissue defects of the leg reduces the risk of relapse of the inflammatory process by 5 times.
2. One-stage replacement of soft tissue defects helps to reduce the treatment time for patients with chronic osteomyelitis of the leg bones, which in turn contributes to a faster return of patients to work capacity

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[Curriculum Vitae]
Head of the purulen traumatology departmenat of Botkin Hospital

FP2-6

Membrane technique in the treatment of chronic osteomyelitis of the bones of the extremities

Oleg Podkosov[1], Aleksei Shabunin[1], Mikhail Parshikov[2], Rustam Kazakhmedov[1], Nikolay Nabatchikov[1], Said Abidzhba[1]

[1]Botkin Hospital, [2]Russian University of Medicine

Introduction: Currently, the problem of extremities osteomyelitis does not lose its relevance. The share of osteomyelitis diagnosed in the first 5 years after surgery is 5-8%. At the same time, we must not forget about post-traumatic osteomyelitis, which is detected in 20% of cases after open fractures. It should also be noted that osteomyelitis is a severe, long-term disease, which in 55% of cases leads to disability of patients, which is a social problem that requires modern solutions. Also, we must not forget about another difficult problem in the treatment of osteomyelitis - the replacement of bone defects, which are often formed as a result of one or a series of surgical interventions, which significantly complicates the treatment of patients with this pathology. Bone transport is often used to solve this problem and this method is quite effective, but it requires a long time to replace the defect and is also associated with difficulties in handling the distraction device, which requires full compliance. Based on the Masquelet technique, we proposed a method for treating osteomyelitis of long bones with defects, which significantly reduced the time of treatment and rehabilitation of patients.

Objective: To study and compare the effectiveness of membrane technology and bone transport for the treatment of osteomyelitis of the bones of the extremities.

Materials and methods: 50 patients with diagnosed osteomyelitis of the bones of various segments of the extremities were examined. 25 patients underwent plastic surgery of the bone defect using the membrane technique. The remaining 25 patients underwent replacement of the bone defect using bone transport.

Results: When analyzing the results obtained, it was found that complete remodeling of the bone graft with the membrane technique was achieved in 96% of cases within 6 months after surgery, while complete replacement of the bone defect using the bone transport technique was 92%. It was noted that the proportion of exacerbations after using the membrane technique was 5.1%, while with bone transport the proportion of exacerbations was 8.4%.

Conclusions:

- the use of membrane technology and bone transport are quite effective methods of replacing bone defects
- the use of membrane technology reduces the risk of relapse of the osteomyelitic process by almost 2 times

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[Curriculum Vitae]
Head of the purulent traumatology department of Botkin Hospital

FP2-7

Fixator-Assisted Lengthening Over an Intramedullary Nail after resection of long segment chronic osteomyelitis femur

Osman Abdellah Mohamed

Osman Abdellah Mohamed

Background: External fixators are being used frequently in standard limb- lengthening and deformity-correction procedures. lengthening over an intramedullary nail has been a successful technique.
Purpose: limb- lengthening and deformity-correction procedures. lengthening over an intramedullary nail has been a successful technique, and fixator-assisted intramedullary nailing.
Methods: Between 2014 and 2025, twenty femur in twenty patients with a median age of twenty-seven years underwent reconstruction with an intramedullary nail and a unilateral fixator.
The mean amount of shortening was 6.33 cm .after resection was performed acutely and secured by the intramedullary nail, which was locked distally, and the same external fixator that was used .
Results: The mean duration of follow-up was forty months. The mean duration of the external fixation was 83.29 days, and the mean external fixation index was 14.98 days/cm. The mean amount of lengthening was 6.02 cm. The mean bone healing index was 36.66 days/cm. A knee flexion contracture developed in one patient and resolved after intensive rehabilitation.
Conclusions: femoral lengthening and deformity correction can be obtained with classic methods of external fixator, but the long period of external fixation, patient discomfort, and plastic deformation of the regenerated bone after removal of the fixator are major disadvantages. Two techniques, fixator-assisted nailing and lengthening over an intramedullary nail, prevent fracture and deformation of the regenerated bone.

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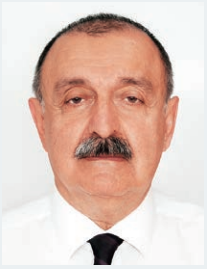
☐ MBBCH with “Very Good” mark from faculty of Medicine, Al Azhar University, Egypt in Dec. 1992
☐ MASTER degree of Orthopedic Specialty “Good” from Faculty of Medicine Al Azhar University, in April 1998.
☐ Thesis of Master degree. Titled “Current concepts in management of slipped upper femoral epiphysis”
☐ M.D: Thesis titled “Correction of Tri-Dimensional foot and ankle deformity by ilizarov external fixators” 50 cases with follow up post. Op 6 years and passed in M.D thesis one year ago.
☐ A.O

FP3-1



Acute Hematogenous Osteomyelitis - Etiology and Pathogenesis

Chingiz Alizade

HB Guven Clinic, Baku

Background. Acute hematogenous osteomyelitis (AHO) remains a subject of discussion and debate. Currently, several theories exist regarding the etiology and pathogenesis of AHO.

Purpose. These studies and long-term observations of patients' treatment outcomes have allowed us to propose a new theory on the etiology and pathogenesis of AHO.

Material and Methods. At the Azerbaijan Research Institute of Traumatology and Orthopedics, within the department of purulent trauma, various aspects of musculoskeletal infections, including AHO, have been studied over 40 years. Processes of lipid peroxidation and antioxidants in patients with AHO were investigated, which is reflected in three dissertations. Based on this theory, we developed a scheme for the pathogenetic treatment of patients. These treatment methods have been used for more than 40 years on over 250 patients.

The foundation of this theory is the hypothesis that stress in the body leads to an increase in free radical production and simultaneous depletion of antioxidant defense. As a result of these processes, uncontrolled destruction of lipid membranes of mitochondria and bone marrow cells begins, leading to necrosis. Immediately afterward, other body mechanisms aimed at protecting it are activated - the process of aseptic inflammation. Subsequently, after the translocation of microorganisms from the intestine to the area of necrosis (a normal protective mechanism aimed at eliminating necrotic cells), the process of septic inflammation begins.

One of the fundamental conclusions of this theory is that it considers the mechanism of homeostasis disruption at a lower level of the human body's structure - the atomic-molecular level, with a gradual transition of pathological processes to higher levels - cellular, then tissue, and finally organ level.

Results. We propose the hypothesis that the onset of AHO is characterized by necrosis at the subcellular and cellular levels, resulting from peroxide destruction of lipid membranes, and only afterward do microorganisms join this process. Based on this theory, we developed a comprehensive pathogenetic treatment for patients. Furthermore, based on the proposed theory of AHO development, we have ceased not only trepanning of the bone but also, when necessary to open phlegmons, do not touch the bone. This approach reduces the stress on bone tissue. As a result, we no longer observe complications such as pathological fractures, false joints, or significant bone thickening due to the periosteal reaction. As a result of the proposed treatment, we managed to reduce the transition from AHO to chronic osteomyelitis to 5%.

Conclusion. We suggest revising the fundamental aspects of AHO therapy. The focus of treatment should be shifted from the elimination of microorganisms to the correction of pathogenetic changes in the human body. We invite all interested specialists to conduct a multicenter study of all the aforementioned aspects of AHO.

[Curriculum Vitae]

A distinguished medical professional with over 40 years of dedicated service at the Azerbaijan Scientific Research Institute of Traumatology and Orthopedics. Renowned for founding a new scientific direction in the study of infectious complications in Azerbaijan. Recipient of the prestigious SICOT award in 2019 for contributions to fundamental science in traumatology and orthopedics.

Education:

Doctor of Medical Sciences Degree (2003), Moscow, Russia Candidate of Medical Sciences Degree (1985), Azerbaijan Medical Institute (1974),

Professional Experience:

Azerbaijan Scientific Research Institute of Traumatology and Orthopedics (1974-2019). Place of work: HB Güven Clinic Baku

Developed new scientific approaches in the field of infectious complications.

Professor since 2005.

Career Achievements:

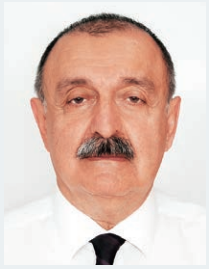
Supervised 8 PhD dissertations. Authored 13 patents, including 6 with international recognition. Published over 220 works and authored 2 monographs.

Professional Memberships:

Member SICOT, WAIOT, EFFORT,

Winner of the SICOT Prize in Fundamental Science

FP3-2



Analysis of known theories of acute hematogenous osteomyelitis from the perspective of modern scientific advancements

Chingiz Alizade[1], Huseyn Aliyev[2], Farhad Alizada[3]

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Background. Acute hematogenous osteomyelitis (AHO) remains a subject of discussion and debate. Currently, several theories exist regarding the etiology and pathogenesis of AHO.
Purpose. To study and analyze the theories of AHO based on existing literature.
Material and Methods. We conducted an analysis of existing literature on the etiology and pathogenesis of AHO. A total of 28 works were reviewed, starting from Lexer (1894) to Labbé JL et al. (2010) and Jansson et al., 2009. Some experimental works on creating models of AHO were also studied.
Results. The analysis of the aforementioned works demonstrated that all proposed theories focused on the study and analysis of the microcirculatory bed and the mechanism of microorganism penetration into the metaphysis, physis, and epiphysis of long bones. Some experimental studies on chickens suggested that stress might contribute to the development of necrotic foci in the metaphysis of bones.
Discussion Thus, for nearly 150 years, the etiology and pathogenesis of AHO have been considered at the organ and tissue levels. We did not encounter studies that examined the etiology and pathogenesis of AHO at the subcellular and molecular levels. However, today there is enough research that could help to consider the pathogenesis of AHO from these perspectives.
Conclusion. Thus, from the perspective of modern science, the known theories of acute hematogenous osteomyelitis (AHO) do not encompass many possible processes occurring in a child's bones and joints during the onset and progression of AHO. In our opinion, there is a pressing need to develop a new theory of AHO to optimize its treatment in accordance with contemporary scientific knowledge.

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A distinguished medical professional with over 40 years of dedicated service at the Azerbaijan Scientific Research Institute of Traumatology and Orthopedics. Renowned for founding a new scientific direction in the study of infectious complications in Azerbaijan. Recipient of the prestigious SICOT award in 2019 for contributions to fundamental science in traumatology and orthopedics.
Education:
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Professional Experience:
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Developed new scientific approaches in the field of infectious complications.
Professor since 2005.
Career Achievements:
Supervised 8 PhD dissertations. Authored 13 patents, including 6 with international recognition. Published over 220 works and authored 2 monographs.
Professional Memberships:
Member SICOT, WAIOT, EFFORT,
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FP3-3

From Prevention to Complication: The Challenges of Managing Bone Infection

MD. MOFAKHKHARUL BARI

Bari-Ilizarov Orthopaedic Centre

Background

Bone infections, particularly osteomyelitis, pose a significant challenge in orthopedic surgery due to the compromised vascularity of necrotic bone, which limits immune response and antibiotic penetration. Poor surgical techniques, excessive periosteal stripping, and inadequate fixation further increase the risk of infection. Successful management requires meticulous surgical planning, soft tissue preservation, and advanced reconstruction techniques, including the Ilizarov method.

Purpose

This study aims to identify key preventive measures and surgical strategies for managing bone infections, with a focus on the Ilizarov technique for infection control and bone defect reconstruction. The role of soft tissue preservation, proper fixation techniques, and staged reconstruction is emphasized.

Materials and Methods

A retrospective analysis of clinical cases from 1990 to 2023 was conducted, involving 165 patients aged 3 to 49 years, including 45 with severe infections. Risk factors such as poor fixation stability, excessive periosteal stripping, and thermal necrosis from improper intramedullary nailing were evaluated. Treatment strategies included radical debridement, Ilizarov external fixation for large bone defects through bone transport and distraction osteogenesis, and the Masquelet technique or vascularized fibular grafts for smaller defects.

Results

Early debridement and soft tissue preservation significantly reduced infection rates. The Ilizarov technique demonstrated excellent outcomes in managing large bone defects by providing stability and facilitating controlled bone regeneration. Bone transport with the Ilizarov fixator restored limb length while preserving soft tissues. Cases in which reconstruction was attempted without complete debridement had persistent infections and poor outcomes.

Conclusion

The Ilizarov technique is a highly effective method for treating bone infections with significant bone loss. Preventing infection requires meticulous surgical technique, limiting unnecessary exposure of devitalized bone, and preserving soft tissues. Early stabilization and carefully planned reconstruction improve patient outcomes.

[Curriculum Vitae]
Qualifications:
Doctor of Medicine (MD) Kiev
MS (Ortho & Trauma)- Kiev
Ph.D. (Ortho & Reconstructive Surgery) Tashkent
3 times Post-Doctoral Fellowship on Illzarov Technique- RISC, RTO, Kurgan, Russia
Volkov Oganesyan Fellow, CITO-Moscow
WHO Fellow Reconstructive Surgery-Chennai

Present Working Places:
- Prof. Ph.D., Chief Consultant Bari-Ilizarov Orthopaedic Centre, Dhaka, Bangladesh.
- Visiting Prof. of BIRDEM (Bangladesh Institute of Research and Rehabilitation in Diabetes) and BIHS (Bangladesh Institute of Health Science)
- Visiting and Honored prof. of Russian Ilizarov Scientific Centre, Kurgan.
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Published articles:
■ 106 International articles published.
■ 8 Books published since 2006.

Reviewer:

- PhD Thesis 9
- DSC Thesis 6
- International Article 37

FP3-4

The Role of ILIZAROV in Managing Infected Large Gap Non-Unions of the Humerus

A. M. Shayan Bari

Bari-Ilizarov Orthopaedic Centre

Purpose

This study aims to evaluate the outcomes of the Ilizarov method in treating infected humeral non-unions with large bone defects. The focus is on infection control, bone transport, and functional recovery, achieved without the need for bone grafting.

Materials and Methods

A total of 75 cases of infected large-gap humeral non-unions were treated between 2015 and 2023. Of these, 5 cases presented without active infection and were treated with the Ilizarov ring fixator. In 40 cases, patients had draining infections, requiring debridement followed by Ilizarov bone transport. Bone transport was performed to address gaps ranging from 2.5 to 30 cm in 40 cases. Bifocal treatments were utilized in 15 cases. None of the cases required bone grafting for union.

Results

All cases successfully healed using the Ilizarov method. In eight patients, a second application of the fixator was necessary to achieve complete union, resulting in a 100% success rate. The technique effectively restored bone continuity, corrected limb length discrepancies, controlled infection, and promoted functional recovery without the need for bone grafts.

Conclusion

The Ilizarov technique proves to be highly effective for managing infected large-gap non-unions of the humerus. Unlike conventional treatments, which often fail in such complex cases, the Ilizarov method provides reliable bone healing and functional restoration within 1 to 2 years, without the need for bone grafting.

Keywords

Ilizarov technique, bone transport, infected humeral non-union, limb reconstruction, bone defects, external fixation.

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Published articles:
・Lead author in 2 international articles
・Co- Author in16 international articles

FP3-5

Infected nonunion femur bone defect, different options

Mohamed Mahmoud Fadel

Orthopaedic Surgery, Minia University Hospital

Background Many conventional methods are used for management of nonunion of shaft femur.
Purpose We discuss use of Ilizarov principles in treatment of infected nonunion of the femoral shaft
Materials and Methods We treated 43 cases of infected nonunion of the femoral shaft had been treated between September 2006 and 2016. Their average age was 30years (range: 18:62). There were 6 female. Patients presented with discharging sinus in 27 cases, intermittent discharging sinus in 8 cases, and past history of infection less than 6 months in 6 patients. There were past history of more than 2 previous surgical attempts for management in all cases. Nonunion was associated with stiff knee in 32 cases. The wound and bone were debrided and the bone fixed with Ilizarov device. Bone transport was needed for 7 cases. The wound was debrided and excision of the sinus was performed. The bone was explored, debrided, sequestrectomy was removed, and local antibiotic was added, if financially possible. Ilizarov external fixator was applied, then acute compression, compression followed by distraction compensating lengthening, bone transport using gradual compression with distraction at the corticotomy site, and correction of deformity.
Results We used monofocal technique in 28, and bifocal in 11 (one with acute docking), free vascularized fibular graft in 1, and free nonvascularized fibular graft in 3. After mean follow-up were 24: 36 months. All fractures heeled between 6 and 25 months. Ten limbs with mild intermittent discharging sinus continued on local dressing and antibiotics, and 6 limbs needed redebridement and both conditions resolved.
Conclusion We concluded that the Ilizarov external fixator is effective in management of infected nonunion of the femoral shaft. FIAT provides advantages of acute docking, gain lengthening, and correction of deformity if needed with early rehabilitation.

[Curriculum Vitae]
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FP4-1

Early Surgical Management of Septic Hip Arthritis in infant un expected results

Osman Abdellah Mohamed

Osman Abdellah Mohamed

Background: Septic arthritis is one of the diseases with a high destructive effect on the articular and bone level. A delay in diagnosis or a misdiagnosed septic arthritis of the pediatric hip it can be a complicated challenge for many physicians. The aim of this study was to evaluate surgical options for the management of sequelae caused by septic arthritis in children.
Purpose: early diagnosis and surgical debridement to prevent complications.
Material and Methods: We used the electronic databases and selected articles that had as main topic the septic arthritis of the hip in children and their methods of diagnosis and treatment.
Results: We can use IL-6 and CRP (C- Reactive Protein) for early diagnosis. The most important thing is early diagnosis and early treatment to prevent premature closure of the triradiate cartilage, acetabular dysplasia, subluxation, dislocation and ischemic necrosis of the femoral head.
Conclusion: Good early diagnosis and appropriate treatment are required for a good result. Management of sequelae after hip septic osteoarthritis is a difficult and long-lasting one and that does not always manage to correct everything that has been destroyed.

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- ☐ Thesis of Master degree. Titled “Current concepts in management of slipped upper femoral epiphysis”
- ☐ M.D: Thesis titled “Correction of Tri-Dimensional foot and ankle deformity by ilizarov external fixators” 50 cases with follow up post. Op 6 years and passed in M.D thesis one year ago.

FP4-2

Withdrawn

FP4-3

Favorable Clinical Outcomes of Five Cases Using Antibiotics-Loaded Mega-Cement Spacers for Refractory Periprosthetic Joint Infections of the Knee Arthroplasty

Yusuke Nakagawa, Takashi Hoshino, Daisuke Asami, Ichiro Sekiya, Hideyuki Koga

Institute of Science Tokyo

Background

Periprosthetic joint infection (PJI) is one of the most serious complications after knee arthroplasty, and is especially difficult to treat when the infection is not cured after implant removal and implantation of an antibiotics loaded cement spacer, or when PJI occurs after revision TKA.

Purpose

We report five cases of refractory PJI treated with a cement spacer (mega-cement spacer) made from implant trial of the implant for revision TKA.

Material and Methods

Five cases and five knees that underwent surgery at our hospital from 2020 to 2023 were included in the study. The mean age at the time of surgery was 76 (53-87) years, 4 women and 1 man. The mean number of surgeries before insertion of the mega cement spacer was 3.8 (2-7). For the fabrication of the mega-cement spacer, an autologous silicone mold was made based on a trial implant with stem extensions on both the femoral and tibial components preoperatively. Intraoperatively, spacers were prepared using the silicone mold with antibiotics loaded cement. After debridement and osteotomy, the mega-cement spacers were fixed with the same antibiotics loaded cement. Postoperatively, the patient was allowed full weight bearing and no restricted range of motion (ROM) exercise. Revision surgery was performed when the infection was relieved based on laboratory data and synovial biopsy (under ultrasound). Patient demographics, the control of infection, ROM, ability to walk, and patient satisfaction during mega-cement spacer implantation were examined.

Results

PJI were relieved in all patients, and four patients underwent revision at an average of 6.3 months (4-9) after mega-cement spacer insertion, with no recurrence of PJI at an average follow-up of 33 months (11-48 months). One patient who did not perform tri-revision TKA due to advanced age also had no recurrence of PJI at the 42-month, but breakage of the femoral cement spacer occurred at 40 months. ROM (extension/flexion) was -4/112 before insertion of the mega cement spacer and -5/106 after insertion. Three patients were able to walk and two patients were able to walk with a T-cane during the implantation of the mega cement spacer.

Conclusions

The clinical outcomes of mega-cement spacer were favorable in terms of knee joint function and the control of infection. There were several advantages of mega-cement spacer, such as higher loading volume of antibiotics, durability and enable surgeon to perform more aggressive debridement. Mega-cement spacer was considered to be a useful treatment option for complex PJI cases.

[Curriculum Vitae]

2011/April-2015/March	Graduate School of Medicine, Tokyo Medical and Dental University
2016/April-2018/Mar	Research Associate, Orthopedic Soft Tissue Research Program, Hospital for Special Surgery.
2018/April- 2021/ July	Assistant Professor, Cartilage Regeneration, Tokyo Medical and Dental University
2021/Aug – 2022/Mar	Senior Assistant Professor, Joint Surgery and Sports Medicine, Tokyo Medical and Dental University
2022/Apr- 2024/Sep	Associate professor, Cartilage Regeneration, Tokyo Medical and Dental University
2024/Oct- present	Associate professor, Cartilage Regeneration, Institute of Science Tokyo

FP4-4

Outcomes following debridement, antibiotics and implant retention (DAIR) for periprosthetic joint infection after total hip arthroplasty

Tsunehito Ishida, Toshiyuki Tateiwa, Toshinori Masaoka, Takeshi Seki, Mitsutaka Hoshi, Takaaki Shishido, Kengo Yamamoto

Department of Orhopedic Surgery, Tokyo Medical University

Background: Periprosthetic joint infection (PJI) is one of the most serious complications of total hip arthroplasty (THA) and has a serious impact on the quality of life of patients. Debridement, antibiotics, and implant retention (DAIR) is recommended as a treatment for acute PJI without implant loosening. However, the treatment outcomes are not consistent.

Purpose: The purpose of this study is to investigate the outcomes of DAIR treatment for PJI after THA in our department.

Material and Methods: This study included 25 patients (26 joints) who underwent DAIR for PJIs after THA performed in our department between 2000 and 2024. We examined the mode of PJI onset, the time from postoperative THA to the onset of PJI, the causative microorganisms, the time from the onset of infection to DAIR treatment, and the success rate.

Results: The mode of onset was early infection within 3 months of surgery in 15 joints, and other PJI in 11 joints. The median time from postoperative THA to the onset of PJI was 43 days (6-6198 days). The median time from the onset of infection symptoms to DAIR treatment was 12 days (2-840 days). The causative microorganisms were MSSA in 5 joints, CNS in 2 joints, MSSA/CNS in 1 joint, MSSA/MSSE in 1 joint, MRSA in 1 joint, MRSE in 1 joint, Streptococcus in 4 joints, E. coli in 2 joints, other in 2 joints, and unknown in 7 joints. Recurrence after DAIR was observed in 6 joints, and the success rate was 76.9%. Compared to the recurrence cases, the successful cases were significantly earlier in onset time (70% vs. 17%, $p = 0.02$), and the cases that used antimicrobial agents in combination were significantly more common (85% vs. 17%, $p = 0.002$).

Conclusion: The use of antimicrobial agents that are susceptible to DAIR treatment is an important factor in achieving resolution, and as with previous reports, early surgery after the onset of PJI is desirable in our department's DAIR treatment results, and care must be taken not to delay the timing of surgery after the onset of infection symptoms.

[Curriculum Vitae]

Tsunehito Ishida, M.D., Ph.D.

Dr. Tsunehito Ishida is an orthopedic surgeon specializing in hip and knee replacement. He obtained his medical degree from Tokyo Medical University and completed his residency and fellowship in orthopedic surgery at Tokyo Medical University Hospital.

Dr. Ishida's research interests include implant longevity, polyethylene wear, metal ions level, adverse local tissue reactions (ALTR), periprosthetic joint infection, application of navigation and robotic-assisted surgery in hip and knee replacement.

He has presented his work at various international conferences and has published in leading orthopedic journals. He is an active member of The Japanese Orthopaedic Association, Japanese Hip Society, and The Japanese Society for Replacement Arthroplasty.

Currently, Dr. Ishida serves as assistant professor at Department of Orthopedic Surgery, Tokyo Medical University where he continues his clinical and research endeavors in hip and knee replacement. In addition, how best to teach medical students and fellows the proper way to perform hip and knee surgery.

FP4-5

Post infected THR Pelvic Support Osteotomy

Osman Abdellah Mohamed

Osman Abdellah Mohamed

Background: Resistant hip infection in adults can be a complicated problem that does not respond to surgical and medical treatment.

Purpose: This line of treatment can eradicate the infection but also is associated with poor function. In some cases, conversion of Pelvic support osteotomy with the Ilizarov modification can present an alternative solution for such patients.

Material& Methods: This study included 30 patients with resistant hip infection who were treated using excision arthroplasty. Pelvic support osteotomy then was used to improve hip stability and abductor muscle function.

Results: The Ilizarov modification was applied to correct mechanical alignment of the limb and the limb length discrepancy. Harris hip scores improved in all patients:.

Conclusion: Pelvic support osteotomy, along with the Ilizarov modification, can provide an alternative treatment to improve function in patients previously managed with excision hip arthroplasty and Girdle stone surgery.

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- ☐ MASTER degree of Orthopedic Specialty “Good” from Faculty of Medicine Al Azhar University, in April 1998.
- ☐ Thesis of Master degree. Titled “Current concepts in management of slipped upper femoral epiphysis”
- ☐ M.D: Thesis titled “Correction of Tri-Dimensional foot and ankle deformity by ilizarov external fixators” 50 cases with follow up post. Op 6 years and passed in M.D thesis one year ago.

FP4-6

Two cases of rheumatoid arthritis that could be treated periprosthetic infections which developed during the use of biologics without implant removal

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[1]University of Fukui, [2]Sakai Municipal Mikuni Hospital

Periprosthetic infections associated with RA are difficult to treat, and especially in cases of late infections during the use of biologics, implant preservation is often impossible. We report two cases of periprosthetic infections that developed during the use of biologics. **Case 1**: A 77-year-old woman was admitted to our hospital because of a fever with 60 impaired consciousness and septic shock. She had been receiving medication for RA at 61 private clinic for 17 years. Before admission to our hospital, she administered three etanercept self-injections within 2 days in addition to her usual weekly etanercept self-injections. **Case 2**: A 63-year-old woman was admitted to our department because of severe left elbow pain. She had undergone treatment for RA for 25 years. Two years ago, she received a left elbow joint replacement for rheumatic deformity of her elbow joint. Six weeks after the onset of pain, the left elbow joint became swollen and a fistula developed medially in the elbow, leading to the draining of pus. In both cases, the use of biologics was discontinued and surgical treatment of the local area along with antibiotics was successfully used to control the infection while preserving the prosthesis. In this paper, we present two cases of periprosthetic infections that occurred during the use of biologics, and discuss their treatment, citing the literature.

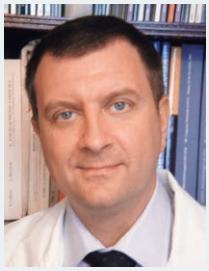
[Curriculum Vitae]
Education
March 2012: M.D., Faculty of Medical Sciences, University of Fukui
April 2016: Enrolled in the Doctoral Program, Graduate School of Medical Sciences, University of Fukui

Research Experience
April 2024 – Present: Assistant Professor, Department of Rehabilitation Medicine, University of Fukui Hospital

Professional Experience
April 2014 – March 2017: Staff Physician, Dept. of Orthopaedic and Spine Surgery, University of Fukui Hospital
April 2017 – March 2020: Staff Physician, Dept. of Orthopaedic Surgery, Obama Municipal Hospital
April 2020 – Sept. 2020: Physician, Dept. of Orthopaedic Surgery, Tannan Regional Hospital
October 2020 – Present: Staff Physician, Dept. of Orthopaedic Surgery, University of Fukui Hospital

Licenses and Certifications
March 2019: Board-Certified Orthopaedic Surgeon, Japanese Orthopaedic Association (Reg. No. 123940)
March 2022: Board-Certified Rheumatologist, Japan College of Rheumatology (Cert. No. 7120)
March 2023: Certified Rheumatology Instructor, Japan College of Rheumatology (Cert. No. 2967)

FP4-7



A Fully Resorbable Anti-Bacterial Hydrogel Coating for Implants: A Ten Years Experience

Carlo Luca Romanò[1], Giulio Bonomo[2], Luigi Bonomo[2]

[1]Romano Institute, 1001 Tirana, [2]Universitatea de medicina si famarcie Victor Babes din Timisoara

Background: Postoperative infections remain one of the most challenging complications in implant surgery, often leading to implant failure, extended antibiotic use, and increased healthcare costs. Over the past ten years, we have developed and clinically implemented a fully resorbable hydrogel-based antibacterial coating designed to reduce early bacterial colonization on implant surfaces.

Purpose: Here we present a summary of our decade-long experience with this innovative technology across orthopedic and trauma applications.

Material and Methods: The hydrogel coating (DAC®, Disposable Antibacterial Coating) is composed of a biocompatible, biodegradable polymer matrix, antibiotic-loaded and applied to the implant surface at the time of surgery. The coating forms a thin, uniform layer that remains active for approximately 2–3 days — the period of highest infection risk — before fully resorbing without interfering with tissue healing or osseointegration.

Results: From 2014 to 2024, over 500 coated implants were placed in a diverse patient population, including individuals with high infection risk factors. Compared to a matched control group receiving uncoated implants, patients with the hydrogel-coated implants demonstrated a significantly lower incidence of postoperative infections. Histological and radiographic follow-up confirmed the complete resorption of the hydrogel and absence of inflammatory reactions or interference with bone healing.

Conclusion: This ten-year clinical experience demonstrates that fully resorbable antibacterial hydrogel coatings represent a safe, effective, and scalable strategy to prevent implant-related infections. By combining local, time-limited antimicrobial action with full resorption, this technology offers a compelling alternative to permanent coatings, supporting better outcomes in both routine and high-risk implant procedures.

Carlo L Romanò is currently a free consultant in orthopaedic surgery and founder and CEO of the Romano Institute, based in Tirana, Albania.
He served as adjunct Professor of Orthopedics at the University of Milan, founder and Director of the Center of Reconstructive Surgery and Osteoarticular Infection and of the Milano Biofilm Center at the Research Orthopedic Institute Galeazzi in Milan, Italy.
Co-founder and currently Secretary General of the World Association against Infection in Orthopedics and Trauma, he is past-President of the European Bone and Joint Infection Society and co-founder and past-President of the Italian Study Group on Osteoarticular Infections.

FP4-8

Evaluation of the Efficacy of Continuous Local Antibiotic Perfusion (CLAP) for PJI -CLAP vs. Non CLAP-

Keisuke Oe, Tomoaki Fukui, Yohei Kumabe, Yutaka Matsumiya, Tomoyuki Matsumoto, Shinya Hayashi, Ryosuke Kuroda

Kobe University Graduate School of Medicine, Department of Orthopaedic Surgery

Background:
Periprosthetic joint infection (PJI) is a serious complication that is difficult to treat and significantly affects patients' functional prognosis and quality of life. I In Japan, continuous local antibiotic perfusion (CLAP) therapy, in which high-concentration antibiotics are administered directly to the infected area via a tube or needle, is widely used for musculoskeletal infections, and there have been many reports demonstrating its effectiveness. However, studies on its application in PJI remain limited.

Purpose:
This study aims to compare treatment outcomes between PJI cases with and without CLAP intervention.

Materials and Methods:
We analyzed 65 PJI cases (29 TKA, 36 THA) that underwent surgery at our institution between April 2016 and July 2024, with at least six months of follow-up. Treatment success was defined as cases that did not require additional surgery for infection. Patients were classified into the CLAP group (n=17) and the non-CLAP group (n=48) based on the introduction period of CLAP (before September 2022: non-CLAP, after October 2022: CLAP). We also investigated the implementation of Debridement, Antibiotics, and Implant Retention (DAIR) and implant retention. Statistical analysis was conducted using the chi-square test and t-test.

Results:
The CLAP group included 17 joints, while the non-CLAP group had 48 joints. There were no significant differences between groups regarding age, sex, BMI, timing from infection onset to surgery, timing from TJA surgery to infection onset, DAIR implementation, and implant retention. In terms of treatment success, the CLAP group had a significantly higher success rate in THA than the non-CLAP group (CLAP: 76.9%, non-CLAP: 34.8%, p=0.037). However, no significant difference was observed in TKA (CLAP: 75%, non-CLAP: 72%, p=1.0). Regarding case distribution, there was no significant difference in THA between primary (16 joints) and revision cases (20 joints) (p=0.614), whereas in TKA, primary cases (25 joints) were significantly more frequent than revision cases (4 joints) (p=0.002).

Conclusion:
These results suggest that CLAP intervention may improve treatment outcomes in THA-associated PJI. In contrast, the high proportion of primary cases in TKA may have influenced treatment outcomes. Further accumulation of cases and long-term prognosis evaluation are needed for a more comprehensive analysis.

[Curriculum Vitae]
Dr. Keisuke Oe was born in 1975 in Hyogo Prefecture, Japan. He became a medical doctor in 2000 and received his Ph.D. in 2008 from Kobe University Graduate School of Medicine. In 2009, he was a fellowship doctor at the Murnau Trauma Center, a level 1 trauma center in Germany. Since 2017, he has been working as an assistant professor at the Department of Orthopedic Surgery, Kobe University Hospital. His research interests include SPECT/CT studies for fracture nonunion, human peripheral blood CD34-positive cell transplantation trials for fracture nonunion, BMP (bone morphogenic protein) trials for facture nonunion, and basic research of Continuous Local Antibiotic Perfusion (CLAP). He also serves as a council member for AO Trauma Japan and Japanese Orthopedic Trauma Association (JOTA). He has received an academic award as the first author including the 2nd Meeting for Youth Community of KOBE kenkyu-net, Kobe University Graduate School of Medicine (2008). Also, he has received the Best Presentation Award (Orthopaedic Research Society International Section of Fracture Repair 2018, Japanese Society for Study of Bone and Joint Infections 2023).

FP5-1

Treatment Of Deformities Due to Metabolic Disease

MD. MOFAKHKHARUL BARI

Bari-Ilizarov Orthopaedic Centre

Background:
Metabolic bone diseases, such as hypophosphatemic rickets and renal osteodystrophy, can lead to progressive skeletal deformities, bone pain, and an increased risk of fractures. These conditions often result in lower-limb deformities that impair mobility and quality of life. Surgical correction is challenging due to poor bone quality and the need for gradual realignment.

Purpose:
This study evaluates the outcomes of using the Ilizarov technique for correcting lower-limb deformities caused by metabolic bone diseases.

Materials & Methods:
We retrospectively analyzed 29 patients treated between 1990 and 2023. The cohort included 27 patients with hypophosphatemic rickets and 2 with renal osteodystrophy, with a mean age of 25.6 years (range: 14 to 57 years). A total of 43 lower-limb segments underwent osteotomy, followed by gradual deformity correction using the Ilizarov external fixator. Functional and radiographic outcomes were assessed postoperatively.

Results:
All patients achieved satisfactory correction of deformities, with improvements in alignment, limb function, and pain reduction. No major complications were reported, and bone healing was achieved in all cases.

Conclusion:
The Ilizarov technique is a reliable and effective method for correcting lower-limb deformities associated with metabolic bone diseases. It allows for precise, gradual correction while accommodating the challenges posed by poor bone quality.

[Curriculum Vitae]
Qualifications:
Doctor of Medicine (MD) Kiev
MS (Ortho & Trauma)- Kiev
Ph.D. (Ortho & Reconstructive Surgery) Tashkent
3 times Post-Doctoral Fellowship on Illzarov Technique- RISC, RTO, Kurgan, Russia
Volkov Oganesyan Fellow, CITO-Moscow
WHO Fellow Reconstructive Surgery-Chennai

Present Working Places:
- Prof. Ph.D., Chief Consultant Bari-Ilizarov Orthopaedic Centre, Dhaka, Bangladesh.
- Visiting Prof. of BIRDEM (Bangladesh Institute of Research and Rehabilitation in Diabetes) and BIHS (Bangladesh Institute of Health Science)
- Visiting and Honored prof. of Russian Ilizarov Scientific Centre, Kurgan.
- Prof. of Weifang Medical University, China.

Published articles:
■ 106 International articles published.
■ 8 Books published since 2006.

Reviewer:

- PhD Thesis 9
- DSC Thesis 6
- International Article 37

FP5-2

The ILIZAROV Technique in Chronic Osteomyelitis: Effective Infection Control and Bone Reconstruction

MD. MOFAKHKHARUL BARI

Bari-Ilizarov Orthopaedic Centre

Background

Chronic osteomyelitis in children is a challenging condition that can be difficult to completely eradicate. Despite improvements in medical management, persistent infection within the bone may lead to long-term complications, including pathological fractures and limb deformities. The Ilizarov technique has emerged as an effective approach for infection control and bone reconstruction, offering children a chance at full recovery.

Purpose

This study aims to evaluate the effectiveness of the Ilizarov method in managing chronic osteomyelitis in children, with a focus on infection elimination, bone defect reconstruction, and functional limb restoration.

Materials and Methods

Study Period: 1990 to 2023

Total Patients: 265 children (105 with severe cases)

Age Range: 3 to15 years

Followup Duration: 2 to 19 years

Preoperative assessment included vascular examination by palpating the dorsalis pedis and posterior tibial arteries, evaluating local temperature and color changes, and using pulse oximetry. A stable Ilizarov fixator was applied before performing corticotomy at the metaphyseal region to enhance vascularization and stimulate bone regeneration. Bone transport was carried out at a controlled rate of 1 mm/day until the defect was bridged and the fragments were compressed together. In cases with large defects, a guide wire was introduced to maintain anatomical alignment and prevent malunion. The fixator was kept in place until full bone healing and limb length restoration were achieved.

Results

Children with pandiaphyseal osteomyelitis, pathological fractures, and chronic discharging sinuses responded well to the Ilizarov technique. In some cases, radical resection of infected bone was performed, followed by bone transport to bridge the resulting defect. The procedure resulted in excellent infection control, bone regeneration, and functional recovery, with minimal complications.

Conclusion

The Ilizarov method is a highly effective treatment for chronic osteomyelitis in children. It not only eradicates infection but also facilitates bone regeneration and restores limb function, significantly improving long-term outcomes.

[Curriculum Vitae]

Qualifications:

Doctor of Medicine (MD) Kiev

MS (Ortho & Trauma)- Kiev

Ph.D. (Ortho & Reconstructive Surgery) Tashkent

3 times Post-Doctoral Fellowship on Illzarov Technique- RISC, RTO, Kurgan, Russia

Volkov Oganesyan Fellow, CITO-Moscow

WHO Fellow Reconstructive Surgery-Chennai

Present Working Places:

- Prof. Ph.D., Chief Consultant Bari-Ilizarov Orthopaedic Centre, Dhaka, Bangladesh.
- Visiting Prof. of BIRDEM (Bangladesh Institute of Research and Rehabilitation in Diabetes) and BIHS (Bangladesh Institute of Health Science)
- Visiting and Honored prof. of Russian Ilizarov Scientific Centre, Kurgan.
- Prof. of Weifang Medical University, China.

Published articles:

■ 106 International articles published.

■ 8 Books published since 2006.

Reviewer:

- PhD Thesis 9
- DSC Thesis 6
- International Article 37

FP5-3

Septic arthritis of the ankle and subtalar joint managed with Continuous Local Antibiotics Perfusion (CLAP) : A case report

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Department of Orthopaedic Surgery, Yokohama Sakae Kyosai Hospital

Background

Arthroscopic debridement of the septic arthritis of the ankle joint without bone loss has recently shown promising results in infection control and functional recovery. However, its effectiveness in treating septic arthritis of the ankle and subtalar joint with fistula formation remains unclear. Continuous Local Antibiotic Perfusion (CLAP) has been reported as a successful treatment for bone and soft tissue infections in septic arthritis cases, but its use in the ankle and subtalar joints have not been previously documented.

Purpose

To report our experience using CLAP for managing septic arthritis of the ankle and subtalar joint with fistula.

Materials and Methods

A 57-year-old woman initially presented at another hospital with swelling and pain in her left ankle. She was diagnosed with septic bursitis and treated with Cephalexin. However, as her symptoms worsened, she was referred to our hospital.

At the time of admission, the puncture site had developed a fistula with persistent purulent discharge. Cefazolin was administered but failed to improve symptoms or inflammatory markers. The culture was Staphylococcus aureus. MRI showed fluid accumulation in the ankle joint, subtalar joint and the Flexor Hallucis Longus (FHL) tendon sheath with low signal intensity on T1-weighted images and high signal intensity on T2-weighted images. Based on these findings, we diagnosed septic arthritis.

On the seventh day of admission, we performed arthroscopic debridement and synovectomy. During surgery, extensive synovial hyperplasia was observed in the joint and FHL tendon sheath, along with some subchondral bone exposure in non-weight-bearing areas. CLAP was initiated, and antibiotics were administered intra-articularly and to the soft tissues. A tube was inserted from the ankle joint to the tarsal sinus (anterior to the subtalar joint), and Negative Pressure Wound Therapy (NPWT) was applied simultaneously above fistula.

Results

Within a week of starting CLAP, white blood cell counts and C-reactive protein (CRP) levels showed rapid improvement. CLAP was continued for ten days without complications. Two weeks after surgery, pain and swelling had significantly reduced, and CRP normalized from 16.2 to 0.46. The following week, fistula was also reduced and closure. The patient transitioned to oral antibiotics and began weight-bearing. By the four weeks after surgery, she was discharged and able to walk with a cane.

Conclusion

CLAP combined with NPWT effectively controlled infection in septic arthritis involving the ankle and subtalar joints with fistula. However, long-term follow-up is needed to assess joint preservation outcomes.

[Curriculum Vitae]

Tsukasa Fujieda works at Yokohama Sakae Kyosai Hospital as a senior resident in Orthopaedic Surgery.

FP5-4

TREATMENT OF A PATIENT WITH EXTENSIVE POST-OSTEOMYELITIC DEFECTS OF THE TIBIAL BONE TISSUE IN CHILDREN

SHAROF MAZHIDOVICH DAVIROV[1], Payzilla Urinbaev[2], Djalol Mansurov[2], Qayum Majidov[2]

[1]Samarkand Branch of the Republican Specialized Scientific and Practical Medical Center for Traumatology and Orthopedics,
[2]Samarkand State Medical University

Objective: To evaluate the effectiveness of treatment of patients with post- osteomyelitic extensive bone defects of the tibia by moving the fibula to the tibia, equalizing the length of the lower leg, and creating tibiofibular synostoses.
Material and methods: The results of treatment of children with postosteomyelitic extensive bone defects of the tibia by simultaneous displacement of the fibula to the site of the tibial defect were studied.
Results: At the 1st stage in the Ilizarov apparatus, simultaneous lengthening of the tibia with bringing down the highly dislocated head of the fibula was performed. At the 2nd stage, one-stage osteotomy was performed in the region of the upper and lower metaphyses of the fibula and the graft was moved to the proximal, distal fragments of the tibia with fixation of the fragments with pins in the Ilizarov apparatus.
Conclusions: Two-stage treatment made it possible to completely restore the incompetence of the leg, provided a good clinical result for a number of these patients.

[Curriculum Vitae]
Davirov Sharof Majidovich has been worked as a Samarkand branch of the Republican Specialized Scientific and Practical Medical Center for Traumatology and Orthopedics, department of adult traumatology N2, from 2003 to February 2015. Since February 2015, he has been working in the specialized department of osteoarticular purulent complications
The place of birth is Farish District, Jizzax State.
The date of birth is Augustl 19, 1976
Nationality is Uzbek, doesn't belong to any Political Parties.
Education is high, graduated Samarkand State Medical Institute in 2001.
The profession is traumatologist orthopedist of the highest category, PhD.

FP5-5

LENGTHENING OF THE TIBIA WITH POSTOSTEOMYELITIC EXTENSIVE BONE DEFECTS USING THE ILIZAROV APPARATUS USING A NEW DISTRACTION DEVICE

SHAROF MAZHIDOVICH DAVIROV[1], Payzilla Urinbaev[2], Djalol Mansurov[2]

[1]Samarkand Branch of the Republican Specialized Scientific and Practical Medical Center for Traumatology and Orthopedics,
[2]Samarkand State Medical University

The aim of the study was to analyze the effectiveness of the treatment of patients with post-traumatic, postosteomyelitic defects of long bones by the Ilizarov method using a new distraction device for bone lengthening in the specialized department of bone-purulent complications.

Material and methods. The effectiveness of the use of a new distraction device in the layout of the Ilizarov apparatus in the dynamics of treatment of 62 patients treated in 2019-2024 was studied and analyzed. with an extensive bone defect in the bone tissue of the diaphysis of the tibia. Tibial defects were more than 6 cm. All patients were divided into two groups. The first group consisted of 36 patients who were treated with the classical Ilizarov method. The remaining 26 patients were treated with the new device. The complexity of distraction osteosynthesis with the Ilizarov apparatus, the control of the movement of the osteotomized bone fragment, and the possibility of controlling the amount of movement were evaluated.

Results and discussion. In the process of treatment, patients using the Ilizarov apparatus have difficulties in the process of lengthening, associated with the need to lengthen on four threaded rods, since manipulations are performed on 8 elements, nuts, if lengthening is performed four times a day, 64 manipulations are performed at different points . The use of the proposed distraction device in the layout of the Ilizarov apparatus reduces the number of manipulations and reduces the complexity of distraction.

Conclusions. The use of a new distraction device objectively reduces the laboriousness of distraction osteosynthesis with the device, increases the ease of use, both for the doctor and the patient when replacing a bone defect.

[Curriculum Vitae]
Davirov Sharof Majidovich has been worked as a Samarkand branch of the Republican Specialized Scientific and Practical Medical Center for Traumatology and Orthopedics, department of adult traumatology N2, from 2003 to February 2015. Since February 2015, he has been working in the specialized department of osteoarticular purulent complications
The place of birth is Farish District, Jizzax State.
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Nationality is Uzbek, doesn't belong to any Political Parties.
Education is high, graduated Samarkand State Medical Institute in 2001.
The profession is traumatologist orthopedist of the highest category, PhD.

FP5-6

TEWNTY YEARS POST COMPRESSION ARTHRODESIS IN INFECTED DIABETIC CHARCOT ANKLE JOINT

Ahmad S. Allam

Banha University

Background: Infected diabetic Charcot ankle joint is a real surgical challenge because of the resistance of infection, presence of deformity and instability that – in many instances - makes amputation inevitable.

Methods: 30 patients (44 – 69 y.) with actively draining sinus(es) from unstable, deformed diabetic Charcot ankle joints; were operated upon. All were giving a history of previous multiple drainage or soft tissue debridement procedures 2 to 5 times. All were treated by a one stage intervention in the form of radical debridement of the infected ankle bone and soft tissues followed by ankle compression arthrodesis by a modified Charnley's device.

Results: 19 patients (63.3 %) showed solid (bone) union, with infection eradication in 13 (43.3%) of them. Seven patients (23.3 %) had stable (fibrous) nonunion with infection eradication in only 4 (13.3 %) of them. Two patients (6.7 %) showed complete failure of the procedure in the form of unstable nonunion with persistence of infection. The remaining two patient (6.7 %) had no residual infection but still with unstable nonunion. Average time for bone healing was 14w. (12-23w.). Surgical wound (& sinuses) closure time was 4w. in average (3-8w.). Residual average limb length discrepancy was 2.5 cm. There was no late reactivation of infection after a follow up of 18 y. (7 -19.5 y.).

Conclusion: simultaneous debridement and compression arthrodesis is a successful method of limb salvage in infected diabetic Charcot ankle joints; obtaining a satisfactory stable ankle in 86.6 % of patients (with 63.3 % solid union); and infection eradication rate of 63.3 %.

FP5-7

Bridging Infected Long Tibial Defects Via Using Mono-lateral Frames

Ahmad S. Allam

Banha University

Introduction

Post-traumatic tibial non-union in association with infection is not uncommon. When tibial shortening occurs and soft tissue (especially skin) complications are added to this problem due to multiple surgical procedures to solve the first problem, this is one of the heaviest complications in bone-joint surgery.

Objectives

to evaluate the results of radical debridement, compression, and remote callotasis using monoplane frames in infected, non-united tibiae with bone loss.

Methods

Twenty five tibial non-united fractures (8-65y), complicated with infection, shortening (4-11 cm.) and skin or other soft tissue complications; following repeated surgeries (2-5 previous operations) were subjected to debridement of the soft tissues at the non-union site with excision of bone ends till healthy bone (adding more shortening). Mono-planer external fixators were applied to all cases; compression was applied to fracture site, and distraction-callotasis principle was performed at a proximal (or distal) corticotomy.

Results

Bone healing was achieved in 24 cases (96%) in 12 – 28 weeks (mean of 18.2 weeks). Infection was eradicated in 22 cases (88 %); all were united. The mean length gained was 7.7 cm (6.5-14.5 cm). Satisfactory results were obtained in 22 patients (88%) and unsatisfactory results in 3 patients(12 %).No major complications were encountered; There have been no refractures or loss of length. after a follow-up of 3,6 years (range 2.5 - 7 y).

Conclusions

Competent mono-plane devices, combined with proper debridement can give a high success rate in achieving bone healing, eradication of infection and correction of shortening in tibial non-union associated with infection and long segment bone loss.

FP6-1

Effect of hydrogen peroxide and povidone iodine on Staphylococcus aureus biofilms on orthopedic biomaterials. In vitro study

German Jorge Viale[1], Jonathan Roberto Vazquez[1], Cintia Ledesma[2], Artruro Xavier Maya[1], German Garabano[1], Laura Friedman[2]

[1]British Hospital of Buenos Aires, [2]Jonathan Roberto Vazquez, [3]Cintia Ledesma, [4]Arturo Xavier Maya, [5]Germán Garabano, [6]Laura Friedman

Background: Periprosthetic infection represents a significant clinical challenge, with incidence rates varying between 1-2% in primary surgeries and 4-10% in revision surgeries. Staphylococcus aureus is a pathogen commonly associated with these infections, known for its ability to form biofilms on biomaterial surfaces, which increases its resistance to antibiotic treatments.

Purpose: This study aims to evaluate the bactericidal effectiveness and synergistic action of the combination of hydrogen peroxide with Povidone-iodine to inhibit the formation of S. aureus biofilms on orthopedic biomaterials, standardize quantitative protocols, and compare its efficacy against established antiseptics.

Materials and methods: Eleven strains of S. aureus were used, including methicillin-resistant and sensitive strains, isolated from community and hospital sources. The antiseptics used were Povidone-iodine, hydrogen peroxide and chlorhexidine, with all tests carried out three times. The assays were designed to evaluate the bactericidal activity of the individual and combined antiseptics both in suspension and on biofilms formed on biomaterials such as surgical steel, cobalt-chromium-molybdenum, titanium, high-density polyethylene (HDPE), and polymethylmethacrylate. The viability and resultant biomass were measured after each treatment.

Results: All evaluated biomaterials were susceptible to biofilm formation, being HDPE the one that exhibited the highest capacity for formation. The combination of hydrogen peroxide and Povidone-Iodine showed significant bactericidal efficacy, reducing bacterial viability from log 8.18 CFU/well to log 1.66 CFU/well, compared to the chlorhexidine group, which achieved a reduction to log 5.06 CFU/well at 2 minutes, overcoming the activity of individual and sequential antiseptics. However, despite the reduction in viability, the biofilm matrix persisted, but to a lesser measure than with individual antiseptics.

Conclusion: The combination of hydrogen peroxide with Povidone-Iodine emerged as the most effective antiseptic against S. aureus biofilm formation. The bactericidal efficacy of the antiseptics varies significantly among different biomaterials, suggesting that the hydrogen peroxide with Povidone-Iodine combination could be effective in the treatment of S. aureus infections.

[Curriculum Vitae]
Medical Doctor Staff at the British Hospital of Buenos Aires.
Medical Doctor Staff at the Sanatorium Las Lomas of Buenos Aires.
Full member of the Asociacion Argentina de Ortopedia y Traumatología (AAOT).
Full member of the Asociación Argentina para el estudio de la Cadera y la Rodilla (ACARO).
Former President of the Steering Committee, Certifications and Accreditations of the AAOT.
Former member of the ACARO Board of Directors.
Former member of the AAOT Board of Directors.

FP6-2

Optimal Diluted Povidone-Iodine Solution for Preventing Periprosthetic Joint Infection

Musashi Ima[1], Tamon Kabata[1], Masaharu Tokoro[2], Daisuke Inoue[1], Tomoyuki Kataoka[1], Yuu Yanagi[1], Takahiro Iyobe[1], Keisuke Sano[1], Rin Maeda[1], Satoru Demura[1]

[1]*Department of Orthopaedic Surgery School of Medical Sciences Kanazawa University,*
[2]*Department of Global Infection Disease School of Medical Science Kanazawa University*

Introduction

Periprosthetic joint infection (PJI) is a severe and challenging complication following joint arthroplasty, leading to increased morbidity, prolonged hospitalization, and higher healthcare costs. Effective intraoperative strategies to prevent PJI are essential to improving surgical outcomes. Povidone-iodine (PVP-I) is widely used due to its broad-spectrum antimicrobial properties, yet the optimal concentration and irrigation timing remain unclear. While previous studies have shown its efficacy, standardized protocols are lacking. This study investigates the most effective PVP-I concentration and irrigation interval for preventing PJI using a rat femur model inoculated with methicillin-sensitive *Staphylococcus aureus* (MSSA).

Methods

Sprague-Dawley rats (250-300g) underwent femoral implantation with a stainless steel plate and were inoculated with 10^8 CFU/ml of MSSA. The rats were divided into three groups: Group A (saline), Group B (0.13% PVP-I), and Group C (0.35% PVP-I). Each group was further divided into two subgroups based on irrigation frequency (30-minute or 60-minute intervals). The surgical site was irrigated for 3 minutes at the designated intervals. On postoperative day 7, femurs and implants were harvested, and bacterial counts were determined using sonication and colony-forming unit (CFU) quantification. u-CT scans were performed to assess cortical bone volume, and histological analysis was conducted using hematoxylin and eosin (H&E) staining.

Results

Bacterial counts were significantly lower in Group C with 30-minute intervals, where no bacteria were detected. For 60-minute intervals, CFU counts were $36.0 \pm 4.0 \times 10^6$ in Group A, $20.0 \pm 4.0 \times 10^4$ in Group B, and $11.0 \pm 5.0 \times 10^3$ in Group C. For 30-minute intervals, CFU counts were $20.0 \pm 4.5 \times 10^6$ in Group A, 66.0 ± 20.0 CFU/ml in Group B, and undetectable in Group C. Cortical bone volume was significantly preserved in Groups B and C, especially with 30-minute intervals (0.17 cm^3 in Group B, 0.16 cm^3 in Group C). Histopathology showed abscess formation and bone destruction in Group A, whereas Groups B and C exhibited osteoid formation, indicating improved bone healing.

Conclusion

These findings emphasize the critical role of both PVP-I concentration and irrigation frequency in preventing PJI. The 0.35% PVP-I solution at 30-minute intervals was most effective, significantly reducing bacterial load and preserving bone integrity. Optimizing intraoperative irrigation protocols may enhance infection control and surgical outcomes in arthroplasty.

[Curriculum Vitae]

Dr. Musashi Ima is a board-certified orthopedic surgeon specializing in total joint replacement surgery, particularly of the hip and knee. He graduated from Kanazawa University School of Medicine in 2017 and passed the 111th National Medical Licensing Examination in Japan.

After completing his residency at Kanazawa University Hospital (2017–2019), he worked as an orthopedic surgeon at Takaoka Kouseiren Hospital, Suzu City General Hospital, and Tonami City General Hospital. Since 2024, he has been practicing at Kanazawa West Hospital.

Dr. Ima focuses on clinical and research advancements in periprosthetic joint infections (PJI) and has received multiple research grants, including the IO DATA Research and Development Grant, the Orthopedic Trauma and Disaster Surgery Grant, and the MSDI Medical Technology Research and Development Grant.

He is a member of the Japanese Orthopaedic Association, the Japanese Hip Society, the Japanese Society for Joint Replacement, and the Japanese Society for Bone and Joint Infections. With a strong commitment to improving surgical outcomes, Dr. Ima continues to contribute to research and clinical excellence in orthopedic surgery.

FP6-3

Halicin combinations with conventional antibiotics are more effective than monotherapy against both planktonic and biofilm residing Staphylococcus aureus

Akira Morita[1], Joash R Suryavanshi[2], Allison J Wintring[2], Roman M Natoli[2], Edward M Greenfield[2]

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Background:
Halicin was recently identified as a novel antimicrobial agent that eradicates S. aureus biofilms on various orthopedically relevant substrates. Antibiotic combinations often act synergistically and can prevent the emergence of antibiotic resistance.

Purpose:
To investigate whether halicin combinations with conventional antibiotics are more effective than monotherapy against planktonic and biofilm-residing Staphylococcus aureus

Materials and methods:
Halicin combinations with antibiotics conventionally utilized in orthopaedic infections were tested in checkerboard assays of planktonic S. aureus. Combination efficacy was evaluated by calculating the fractional inhibitory concentration index (FICI). Antibiotic combinations with halicin (250 uM = 1/4 of its minimum biofilm eradication concentration (MBEC)) were tested against less-mature (24-hour) and more-mature (7-days) biofilms on titanium alloy discs. MBECs were defined as the lowest antibiotic concentration that resulted in no detectable colony forming units (CFUs) after antibiotic challenge (20 hours), a recovery period (24 hours), and sonication to disrupt the biofilms.

Results:
Planktonic checkerboard assays showed halicin synergy (FICI "<0.5) with gentamycin, tobramycin, and cefazolin but not with rifampicin or vancomycin. In experiments with less-mature and more-mature biofilms, halicin decreased the concentration of rifampicin required to eradicate viable bacteria by ">100-fold. Importantly, halicin also prevented the emergence of resistance to rifampicin. Halicin also modestly decreased, by 4-fold, the concentrations of gentamycin and tobramycin required to eradicate less-mature biofilms, but the effect was lost against more-mature biofilms. In contrast, halicin reduced vancomycin ability to eliminate biofilms. Cefazolin was ineffective, both in the presence and absence of halicin, against biofilms at doses above clinically achievable concentrations.

Conclusion:
Halicin synergized with gentamycin, tobramycin, and cefazolin against planktonic S. aureus; halicin increased the bacterial eradication effectiveness of rifampicin against less-mature and more-mature biofilms. Our results that different antibiotics have superior combinatorial activity with halicin against biofilms than against planktonic cultures further demonstrate the importance of studying biofilms to support translation to clinical studies. Highlighting the translatability of our results, the doses of conventional antibiotics in combination with halicin required to affect both planktonic and biofilm-residing S. aureus are all clinically achievable in serum and locally in bone. The halicin/rifampicin combination should be tested in murine models of orthopaedic infections.

[Curriculum Vitae]
Dr Akira Morita is Orthopaedic Surgeon in Yokohama city university.
Akira completed a Bachelor's degree in pharmacy from Musashino University, a MD degree from Dokkyo Medical University, and a PhD degree from the Department of Orthopedic Surgery, Yokohama City University in 2023. His Doctoral research was on periprosthetic loss of bone mineral density after total hip arthroplasty and lead to multiple publications. His orthopaedic residency focused on trauma surgery and was also in the Department of Orthopedic Surgery Yokohama City University
From April 2023 to February 2025, Akira moved to the Indiana University School of Medicine in the United States for a postdoc and studied in research on novel approaches to eradicate biofilms in both in vitro and murine models of periprosthetic joint infection and already published a study on this topic. After study abroad, akira is working in Yokohama city university as a hio surgeon.

FP6-4

Enzymes and local vancomycin enhance systemic therapy against MRSA biofilm in an implant infection model

Randy Buzisa Mbuku[1], Herve Poilvache[2], Francoise Van Bambeke[3], Olivier Cornu[1,2]

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Background
Implant-associated infections (IAI), including prosthetic joint infections (PJI), are challenging complications of orthopaedic surgery, associated with significant morbidity. These infections are notoriously difficult to eradicate due to bacterial biofilms that impair antibiotic efficacy [1]. Enzyme-based adjuvant therapies, capable of disrupting biofilm matrices, are being investigated as a means to potentiate antibiotic activity [2].

Purpose
This study aimed to assess the efficacy of a local combination of vancomycin (VAN) and a hydrolytic enzyme cocktail (EC), administered alongside systemic vancomycin-rifampicin therapy, in an in vivo model of biofilm-associated infection caused by methicillin-resistant *Staphylococcus aureus* (MRSA).

Material and methods
A guinea pig tissue cage model (adapted from [PMID: 7119479]) was used. Sterile multiperforated tissue cages containing titanium beads were implanted and subsequently infected with MRSA ATCC33591. Infected animals were treated for 4 days with intraperitoneal vancomycin (15 mg/kg) and rifampicin (12.5 mg/kg) twice daily. Additionally, local injections (1 mL) were administered into the cages every 48 hours, containing either saline, VAN (2 g/L), EC, or VANandEC. Animals were distributed into five groups: infected/non-treated, infected/saline, infected/VAN, infected/EC, and infected/VANandEC. Planktonic and adherent bacterial counts were determined at multiple timepoints.

Results
The combination of local VANandEC with systemic therapy showed the highest efficacy, leading to a >1 $\log_{10}$ reduction of planktonic bacterial counts compared to VAN or EC alone. Bacterial clearance improved progressively until day 7 (24 hours post-treatment) (see figure 1a), when VANandEC achieved a reduction of 1.3 $\log_{10}$ CFU ($p=0.007$) versus VAN alone, and 1.7 $\log_{10}$ CFU ($p<0.0001$) versus EC alone, in adherent bacteria (see figure 1b). Importantly, 75% (6/8) of cages in the VANandEC group showed undetectable adherent CFU (<100 CFU/mL). At day 11, a slight regrowth (0.5 to 1 $\log_{10}$ CFU) was observed in all groups, but the VANandEC combination maintained superior efficacy. At the end of follow-up, 6 out of 16 cages remained sterile in the VANandEC group (see figure 1c).

Conclusions
The local application of vancomycin combined with a hydrolytic enzyme cocktail, in addition to systemic vancomycin-rifampicin therapy, significantly improved bacterial clearance in an MRSA biofilm-associated infection model. This approach holds promise for enhancing the management of prosthetic joint infections by effectively targeting both planktonic and biofilm-embedded bacteria.

[1] Tande AJ, Patel R. Prosthetic joint infection. Clin Microbiol Rev 2014;27(2):302-45. DOI: 10.1128/CMR.00111-13.
[2] Poilvache H, Ruiz-Sorribas A, Cornu O, Van Bambeke F. In-Vitro Study of the Synergistic Effect of an Enzyme Cocktail and Antibiotics against Biofilms in a Prosthetic Joint Infection Model. Antimicrob Agents Chemother 2021. DOI: 10.1128/AAC.01699-20

[Curriculum Vitae]
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FP6-5

Influences of High-dose Gentamicin Exposure on Human Articular Chondrocyte

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Background: Gentamicin (GM) is a generally used antibiotic within the orthopaedic surgery field due to its suitability to be applied locally. In Japan, recently emerged continuous local antibiotic perfusion (CLAP) therapy uses a high concentration of gentamicin, namely 1200μg/ml, to be perfused into the lesion. Although recently it was known to be dose-dependent, gentamicin chondrotoxicity at such a level is still not much known.

Purpose: To determine whether the recent dose of CLAP therapy is safe for cartilage.

Method: Chondrocytes isolated from the femoral condyle following a total knee replacement surgery were then suspended in Dulbecco Modified Eagle Medium, 10% fetal bovine serum, and antibiotics. Medium changes were done two times a week, then passaged at 80% confluence then exposed to GM in various concentration. Cell viability on days 4,7, and 14 was then measured using cell counting kit-8 within 450 nm absorbance. Recovery capability was also measured by exposing chondrocytes to the same concentration groups for a seven-day period, then resuspended in growth medium without GM for 14 days. Apoptosis rate was measured with the Apo-direct apoptosis kit; examination under a confocal microscope was done. Real-time RT-PCR of chondrocyte-related gene is done after 7 days of exposure.

Results: Significant reduction in cell viability was seen at the 10000 μg/ml, 5000 μg/ml and 1000 μg/ml after 4,7, and 14 days, respectively. Recovery capability was decreased at 2000, 3000, and 4000 μg/ml groups. Apoptosis rate was increased in the 1000 μg/ml group and beyond. BAX gene, which was an apoptosis marker, was increased after 7 days of exposure in 1000 μg/ml groups and beyond; conversely, Aggrecan was reduced at a concentration of 2000 μg/ml and beyond.

Discussion: Reduced cell viability and increased apoptosis rate in the higher dose group after a long period of exposure with an in vitro setting indicate gentamicin chondrotoxicity is time- and dose-dependent. The average duration of CLAP therapy is approximately two weeks; therefore, it might have side effects on chondrocytes. But concentration might be different within in vivo or clinical settings; thus, further study is required.

Conclusion: High doses of gentamicin affect chondrocytes negatively in vitro. These results provide an important basis for selecting optimal concentrations of GM for CLAP therapy.

[Curriculum Vitae]

Jonathan is a graduate student of Kobe University with a strong focus on orthopedic surgery. After graduating from Gadjah Mada University, Indonesia, in 2021, he decided to deepen his understanding of the orthopaedic field by doing research in joint infection management by enrolling in the graduate school of medicine at Kobe University in 2023. Right now he is in the second year of his study period and continuing research on the safety of gentamicin on articular chondrocytes, which hopefully will expand the knowledge and improve recently emerging Continuous Local Antibiotic Perfusion (CLAP) therapy for infection in Japan.

FP6-6

Bactericidal Effect and Impact on Osteoblasts of the Absorbable Local Hemostatic Agent Surgicel Powder

Masashi Shimoda[1,2], Hyonmin Choe[1], Kimi Ishikawa[1], Eito Tomoyama[3], Hiroyuki Ike[1], Hideo Mitui[1], Koki Abe[1], Yuta Hieda[1], Yutaka Inaba[1]

[1]Department of Orthopedic Surgery, Yokohama City University, [2]Kanagawa Rehabilitation Hospital, [3]Clinical Laboratory Department, Yokohama City University.

Purpose

Surgicel Powder (SP) is a powdered absorbable hemostatic agent that has been reported to have hemostatic effects in various surgical procedures. The main component of SP, oxidized regenerated cellulose, forms an acidic environment when dissolved and is believed to have bactericidal properties. However, reports regarding its effectiveness against bacteria adhered to implants and its effects on osteoblasts are lacking. The purpose of this study is to evaluate the bactericidal effect of SP against methicillin-resistant Staphylococcus aureus (MRSA) adhered to implants and its impact on osteoblast viability.

Methods

First, in-vitro, the effect of SP on MRSA was evaluated by mixing MRSA suspension with SP (40–200 mg/mL). Next, in an implant bacterial adhesion model, MRSA suspension was cultured with titanium plates, and 200 mg of SP was applied to evaluate its antibacterial effect. The effect of SP (0.025–200 mg/mL) on human osteoblasts was evaluated by exposing the cells for 5 minutes and 24 hours. Cell viability was quantitatively assessed using the CellTiter–Glo 2.0 luminescence assay based on ATP levels.

Results

The effect of SP on MRSA suspension increased with higher concentrations, and complete bacterial eradication was observed at 120 mg/mL. In the implant bacterial adhesion model, SP application resulted in a significant decrease in bacterial count. In the cell viability assay, a dose-dependent cytotoxicity was observed, but no cytotoxicity was noted with SP concentrations ≤40 mg/mL, even after 5-minute and 24-hour exposures.

Conclusion

SP demonstrated antibacterial activity against MRSA adhered to implant surfaces. However, high concentrations of SP may reduce osteoblast viability. Therefore, consideration of SP concentration and exposure time is essential for its clinical application.

[Curriculum Vitae]

Masashi Shimoda is a graduate student at Yokohama City University.

He is working in the hip group, especially on alignment changes after Total Hip Arthroplasty (THA) and the treatment of periprosthetic joint infection (PJI).

FP7-1

Decreased infection and wound complication in total sacrectomy by using one-stage Hemi-TRAM flap

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Background: Total sacrectomy often leads to surgery-related infection, such as wound complications, resulting in prolonged hospital stays. Several methods have been introduced to enhance safety and reduce wound complications. The aim of this study was to compare the wound infection rate and length of hospital stay between total sacrectomy with a hemi-transverse rectus abdominis muscle flap (hemi-TRAM) and traditional total sacrectomy.

Method: A retrospective cohort study was conducted from January 2011 to January 2025. Patients who underwent total sacrectomy through a single posterior approach, with or without lumbopelvic reconstruction, were included in the study. A comparison was made between the hemi-TRAM flap group and the traditional group regarding wound complications requiring surgical treatment and length of hospital stay. A p-value of less than 0.05 was considered statistically significant.

Results: A total of 21 patients were included in the study, with 70% being female. The most common diagnoses were chordoma followed by giant cell tumor. All patients underwent single posterior approach total sacrectomy with lumbo-pelvic reconstruction from L3 to the iliac. Eleven patients received hemi-TRAM flaps. There were no significant differences in overall demographic data including age, sex, tumor volume, pre-operative ECOG score, and Karnofsky performance status. The incidence of wound infection in the hemi-TRAM flap group was 9.1% (1 case), compared to 50% in the traditional group. The length of hospital stay in the hemi-TRAM group was significantly shorter than in the traditional group ($p < 0.001$).

Conclusion: The use of hemi-TRAM flap in single-stage, all posterior approach total sacrectomy resulted in favorable clinical outcomes regarding wound infection and length of hospital stay. Flap coverage should be considered when total sacrectomy is chosen as the treatment for sacral tumor patients.

[Curriculum Vitae]
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Board Certified in Orthopaedic Surgery (Thailand), July 2009
Licensed Physician, Thailand Medical Council, April 2004
Thai Medical License Number: 30925
Professional Society Membership
Thai Medical Council, 2004 to present
Medical Association of Thailand, 2004 to present
Royal College of Orthopaedic Surgeons of Thailand, 2009 to present
AO Spine Asia-Pacific (Member No. 647936), 2013 to present
North American Spine Society (International Member), 2012 to present

FP7-2

Characteristics and treatment of postoperative infections in malignant musculoskeletal tumor surgery

Atsushi Mihara, Takashi Imagama, Ryuta Iwanaga, Kazuya Uehara, Takashi Sakai

Yamaguchi University

Background

Surgical treatment for malignant bone and soft tissue tumors requires wide resection, including surrounding normal tissues. Consequently, significant defects in bone and soft tissue often necessitate reconstructive surgery, leading to prolonged surgical durations. Additionally, adjuvant therapies such as chemotherapy and radiation therapy are frequently required in the perioperative period. Compared to general orthopedic surgeries, the risk of postoperative infection is reported to be higher.

Purpose

This study retrospectively investigates surgeries for malignant bone and soft tissue tumors at our institution to analyze the characteristics of postoperative infections, the treatment strategies for infections, and the associated risk factors. Furthermore, we aim to examine preventive measures against postoperative infections.

Patients & Methods

A retrospective review of the records was conducted on patients who underwent surgery for malignant bone tumors (n=41) and malignant soft tissue tumors (n=136) at our institution. We analyzed the incidence of postoperative infections, risk factors for infection, treatment methods, duration of infection treatment, and the impact of infection on survival prognosis.

Results

The incidence of postoperative infections was 19.5% for bone tumors and 18.4% for soft tissue tumors. In soft tissue tumors, infected cases had significantly longer operative times, greater blood loss, longer postoperative drain placement duration, higher use of implants, and more frequent postoperative radiation therapy than non-infected cases. Although no significant differences were observed in bone tumors, the infected group tended to have a longer duration of postoperative drain placement.

For infection management, all cases of bone tumor infections required surgical treatment, with an average of 2.9 operations per case. Only one case was cured by debridement alone, and one case required amputation. In soft tissue tumors, 36% of infected cases were cured with only antibiotics and ward-based wound care. Among cases requiring surgical treatment, an average of one operation was performed, and 50% of them cured with debridement alone. Two cases required amputation. Tumor-specific survival rates, adjusted for age and histological malignancy grade using propensity score matching, showed no significant difference between the infected and non-infected groups.

Conclusions

The postoperative infection rate for malignant bone and soft tissue tumors in our study was consistent with previous reports. Since many bone tumor cases require bone reconstruction during the initial surgery, surgical treatment for infections tends to be more invasive. Postoperative drain placement should be minimized whenever possible.

[Curriculum Vitae]

Entered Yamaguchi University Department of Medicine in 2005 and graduated in 2011. After two years as a primary resident doctor, became an orthopedic doctor at Department of Orthopedic Surgery of Yamaguchi University Graduate School of Medicine. Since 2020, working as an Orthopedic Oncology Doctor at Yamaguchi University. A member of Japanese Orthopedic Society, International Society of Limb Salvage, Orthopedic Research Society. Awarded as Young Investigator Award in an English session for young investigators at Japanese Orthopedic Society Musculoskeletal Tumor Annual Meeting in 2019 and awarded as Young Investigator Award at Asia-Pacific Musculoskeletal Tumor Society Meeting in 2023.

FP7-3

Application of Continuous Local Antibiotic Perfusion (CLAP) Therapy for Spinal Infections: Focus on Cases Requiring Multiple CLAP Procedures

Hideaki Imabayashi, Eri Katsuyama

Tokyo Saiseikai Central Hospital

Continuous Local Antibiotics Perfusion (CLAP) has emerged as a sophisticated therapeutic strategy for musculoskeletal infections, enabling the sustained delivery of antibiotics at concentrations surpassing biofilm-inhibitory thresholds. Initially introduced by Dr. Akihiro Maruo in 2000, CLAP has demonstrated efficacy in managing infections associated with orthopedic implants and has been increasingly adopted in spinal surgery for infection control.

Purpose

This study evaluates the clinical efficacy of CLAP in treating spinal infections, specifically post-surgical SSIs following spinal instrumentation and primary spinal infections. It further examines cases requiring repeated CLAP interventions to determine their necessity and effectiveness.

Materials and Methods

Six patients underwent CLAP therapy, comprising four cases of SSIs post-spinal instrumentation and two primary spinal infections (pyogenic spondylitis and epidural abscess). CLAP was implemented post-debridement using double-lumen tubes and low-pressure suction, ensuring continuous antibiotic perfusion at the infection site.

Results

All patients exhibited clinical improvement; however, two required additional CLAP procedures. In one instance, persistent infection at the L5/S1 intervertebral space necessitated cage removal, suggesting limitations in antibiotic penetration. In another case, there was a possibility that the first debridement was insufficient and that the antimicrobial agent perfusion to the necrotic tissue was not thorough.

Conclusion

CLAP presents a compelling adjunctive approach for spinal infection management, particularly SSIs following spinal instrumentation. Nonetheless, its efficacy may be constrained by infection site-specific challenges and host factors. Further research is warranted to refine its application and enhance therapeutic outcomes.

[Curriculum Vitae]
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National Health Insurance Special Examination Committee Member

FP7-4

Post arthroscopic Surgical thigh muscles Infections. A case reports

GAMAL ELMASHAD

CONSULTANT ORTHOPEDIC (FACHARZ)

Introduction: The use of arthroscopy for both diagnosis and operative intervention has been increasing steadily since its introduction in the 1970s. It is generally associated with fewer complications and shorter times to mobilization than are open procedures. **Purpose:** This review focuses on infectious complications of arthroscopy, which are rare (0.01%–0.48% of procedures) but result in significant morbidity for the patient when they occur. The most commonly reported causative organisms are staphylococci. Several outbreaks have been reported related to breaks in infection control or to contaminated instruments. Suggested risk factors include use of intra-articular corticosteroids, prolonged tourniquet time, patient's age ã50 years. **A case report:** female patient 52 years old presented by swelling edematous thigh after knee arthroscopic surgery 2 weeks later. laboratory and radiological investigations done. then multiple surgical procedures were done till patient recovery occurred.

[Curriculum Vitae]

Career Objective

Experienced and energetic Manager with over twenty years of experience effectively work with a wide variety of patients who suffer from ailments affecting their musculoskeletal system, including bones, joints, muscles, tendons, and ligaments.

Additional Skills

- Management Skills
- Marketing
- Negotiation
- Critical Thinking
- Communication Skills

Work Experience

2017 - Till now Alexandria	Alexandria Police Hospital • Orthopedic and Traumatology Consultant
2014 - 2016 Alexandria	Andalusia Group for Medical Services • Orthopedic and Traumatology Consultant
2011 - 2013 Alexandria	Private Clinic • Orthopedic and Traumatology Consultant
2005 - 2010 Germany	Regensburg University Hospital, Germany • Specialist doctor of Orthopedics (Orthopädie Arzt)
2002 - 2005 Beheira	Damnhour University Hospital • Specialist doctor of Orthopedics
2000 - 2002 Beheira	Damnhour University hospital • resident doctor of Orthopedics

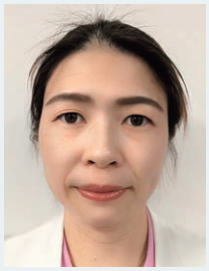
Education And Certifications

1999 Alexandria university	Bachelor of Medicine and Surgery
2003 Alexandria university	Diploma in Orthopedics surgery
2006 Tanta university	Master of Orthopedics surgery
2010 Munich, Germany	German Fellowship of Orthopedics (FACH ARTZ)
2012 Munich, Germany	MD Orthopaedics

Subspecialty

Deformity and complicated fracture treatment by external fixator

FP7-5



Treatment of refractory bone and soft tissue infections Using Continuous local antibiotic perfusion: a case series

Saori Yoshida, Hiroshi Fujimaki, Yuichi Iwamura, Tsuyoshi Takeuchi, Masamitsu Tomioka, Yoori Kim, Keiju Saito, Fusaku Iwata, Kei Takahashi, Seichiro Yamazaki, Yuki Hirano, Akihiro Nakazawa

Yokohama Municipal Citizen's Hospital

Background

Bone and soft tissue infections, such as necrotizing fasciitis, periprosthetic joint infections (PJI) and fracture-related infections can cause complicated problems in clinical practice. Continuous local antibiotic perfusion (CLAP) therapy is a novel method which can administer high concentrations of antibiotics into bone, soft tissues, and joints. Although various treatment methods for these infections have been reported globally, there are still limited reports regarding the use of CLAP.

Purpose

This study presents three cases of bone and soft tissue infections treated with CLAP at our institution.

Methods and Results

The first patient was a 54-year-old male diagnosed with Necrotizing fasciitis of the left thigh. Despite broad-spectrum antibiotic therapy and repetitive surgical debridement, the infection continued to spread. Extensive soft tissue debridement was performed and CLAP treatment was initiated as an adjunct treatment to control the infected wound. CLAP was administered for six weeks, followed by four weeks of negative pressure wound therapy (NPWT). Although the patient's condition was critical at times due to uncontrollable infection, the wound successfully closed as his nutritional status improved, and he was discharged home independently.

The second patient, an 85-year-old male with a metastatic bone tumor in the left hip from lung cancer, developed PJI seven months post-prosthesis. Upon diagnosis of a PJI, surgical debridement and partial exchange of the implant were performed, followed by CLAP treatment. After two weeks of CLAP, effective infection control was achieved with the use of oral antibiotics.

The third patient was a 72-year-old male who had undergone open reduction and internal fixation (ORIF) with cerclage compression wiring for a right patellar fracture. While the bone had healed, it was decided to perform implant removal. Following implant removal, the patient developed a swollen knee and pus drainage, and was diagnosed with pyogenic arthritis of the right knee. In spite of two rounds of surgical debridement, the infection was not adequately controlled. Ultimately, a third debridement, combined with two weeks of CLAP, resulted in significant clinical improvement.

Conclusion

CLAP can be effectively utilized in the treatment of various orthopedic infections, providing a valuable adjunct in managing difficult-to-treat cases.

[Curriculum Vitae]
Dr. Saori Yoshida, MD
Orthopedic Surgeon
Yokohama Municipal Citizen's Hospital, Japan

Dr. Saori Yoshida is an orthopedic surgeon at Yokohama Municipal Citizen's Hospital in Japan. She received her MD from Yokohama City University. Throughout her career, Dr. Yoshida has made significant contributions to the field of trauma surgery, joint reconstruction and arthroscopy.

Currently, she is focusing on public health, with an interest in learning research design to further advance her knowledge in the field. Her ongoing work aims to bridge the gap between clinical practice and public health initiatives, improving patient outcomes through evidence-based approaches.

FP8-1

How can a simple fracture make a disaster ?

Ahmed Mahmoud Hefeda

Orthopedic Surgery, Helwan University

Background: Pediatric fractures always have a big challenge in treatment. If it is managed in a wrong way it will end by a disaster. The disaster will be like a stiff joint, infection short limb or a non united bone.
Purpose: we have to follow the rules to deal with pediatric fractures to avoid any complications.
Materials and Methods : A four years old child presented to our hospital with infected non united fracture femur which was previously treated by another orthopedic surgeon with intramedullary k wires and stainless steel circlage. The surgeon seeked an anatomical reduction in a simple diaphysial fracture femur which ends by a disaster.The patient complain of infection , non union, infection and shortening. we did Iliarov fixation which was very difficult in a four years old boy and also we removed all the necrotic bone .
Results: Full union and length was achieved and the patient returned to his normal daily activity.
Conclusion: We have to follow the guidelines in dealing with the patients.

[Curriculum Vitae]
I am Ahmed Hefeda PhD, Lecturer and consultant of orthopedic surgery, Helwan university,Egypt. I have a master degree 2015 then I finished my PhD at 2023.I did AO fellowship at Charitee hospital, Berlin, Germany. I also did a SICOT fellowship at Ganga hospital, Coimbatore, India. I attended the 2nd WAIOT congress at Cairo 2022.

FP8-2

Relationship between the clinical outcomes of fracture-related infection (FRI) cases and FRI classification

Ryota Nishida, Keisuke Oe, Kenichi Sawauchi, Yutaka Matsumiya, Yohei Kumabe, Tomoaki Fukui, Ryosuke Kuroda

Kobe University Graduate School of Medicine

Background

Fracture–related infection (FRI) presents with various clinical manifestations, and the risk factors for poor outcomes remain unclear. The FRI classification was proposed in 2024 to guide decision–making and facilitate scientific comparison. It consists of three elements: Fracture (F), Related patient factors (R) and Impairment of soft tissues (I). While an increasing amount of evidence based on this classification is expected, little clinical significance has been reported so far.

Purpose

To investigate the relationship between the clinical outcomes of FRI cases treated at our institution and the FRI classification, as well as the risk factors for poor outcomes.

Material and Methods

We included 24 patients treated for FRI associated with long bone osteomyelitis of the lower limbs at our institution between 2017 and 2023. Cases in which the implants had already been removed after fracture union were excluded. Remission was defined as the absence of infection for three months postoperatively, while recurrence was defined as infection reappearance beyond this period. Patients achieving remission and without recurrence were classified as the Successful group, while those who did not achieve remission or experienced recurrence were classified as the Failure group. The relationship between clinical outcomes and the three FRI classification elements of (F, R and I) was assessed using the Fisher´s exact test. The patient factors (age, general complications, etc), infection background (infection site, timing, pathogens, etc) and treatment factors (methods, management of existing implants, etc) were analyzed between the groups using the Mann–Whitney U test and Fisher´s exact test.

Results

The successful group included 18 cases, while the Failure group included 6 cases. The distribution of F elements in the Successful and Failure groups was as follows: F1: 17/0%, F3: 44/67%, and F4: 39/33%. R elements were distributed as follows: R1: 56/50% and R2: 44/50%. I elements were distributed as follows: I1: 61/50%, I2: 28/17%, I3: 0/17% and I4: 11/17%. No significant relationships were observed between clinical outcomes and any classifications elements. Additionally, no significant differences were found between the groups in terms of patient factors, infection background, or treatment factors.

Conclusions

No significant relationship was observed between the clinical outcomes of FRI cases treated at our institution and FRI classification. Furthermore, no risk factors for poor outcomes in FRI were identified. To further validate these finding, a multicenter study or an increased sample size is needed, as potential bias may exist in patient selection and treatment methods.

[Curriculum Vitae]

Ryota Nishida, M.D. is a graduate school student at the Department of Orthopaedic Surgery, Kobe University Graduate School of Medicine. He received his M.D. degree from Mie University in 2015. His clinical and research interests include trauma surgery and bone regeneration.

FP8-3

Outcome Of Debridement Without Entral Or Parenteral Antibiotics In The Management Of Fracture-Related Infection Or Osteomyelitis

RAMA KARTHEEK RANDHI[1], Murali Mohan Kotikelapudi[2]

[1]SRI SAI KRISHNA HOSPTIAL, [2]Consultant Orthopedician

introduction:fracture-related infections (fri)andosteomyelitisposesignificantchallenges in clinical management. debridement is a crucial intervention in the treatment of these conditions, but the role of parenteral or enteral antibiotics alongside debridement remains controversial. **methods:**this retrospective study evaluated the outcomes of 42 patients with fri or osteomyelitis who underwent debridement without concomitant parenteral or enteral antibiotic therapy. data on patient demographics, infection characteristics, surgical procedures, and postoperative outcomes were analysed. **results:**preliminary data showed that debridement without antibiotics in fri or osteomyel casesitis resulted in remission of infection and union of the bone in all the cases:the findings suggest that debridement alone may be effective in managing fri or osteomyelitis, highlighting the potential role of surgery as a standalone treatment option in selected cases. the implications of these results on clinical practice and future research directions will be discussed.**conclusion:**this study contributes to the ongoing debate on the optimal management of fri and osteomyelitis by examining the outcomes of debridement without parenteral or enteral antibiotics. further research is needed to validate these findings and inform evidence-based treatment strategies for challenging these infections. **keywords:** fracture-related infections, osteomyelitis, debridement, antibiotics, treatment outcomes

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[Curriculum Vitae]
Dr.Rama Kartheek Randhi was born in Srungavarapukota, Andhra Pradesh, India. I did my schooling in my town. did MBBS from MIMS Vizianagaram, post-graduation Orthopaedics from MIMS Vizianagaram, did a fellowship in Ilizarov in Kurgan Russia,
interested in regular trauma management and joint preservation, limb salvage

FP8-4

Local application of calcium sulphate impregnated with vancomycin and tobramycin in the treatment of chronic osteomyelitis

Ibrahim Elsayed Abuomira

Al-Azher University

Background: Despite the variety of available treatment options, including surgical procedures and antimicrobial therapy, bone infections are still a medical challenge as they are difficult to treat and cure.

Aim of the work: The goals of this treatment protocol are to eradicate infection, heal the ulceration/abscess/wound, and reduce or eliminate the need for intravenous antibiotics in the treatment of osteomyelitis and complex infections of the skin and soft tissue structures.

Patients and methods: From January 2011 to October 2023 a series of 14 chronic osteomyelitis procedures were performed. All patients underwent surgical debridement followed by application of synthetic pure dissolvable calcium sulphate beads impregnated with antibiotics were employed.

Results and conclusion: The clinical outcome after six months amounted to successful treatment assessed as eradication of infection in 14 patients over the time of observation.

[Curriculum Vitae]
Professor and head of Orthopedic department AL-Azher university, Assiut, Egypt, one member of Egyptian orthopedic association board, Secratory of WOC.

FP8-5

Outcomes of Continuous Local Antibiotic Perfusion in Fracture-Related Infections Based on Infection Stage: Toward a Sustaining Implant Strategy

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Harima Himeji General Medical Center

Background

Implant retention of fracture-related infection (FRI) has been avoided due to the risk of biofilm formation. Complete removal of foreign material was necessary with the maturation of biofilm, although it may compromise fracture stability. Continuous Local Antibiotic Perfusion (CLAP) have been reported as a new local antibiotic delivery system, high dose gentamicin was continuously perfused via bone marrow and surrounding soft tissues. This may achieve infection control without removing internal fixation. We propose a new treatment concept: the "sustaining implant strategy," which aims to maintain or exchange stable fixation throughout infection treatment.

Purpose

The aim of this study is to evaluate the efficacy of CLAP within the sustaining implant strategy across different stages of infection in FRI.

Material and methods

A retrospective case series of 28 patients (20 males, 8 females) with FRI (excluding spinal fractures) treated with CLAP between 2015 and 2022 and followed minimum of 2years was conducted. Infection stage was classified as early, delayed, or late according to Metsemakers criteria. Treatment strategies included implant retention, one-stage exchange, and two-stage reimplantation, depending on implant stability and bone union status. Outcomes included infection remission rate, recurrence rate, and bone union rate. Remission was defined as the absence of infection for ≥3 months. Recurrence was defined as deep infection at the same site.

Results

There were 5 early-stage, 13 delayed-stage, and 10 late-stage cases. Infection remission rates were 100% in early and delayed stages, and 90% in late-stage cases. Recurrence occurred in 0% of early, 8% of delayed, and 30% of late-stage cases. All recurrences were successfully managed with additional CLAP. Internal fixation was ultimately sustained in all cases, except 3cases implant removal because of complete bone union, including 5 one-stage exchange implants and one supplemental fixation with retaining the implants. Primary bone union rates were 80% (early), 75% (delayed), and 80% (late). Complications included one non-union, two malunions, one arthrodesis, and one amputation.

Conclusions

CLAP, applied within the framework of the sustaining implant strategy, achieved high infection remission rates across all stages of FRI including recurrence cases. This strategy allows for prioritizing mechanical integrity through implant retention or timely exchange toward function-preserving infection control.

[Curriculum Vitae]
Name: AKIHIRO MARUO. MD, Ph.D.

Current position
Director of Orthoplastic trauma center
Department of Orthopedic surgery,
Harima-Himeji General Medical Center, Himeji, Japan

Education
April 1989 – May 1995: Medical School, Kobe University Japan
April 1996 – May 1998: Graduate Medical School, Kobe University Japan, Department of Biochemistry

Medical training
April 1995 – October 1995: Resident, Department of Orthopedic Surgery Kobe University Hospital, Kobe, Japan
November 1995 – March 1996: Resident, Department of Orthopedic Surgery Hyogo Saiseikai Hospital Kobe, Japan
April 1998 – May 1999: Resident, Department of Orthopedic Surgery Meiwa Hospital Nishinomiya, Japan
April 1999 – April 2001: Research Fellow, Department of Orthopedic research, Mayo Clinic, Rochester Minnesota, USA
Working activities
April 2001 – present: Nippon Steel Hirohata Hospital, Himeji, Japan
April 2011 Hospital name changed to Steel Memorial Hiroahata Hospital
May 2023 Steel memorial hitohata Hospital was merged and relocate as Harima-Himeji General Medical center

LS1

My Heritage and Innovation in Orthopedic Surgery: "My Dream, Dare & Do"- And to the Future-

Hiroyuki Tsuchiya

Yokohama Sakae Kyosai Hospital, Yokohama

The smiles on the faces of patients and their families who have overcome an "incurable disease" are priceless and the greatest joy for a physician, and for this reason we continue to take on challenges. At times, we are devastated by the death of a patient and despairs of our own powerlessness. However, we rise again with renewed energy, and the challenge continues.

The basis of medical development is challenge and creativity. I believe that a series of "dream, dare, and do" will lead to the development of medicine and orthopedics. Robert Koch said more than 100 years ago, "Mere achievement through brilliant research is nothing more than the self-satisfaction of a scholar. It is nothing unless it is actually applied to help people in the world. Traditionally, we have been taught to care for each sick person, to treat them with all the knowledge and skills at our disposal, and to treat them as if they were our own parents, children, and loved ones. This is where creativity is born.

The challenge begins with a question that arose during a major change in surgical treatment from amputation to limb-sparing surgery. The limb can be preserved but not functionally. What should be done? While prognosis is the highest priority, we want to bring the affected limb function as close to normal as possible. To achieve this, we focused on improving the efficacy of chemotherapy. We developed a liquid nitrogen-treated bone graft as a biological reconstruction technique and applied bone lengthening to achieve good limb function. We have also developed an antimicrobial implant by using iodine compounds on metal surfaces. We have confirmed that this technology is effective in preventing and treating infections, and we expect that it will be put to practical use in the near future.

We have repeatedly fed back questions, issues, and problems found in clinical practice to basic research, and then fed back the results of basic research to clinical practice. Although many seeds have been created, only a small fraction of them have been put to practical use. Nevertheless, it is very important to have "dream, dare, and do" spirit. I have high expectations for the young people who will follow in our footsteps.

[Curriculum Vitae]

Hiroyuki Tsuchiya, MD, PhD

Affiliation:

1) The Director/CEO of Yokohama Sakae Kyosai Hospital, Yokohama (2023, April 1st~)

2) Emeritus Professor, Department of Orthopedic Surgery, Graduate School of Medical Sciences,

Kanazawa University, Japan.

3) Emeritus member of Japanese Orthopedic Association (JOA)

He graduated from Kanazawa University medical school in 1983. He started to study and work in the musculoskeletal oncology field since 1986, and was involved into limb reconstruction with external fixator since 1989.

He developed "caffeine-potentiated chemotherapy for bone and soft-tissue sarcomas", "tumor reconstruction using distraction osteogenesis procedure", "tumor reconstruction using tumor-bearing autogenous bone treated by liquid nitrogen", "antimicrobial iodine coating for orthopedic implants", "cryo-immunological treatment", "musculoskeletal regeneration with adipose tissue derived stem cells" and more. He also achieved numerous basic research in both orthopedics and oncology fields.

He is now the ex-president of "International Society of Limb Salvage (ISOLS)", the ex-president of "ASAMI-Japan", the president of WAIOT (World Association against Infection in Orthopaedics and Trauma) and an emeritus member of Japanese Orthopedic Association.

Furthermore, he has now more than 850 English publications regarding tumor biology, tumor surgery, trauma, distraction osteogenesis, pediatric orthopedics, adult reconstruction, spine surgery, trauma, hand surgery, foot and ankle surgery, regenerative medicine, and so on.

LS2-1

SSI prevention. What is on the horizon

Kouji Yamada

Mizonokuchi Orthopedics

Antimicrobial prophylaxis (AMP) is one of the most important evidence based practice for SSI prevention. The recommended antimicrobial is usually first-generation cephalosporin (CEZ) in the field of major orthopeadic procedures, and the risk of SSI when using alternative antimicrobials would be doubled based on our recent before and after study during our nationwide CEZ shortage. AMP duration is another important issue. Although CDC and WHO recently recommended not to administer additional AMP after closure, there is still lack of evidence in our field. From our cluster RCT in Japan, administration within 24 hours was non-inferior to administration within 48 hours in clean major orthopaedic procedures. On going large scale RCT may provide additional important data.

MRSA infections is another important topic in Japan. An adequate use of anti-MRSA agents is usually recommended for prevention, and should be well understood. Nasal and skin decolonization is also recommended in facilities with high MRSA infection or patients within high risk of MRSA carriage. Intraoperative VCM powder has not been proven its usefulness in meta-analyses and is not recommended in the current Japanese MRSA guidelines 2024 as well as the ICM2025.

There are several other important evidenced based SSI prevention measures that may be considered, such as povidone-iodine irrigation, antimicrobial sutures, and NPWT. These measures have proven their usefulness in a well-organized meta-analyses based on numerous RCTs and are recommended in various guidelines. To note, the recent NICE guidelines strongly recommend the use of antimicrobial sutures and reported a reduction in healthcare costs of £13.62/patient. This measure is also recommended by the CDC, WHO and JOA guidelines, and recently achieved a moderate agreement worldwide at the ICM2025.

In this talk, Dr Yamada will share his knowledge and gaps regarding SSI prevention, from his experience serving as a member of various domestic and international SSI prevention and treatment guidelines.

[Curriculum Vitae]
Koji Yamada, M.D.,PhD

GENERAL EDUCATION AND ACADEMIC INFORMATION
Education & Training

2025.6 –present Director
Department of Orthopaedic
Mizonoguchi Orthopaedic surgery Hospital

2020 –2025.5 Director
Department of Orthopaedic
Nakanoshima Orthopaedic surgery Hospital

2018 – 2020 Deputy Director - Spine Surgery
Department of Orthopaedic & Spine Surgery
Kanto Rosai Hospital
Japan Labour, Health and Welfare Organization Disorders

2009 – 2013 PhD course
Department of Orthopaedic surgery
Graduate school of Medicine and Faculty of Medicine,
The University of Tokyo

1996 – 2001 M.D.
College of Medicine
University of Chiba

Guidelines
- SSI prevention guideline for bone and joint surgery 2015 (JOA, JSSBJI)
- Practical guideline for MRSA infection management 2017 (JSC & JSSI)
- Clinical practice guidelines for antimicrobial prophylaxis in surgery 2016 (JSC/JSSI)
- The JAID/JSC Guide to clinical management of Infectious Diseases 2019 (JAID/JSC)
- APSIC guidelines for the Prevention of Surgical Site Infections 2018
- International Consensus on Musculoskeletal infections 2013 & 2018 (MSIS)

Honors and Awards

2020 Best Paper Award
Japanese Society for Spine Surgery and Related Research
Yamada K et al.: The overview of the "Clinical practice guidelines for antimicrobial prophylaxis in surgery" developed by Japanese Society of Chemotherapy and Japan Society for Surgical Infection

2012 Best Paper Award
Tokyo University, Department of Orthopaedic surgery, Awards Committee

2011 Best Paper Award (Taisho-Toyama Award)
Japanese Society for Study of Bone and Joint infections
Yamada K, Okazaki H, Tanaka S: Bacterial Contamination increases toward the end of the operation in clean orthopaedic surgery.
Journal of the Japanese Society for Study of Bone and Joint Infections 2010, 24, 13-18 in Japanese

2010 Best Presentation Award
The Japanese Orthopaedic Association
The 83rd Annual Meeting of the Japanese orthopaedic Association
Yamada K, Okazaki H, Iga T, Nagai I, Tatsumi T, Tohara C, Sato W, Hasegawa J,Tanaka S, Matsudaira K, Nakamura K: Surgical sites are contaminated even in clean orthopaedic surgeries.

2009 Best Paper Award
Japanese Society for Fracture Repair
Yamada K, Tokimura F, Tsuboi T, Ohori Y, Shouda T, Uesaki F, Oono K, Itoh S, Okazaki H: Does the antibiotic (cefazolin) spread into the femoral head when there is a neck fracture? Kosetsu 2009, 31, 6-10 in Japanese

LS2-2

Infection Control in Orthopaedic Trauma: From Principles to Practice

Masahiro Matsumoto[1], Hyonmin Choe[2], Taichi Kasahara[1], Yuichiro Murakami[1], Shuntaro Ikeda[1], Seiichiro Yamazaki[1], Naomi Kobayashi[3], Ichiro Takeuchi[1], Yutaka Inaba[2]

[1]Advanced Critical Care and Emergency Center, Yokohama City University Medical Center, Yokohama, JPN, [2]Orthopaedic Surgery, Yokohama City University School of Medicine, Yokohama, JPN, [3]Orthopaedic Surgery, Yokohama City University Medical Center, Yokohama, JPN

This lecture will focus on infection management in orthopaedic trauma care, including fracture-related infections (FRIs), highlighting current practices in Japan. In particular, we will introduce clinical approaches such as the Continuous Local Antibiotic Perfusion (CLAP) therapy, which has gained attention as a novel strategy for managing complex infections. By presenting real-world applications and outcomes of infection control in Japan, and comparing them with international standards, this session aims to share Japan's unique experience and contribute to global discussions on best practices in orthopaedic infection management.

[Curriculum Vitae]

Education

- March 1998: Graduated from Soyo High School (Private)
- April 2000: Enrolled in School of Human Sciences, Waseda University
- March 2002: Withdrew from Waseda University
- April 2002: Enrolled in Faculty of Medicine, Gunma University
- March 2009: Graduated from Faculty of Medicine, Gunma University

Professional Experience

- April 2009: Junior Resident, Hiratsuka Kyosai Hospital
- April 2011: Department of Orthopedic Surgery, Hiratsuka Kyosai Hospital
- April 2012: Advanced Critical Care and Emergency Center, Yokohama City University Medical Center (Supervising Physician)
- April 2015: Department of Orthopedic Surgery, Ashigara-kami Hospital
- April 2017: Department of Orthopedic Surgery, Yokohama City University Hospital (Supervising Physician)
- April 2019: Advanced Critical Care and Emergency Center, Yokohama City University Medical Center (Assistant Professor)
- Currently in this position

Professional Memberships

- Japanese Orthopaedic Association (Board-Certified Specialist)
- Japanese Association for Acute Medicine (Board-Certified Specialist)
- Japanese Society for Fracture Repair (Councilor)
- Japanese Association for Biological Osteosynthesis (Organizer)
- Emergency Orthopaedic Trauma Symposium (EOTS) (Organizer)
- Japanese Association for the Surgery of Trauma
- Japanese Society for Spine Surgery and Related Research

Certifications

- December 2016: Certified Kanagawa DMAT-L Member
- March 2018: Board-Certified Specialist, Japanese Orthopaedic Association
- March 2020: Certified Spine and Spinal Cord Specialist, Japanese Orthopaedic Association
- January 2021: Board-Certified Specialist, Japanese Association for Acute Medicine
- March 2021: Certified Musculoskeletal Rehabilitation Physician, Japanese Orthopaedic Association

ES

Molecular Approaches for Rapid Etiological Diagnosis in Orthopedic Infections

Hyonmin Choe, Yuta Hieda, Masashi Shimoda, Yutaka Inaba

Yokohama City University Department of Orthopaedic Surgery

Bone and joint infections often present diagnostic challenges, particularly due to the high rate of false-negative results in bacterial culture testing. One major factor contributing to this issue is the formation of biofilms on implant surfaces and within joint fluid, which hinders the recovery of viable bacteria through standard culture methods. In recent years, significant progress has been made in understanding the pathophysiology of biofilm-associated infections, and this has been reflected in the growing body of literature on the topic. When the causative organism cannot be identified by culture, selecting an appropriate antibiotic regimen becomes exceedingly difficult, complicating treatment strategies. Therefore, accurate diagnosis based on a thorough understanding of the underlying disease mechanisms and the use of appropriate diagnostic tools is essential for effective clinical management. Molecular diagnostic testing methods, such as real-time polymerase chain reaction (PCR), have been shown to be useful in detecting bacterial DNA in culture-negative cases of bone and joint infections. However, the clinical implementation of these technologies has historically been limited to specialized centers, thereby limiting their widespread use. The COVID-19 pandemic has significantly accelerated the adoption of automated molecular diagnostic platforms across a broad range of healthcare settings. These systems allow hospitals to perform in-house molecular diagnostic testing with improved accessibility. The introduction of fully automated nucleic acid testing platforms not only facilitates easy and rapid molecular diagnostics, but also offers advantages such as reduced contamination risk, shorter hands-on time, and improved diagnostic reproducibility. In Japan, The combination of automated genetic analyzers with multiplex PCR technology is now covered by national health insurance for the diagnosis of sepsis and other systemic infections. Although not yet reimbursed for musculoskeletal infections, a specialized multiplex PCR-based panel for synovial fluid—the BioFire® Joint Infection Panel—has been developed and is currently under evaluation. In this seminar, we will explore the pathophysiological features that contribute to the diagnostic difficulty of bone and joint infections, discuss the utility and limitations of molecular diagnostic technologies in this context, and present current evidence regarding the diagnostic accuracy of the BioFire® Joint Infection Panel for synovial fluid. Finally, we will consider future directions and potential clinical applications of molecular diagnostics in orthopedic infection management.

[Curriculum Vitae]

Hyonmin Choe, MD, PhD, is an orthopedic surgeon specializing in hip disorders, joint replacement, rheumatoid arthritis, pediatric orthopedics, and musculoskeletal infections. He is affiliated with Yokohama City University, where he is actively engaged in both clinical and academic orthopedic practice. He is a member of multiple academic societies, including the Japanese Orthopaedic Association, American Academy of Orthopaedic Surgeons, Orthopaedic Research Society, and Japanese Society for Bone and Joint Infections. He serves on the editorial review boards for the *Journal of Orthopaedic Research*.He contributes to international initiatives, including the International Consensus Meeting on musculoskeletal infections. His work bridges clinical excellence and research innovation, with a focus on improving surgical outcomes and developing diagnostic strategies for orthopedic infections.

MS

Silver-Coated Implants for Orthopaedic Implant-Associated Infections: Current Status and Future Directions

Masaya Ueno[1], Shunsuke Kawano[2], Masanori Fujii[1], Yosuke Oba[1], Masatsugu Tsukamoto[1], Tadayuki Morimoto[1]

[1]Department of Orthopedic Surgery, Faculty of Medicine, Saga University, Saga,
[2]Research Center of Arthroplasty, Faculty of Medicine, Saga University, Saga

Orthopaedic implant-associated infection (OIAI) is one of the most serious complications following total joint arthroplasty and spinal surgery. With the increasing number of surgical procedures and the aging population, its incidence is expected to rise. Various preventive strategies have been implemented, including optimization of patients' preoperative conditions, improvement of the surgical environment, staff education, appropriate antibiotic usage, reduction of operative time, and thorough irrigation. In recent years, global efforts have focused on developing biomaterials with antimicrobial properties. Notably, the recently held International Consensus Meeting 2025 concluded with over 70% agreement that silver-coated implants effectively reduce the incidence of surgical site infection (SSI) and periprosthetic joint infection (PJI).

Silver, an inorganic antimicrobial agent known since antiquity, is characterized by its broad-spectrum activity, high antimicrobial efficacy, low resistance potential, and relatively low cytotoxicity. Historical records suggest that Hippocrates used silver in wound care, and silver-containing topical agents such as silver sulfadiazine cream have been widely adopted in modern clinical settings. The antimicrobial mechanisms of silver include disruption of bacterial cell walls by silver ions, ribosome denaturation, inhibition of DNA replication, suppression of ATP production, and membrane perforation by silver nanoparticles. In addition, silver exhibits anti-biofilm effects by inhibiting extracellular polysaccharide production, destabilizing biofilm architecture, and suppressing quorum sensing.

Silver-coated implants have shown promising results, particularly in tumor prostheses, with reductions in infection rates and improved implant retention. Furthermore, silver-containing hydroxyapatite coatings, which combine antimicrobial activity with osteoconductivity, have contributed to infection prevention, even though statistically significant differences in clinical outcomes are still under investigation. Recent studies also indicate silver's efficacy against fungal infections, hematogenous dissemination, and synergistic effects when combined with vancomycin.

Despite these favorable findings, the clinical adoption of silver-coated implants remains limited. Future directions include reinforcing the clinical evidence base, establishing optimal coating techniques, and defining safe therapeutic concentrations.

This seminar will provide an overview of the latest clinical and experimental research on silver-coated implants, and explore the future landscape for their broader clinical application.

[Curriculum Vitae]

Masaya Ueno, MD, PhD, is Assistant Professor of Orthopaedic Surgery at Saga University, Japan.

He received his MD (2006) and a PhD in Microbiology (2017) from Saga University, where he co-developed Ag-PROTEX, the first antibacterial total-hip implant that integrates silver ions hydroxyapatite. Between 2018 and 2020 he collaborated at Stanford University on tissue-engineered constructs for critical-size bone defects. Dr Ueno's current clinical practice centres on hip arthroplasty, and Ag-PROTEX is now employed in routine cases at Saga University. Supported by JSPS grants, he is extending this work to regenerative scaffolds that couple immune modulation with bone metabolism. Board-certified in orthopaedic surgery, musculoskeletal rehabilitation, and sports medicine, he was selected as a 2024 Japanese Hip Society travel fellow to the Hospital for Special Surgery, New York, and received the Japan Advanced Technology Award for the development of Ag-PROTEX.

Abstracts

Poster Presentation

P-1

Isolated Tuberculosis Tenosynovitis with Multiple Rice Bodies of the Extensor Tendons in The Wrist: A Case Report

MAGDALEN ANTHONY, OMAR GILBERT, FELIX LAU HUEY YIH

HOSPITAL TENGKU AMPUAN RAHIMAH KLANG

INTRODUCTION
Mycobacterium tuberculosis (MTB) infection still remains a major global health issue especially in developing and undeveloped countries. Wrist joint tuberculosis (WJ-TB) is a rare about less than 1% of all osteoarticular TB. Herein, we report the diagnosis and treatment of a patient with neglected wrist extensor tendon sheath tuberculosis.

CASE REPORT
A 50-year-old gentleman presented with isolated dorsum hand swelling for 4 years. Its progressive diffuse swelling associated with pain and restriction of movements(ROM). A hand X-ray was performed which revealed soft tissue density increase, soft tissue swelling, and periarticular osteoarthritis changes.MRI showed multiple loose bodies in 4th extensor tendon sheath with surrounding focal fluid collections and wrist images were consistent with extensor tenosynovitis with distal radial bony involvement. Extensor muscle tendons were intact. Based on initial assessment and investigations, a conclusive diagnosis was not achieved and patient underwent a excision biopsy where intraoperatively multiple rice bodies around the wrist extensor tendons were noted. Histopathology report showed multinucleated giant cell associated with caseating granulomas and the microbiologic examination in Lowenstein Jensen medium revealed MTB. He was started on anti-TB treatment with hand physiotherapy and occupational therapy. His pain and ROM improved with anti-TB treatment without any significant side effects of the treatment.

DISCUSSION
Early diagnosis of WJ-TB is challenging due to its deceptive presentation and spectrum of presentations. Delayed treatment leads to osteo-cartilage destruction and joint space narrowing of the WJ which lead to a significant morbidity. The diagnosis of WJ-TB is made through histologic and microbiologic examinations with MRI help. Multidrug anti TB is the mainstay of treatment in all WJ-TB patients, however, surgery is recommended when there is nerve compression, impending bone collapse, or the need for joint debridement, drainage of a large abscess, formation of rice bodies, or deformity correction in the setting of healed disease. Combination of physiotherapy and occupational therapy in conjunction with oral drugs is important to minimize the disability.

CONCLUSION
Tuberculosis is a rare cause of chronic inflammatory swelling of the hand, where MTB should be kept in mind as an infectious agent especially in developing countries. In order to prevent any delay in diagnostic evaluation, all steps should be taken carefully

P-2

Use of MicroDTTect and Blood Culture Media with Resins for Diagnosing Chronic Periprosthetic Infections in Patients with Antibiotic-Loaded Temporary Spacers and antibiotic treatments

Fabiana Giarritiello[1,2], Antonio Caldaria[3], Luca Saccone[3], Angelo Baldari[3], Gian Mauro De Angelis d'Ossat[3], Luca Laverde[3], Alessio Palumbo[3], Francesco Franceschi[3], Carlo Luca Romano[2]

[1]Department of Medicine and Health Sciences "V. Tiberio", University of Molise, [2]Romano Institute, 1001 Tirana, [3]Department of Orthopaedic and Trauma Surgery, San Pietro Fatebenefratelli Hospital, Rome

Background
Chronic periprosthetic infections, particularly after joint implantation, pose significant treatment challenges. Temporary spacers made of antibiotic loaded cement are used to manage infections while awaiting permanent replacement. However, biofilm and the cement's protective barrier complicate diagnosis and treatment, often leading to persistent infections despite initial antibiotic therapy.
Purpose
This case study demonstrates how combining MicroDTTect, a closed circuit device with chemical processing using dithiothreitol, with blood cultures effectively identifies pathogens in chronic periprosthetic infections in patients with antibiotic loaded temporary spacers, even during systemic antibiotic treatment.
Material and Methods
A 76 year old male patient underwent shoulder prosthesis implantation in 2021. Several months later, he developed increasing pain, an axillary abscess, and fistulization near the surgical site. Skin swabs were obtained, with the second testing positive for Streptococcus dysgalactiae spp., resistant to clindamycin and erythromycin, and showing intermediate resistance to levofloxacin. Pathogen identification and antibiogram testing were performed using the VITEK 2 system. The patient underwent shoulder prosthesis removal and implantation of an antibiotic loaded spacer, but the infection persisted. A spacer revision was performed, and the removed spacer was analyzed using the MicroDTTect system, which employs antibiofilm technology and produces an eluate for coupling with blood culture media containing antibiotic binding resins.
Results
The combined diagnostic approach using MicroDTTect and blood culture media successfully identified Enterococcus faecalis, the pathogen that was missed in previous tests. The patient healed without further complications and does not require any additional surgery.
Conclusion
This case shows that MicroDTTect, combined with blood culture media containing antibiotic binding resins, can effectively identify pathogens from retrieved spacers, even during antibiotic treatment. This approach enhances diagnostic accuracy by overcoming biofilm and cement barriers, ensuring accurate pathogen detection and facilitating tailored treatment decisions.

P-3

Rapid Etiological Diagnosis of Periprosthetic Joint Infection Using Combination of Automated Multiplex and MRSA-Specific PCR

Hyonmin Choe, Yuta Hieda, Masashi Shimoda, Tomotaka Yoshida, Hideo Mitsui, Yutaka Inaba

Yokohama City University

Background: Periprosthetic joint infection (PJI) is a serious complication after joint arthroplasty, and timely identification of the causative organism is essential for effective treatment. Conventional bacterial cultures often require several days and may yield false negatives, especially in patients with prior antibiotic exposure. Recently, multiplex PCR technologies have emerged as rapid diagnostic alternatives. The BioFire FilmArray Joint Infection Panel detects a wide range of pathogens, and the GENEQube-MRSA kit identifies the mecA gene associated with methicillin resistance.
Purpose: To evaluate the diagnostic accuracy and clinical utility of combining the BioFire PJI panel and GENEQube-MRSA (auto-PCR) for the rapid etiological diagnosis of PJI.
Materials and Methods: Eighty-two patients with suspected PJI who underwent joint fluid aspiration between 2022 and 2024 were included. PJI diagnosis was confirmed according to the 2018 International Consensus Meeting (ICM) criteria. The results of auto-PCR and conventional bacterial cultures were compared, and their concordance with the definitive diagnosis was assessed. In 21 prospective cases, the time from sample collection to result reporting was recorded.
Results: Of the 82 cases, 52 were diagnosed as PJI. Bacterial cultures were positive in 31 cases, while auto-PCR was positive in 39. Auto-PCR was negative in 4 culture-positive cases but detected 12 additional cases of culture-negative PJI. No false positives were noted in aseptic loosening cases. The sensitivity and specificity of auto-PCR were 0.78 and 1.00, respectively. Auto-PCR results were available within 2 hours in 13 cases, overnight in 7, and in 3 days in 1 case, while the median time to bacterial culture results was 6.6 days.
Conclusion: The combination of multiplex and MRSA-specific PCR provided rapid and reliable etiological diagnosis of PJI, with accuracy comparable to or exceeding that of conventional culture. Its speed and simplicity make it a valuable tool for guiding early treatment decisions and antibiotic selection in clinical practice.

P-4

Usefulness of the Myeloperoxidase Point-of-Care Test for Diagnosis of Periprosthetic Joint Infection

Shinsuke Ikeda[1], Katsufumi Uchiyama[3], Yojiro Minegishi[2], Masaki Nakamura[4], Makoto Kubo[5], Gen Inoue[2], Masashi Takaso[2]

[1]Department of Orthopaedic Surgery, Yokohama General Hospital, [2] Department of Orthopaedic Surgery, Kitasato University School of Medicine, [3]Department of Patient Safety and Healthcare Administration, Kitasato University School of Medicine, [4]Department of Laboratory Medicine, Kitasato University School of Medicine, [5]Department of Microbiology, Kitasato University School of Allied Health Sciences

[Introduction]
Various biomarkers have been reported for the diagnosis of periprosthetic joint infection (PJI), but none can diagnose PJI with perfect accuracy. Alpha-defensin is a highly regarded biomarker and is included in the minor criteria of the 2nd International Consensus Meeting (ICM) diagnostic criteria for PJI. However, its widespread use is limited by high costs. Myeloperoxidase (MPO) is an enzyme that exhibits microbicidal activity against pathogenic microorganisms by catalyzing the production of hypochlorous acid. We previously reported that MPO is a promising biomarker for PJI. In this study, we evaluated a point-of-care test (POCT) for MPO using immunofluorescence, which showed high diagnostic accuracy.

[Methods]
Patients who developed symptoms more than three months after their most recent surgery and underwent revision total joint arthroplasty at our institution were included. They were classified into a PJI group or a aseptic failure group according to the 2nd ICM PJI diagnostic criteria. To evaluate the diagnostic potential of MPO, synovial fluid levels of MPO and alpha-defensin were measured using enzyme-linked immunosorbent assays (ELISA), and their diagnostic accuracy was compared. In addition, the accuracy of the MPO POCT was assessed.

[Results]
We analyzed data from 26 patients with PJI and 24 with aseptic failure. MPO and alpha-defensin levels measured by ELISA were highly correlated. At the optimal cut-off value, both tests showed a sensitivity of 92.3% and a specificity of 95.8%. The MPO POCT provided results within 10 minutes and demonstrated a sensitivity of 96.2% and a specificity of 91.7%.

[Discussion]
MPO measured by ELISA showed diagnostic accuracy comparable to that of alpha-defensin. Furthermore, the MPO POCT demonstrated high diagnostic accuracy and rapid results. This suggests that MPO POCT is a promising alternative to the alpha-defensin test for diagnosing PJI.

P-5

Antimicrobial Effects of Intraoperative Wound Irrigation with Povidone-Iodine and Hypochlorous Acid for Prevention of Periprosthetic Joint Infection: An In Vitro Study

Iku Tomonaga[1], Hironobu Koseki[2], Shiro Kajiyama[3], Masashi Umeki[1], Itaru Furuichi[4], Makoto Osaki[1]

[1]Department of Orthopaedic Surgery, Graduate School of Biomedical Sciences, Nagasaki University, [2]Department of Health Sciences, Graduate School of Biomedical Sciences, Nagasaki University, [3]Sports Medicine Center, Nagasaki University Hospital, [4]Department of Orthopaedic Surgery, Ureshino Medical Center

[Introduction] Intraoperative wound irrigation is widely performed for preventing periprosthetic joint infection (PJI). The WHO and CDC recommend diluted povidone-iodine (PVP-I) for PJI prevention, however, evidence regarding the efficacy of PVP-I irrigation in the presence of metallic biomaterials remains insufficient. This study evaluated the antimicrobial and anti-biofilm effects of different irrigation solutions at various stages of biofilm formation using an in vitro model.
[Methods] Suspension of *Staphylococcus epidermidis* was applied to titanium alloy substrates and incubated for six hours to form early stage biofilm. Four irrigation solutions were tested: normal saline (control), 0.35% PVP-I, and two different pH adjusted hypochlorous acid solutions (pH 5.5 and pH 8.0). Irrigation was performed at three different time points: before bacterial exposure, immediately after adhesion, and after biofilm formation. Viable bacterial counts were assessed using the dilution plate method and expressed as Colony-Forming Units (CFU). Comparisons of the results were performed statistically.
[Results] Before bacterial exposure: The pH 5.5 group showed significantly lower bacterial counts compared to the other three groups. Immediately After the adhesion: The CFU counts (mean±SD, $\times 10^5$ CFU/mL) in the control group was 2.9 ± 1.6, while PVP-I, pH 5.5, and pH 8.0 groups showed almost no viable bacteria ($P < 0.05$). After biofilm formation: CFU counts were significantly lower in the PVP-I (0.8 ± 0.9), pH 5.5 (29.3 ± 24.7), and pH 8.0 (4.4 ± 4.2) groups compared to control group (49.0 ± 11.5).
[Discussion] Irrigation with diluted povidone-iodine and pH-adjusted hypochlorous acid solutions was effective in an in vitro PJI model, with efficacy varying by solution type and timing.

P-6

Efficacy of Continuous Local Antibiotics Perfusion (CLAP) Therapy for Fracture-Related Infection: A Case Series

Iku Tomonaga[1], Shiro Kajiyama[2], Kenji Taguchi[1], Mitsuru Doi[1], Keita Yamaguchi[1], Makoto Osaki[3]

[1]Trauma Center, Nagasaki University Hospital, [2]Sports Medicine Center, Nagasaki University Hospital, [3]Department of Orthopedic Surgery, Nagasaki University Hospital

[Introduction] Fracture-related infection (FRI) is a major complication that impairs fracture healing and treatment. Continuous local antibiotics perfusion (CLAP) has recently been recognized as a novel treatment method for FRI. This study reports the treatment outcomes of patients with FRI who were treated with CLAP.
[Methods] We retrospectively reviewed 15 patients who underwent CLAP for FRI at our institution between May 2020 and December 2024. The cohort consisted of 13 males and 2 females, with a mean age of 42.7 years.
[Results] The anatomical sites treated with CLAP included the lower leg (seven cases), foot (four cases), forearm (two cases), thigh (one case), and pelvis (one case). The average duration of CLAP was 13.7 days. Implant retention was achieved in 13 cases. In one case, implant removal was performed concurrently due to fracture healing. One patient experienced reinfection after CLAP, requiring implant removal and repeated CLAP. Ultimately, infection control and bone healing were achieved in all the cases. No renal dysfunction or hearing impairment associated with gentamicin use in CLAP was observed in any patient.
[Conclusion] CLAP may facilitate infection control in FRI while preserving implants, potentially improving the treatment outcomes.

P-7

Successful Management of Emphysematous Osteomyelitis After an Open Pelvic Fracture Using Continuous Local Antibiotics Perfusion (CLAP): A Case Report

Shunsuke Takahara, Yu Fujiwara

Department of Orthopaedic Surgery, Hyogo Prefectural Kakogawa Medical Center

Background
Emphysematous osteomyelitis is a rare but life-threatening infection with a reported high mortality rate. We present a case of emphysematous osteomyelitis that developed after an open pelvic fracture and was successfully managed with Continuous Local Antibiotic Perfusion (CLAP).
Case Presentation
A 19-year-old male suffered multiple injuries after being struck by a truck and presented in hemorrhagic shock with unmeasurable blood pressure. He was diagnosed with a Faringer zone I open pelvic fracture (AO: 61C3.1) associated with mesenteric and sigmoid colon injuries, massive intra-abdominal hemorrhage, and extensive soft tissue damage extending from the perineum to the right iliac region, inguinal area, and thigh. Both sacroiliac joints, sacrum, and right ilium were exposed. Additional injuries included extraperitoneal bladder rupture, rectal injury, and penile trauma. Initial resuscitation included a massive transfusion protocol (MTP), resuscitative endovascular balloon occlusion of the aorta (REBOA), transcatheter arterial embolization (TAE), preperitoneal pelvic packing (PPP), exploratory laparotomy, and high-route external fixation. Colostomy and bladder repair were performed for infection source control. The following day, percutaneous pelvic screw fixation (transiliac, iliosacral, and ramus screws) was performed to stabilize the pelvis and facilitate extensive wound management. Because of irreparable anal sphincter damage, a rectal transection was conducted. On post-injury day 9, systemic and local infection signs became apparent, and computed tomography (CT) revealed intraosseous gas in the right ilium. Intraoperatively, the bone marrow appeared necrotic, blackened, and malodorous. Cultures identified Escherichia coli, Enterococcus faecalis, Bacteroides fragilis, and Clostridium species, confirming emphysematous osteomyelitis. CLAP with gentamicin was administered via an intramedullary needle, leading to rapid infection control. Despite extensive bone exposure, planned soft tissue reconstruction was not required due to robust granulation tissue formation, enabling successful wound coverage with skin grafting. The patient was able to walk with a walker at four months postoperatively and remained free of recurrence at the two-year follow-up.
Conclusion
Emphysematous osteomyelitis is a rare but potentially fatal condition, with a reported 32% mortality rate. In this case, early detection of intraosseous gas on CT and timely surgical intervention, combined with CLAP for aggressive source control, led to rapid infection resolution and favorable long-term outcomes

P-8

Clinical Outcomes of External Locking Compression Plate Fixation for Open Lower Extremity Fractures: A Case Series Study

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Introduction: Traumatic femoral and tibial fractures are prevalent in low- and middle-income countries, where internal fixation (intramedullary nails or plates) remains the primary treatment. External fixators are typically reserved for complex open fractures with soft tissue compromise, valued for their cost-effectiveness and equipment accessibility. The external application of locking compression plates (LCPs) as mono-lateral external fixators is not novel but remains underutilized in conventional practice. Although described for managing open fractures, nonunion, septic arthritis, and distraction osteogenesis, this technique lacks prominence in classical orthopedic literature. LCPs, designed for angle-stable internal fixation, can function externally as low-profile frames, offering advantages over traditional bar-Schanz pin or circular fixators. Finite element analyses suggest enhanced flexibility with LCP external fixation, promoting secondary bone healing. The joint-sparing design facilitates early range of motion and functional rehabilitation, while the compact frame improves patient tolerance and daily functionality. Recent studies highlight its utility not only in lower extremity fractures but also in those involving the upper extremity.
Purpose: This study evaluates the reliability and clinical viability of LCP external fixation in complex lower extremity fractures.
Material and Methods: Six patients (2 femoral, 4 tibial fractures) treated with external LCP fixation at Imam and Golestan Educational Hospitals in Ahvaz (the primary trauma centers of Khuzestan Province, Iran) from January 2019 to December 2021 were retrospectively reviewed. Outcomes included bone union time, alignment, residual pain, need for narcotics, wound complications (pin tract infections, loosening), and quality of life (assessed via the EQ-5D-3L questionnaire and EQ-VAS).
Results: Union was achieved in all cases. One patient required an antibiotic-loaded cement spacer (later replaced with bone graft via the Masquelet technique). All patients regained non-assisted ambulation and were pain-free by treatment completion. Two patients developed knee flexion contractures requiring surgical intervention.
Conclusion: External LCP fixation demonstrates promise as a primary treatment for severe open lower extremity fractures or those complicated by osteomyelitis, offering functional recovery with minimal complications.
Level of Evidence: Level IV, retrospective case series

P-9

Effects of high antibiotic concentrations applied in a continuous local antibiotic perfusion therapy on human umbilical vein endothelial cells

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Background: Continuous local antibiotic perfusion (CLAP) has recently attracted attention as a novel drug delivery system for orthopaedic infections. CLAP includes direct continuous infusion of high concentration gentamicin (GM) into the bone marrow or soft tissue. However, its influence on the vascular endothelial cell has not been well studied.
Purpose: This study aimed to examine the effects of high concentration antibiotics on human umbilical vein endothelial cells (HUVECs).
Methods: HUVECs were obtained from Kurabo (Osaka, Japan) and cultured in endothelial cell growth medium under standard conditions (37°C, 5% CO_2, humidified incubator). The culture medium was replaced every 3 to 4 days. We confirmed to be viable in the wells one day after seeding HUVECs before GM exposure. The maximum GM concentration was set at 10000 μg/mL, and below that was set up in stages. Cell viability assay was used to evaluate live cells rate, apoptosis assay to evaluate apoptosis rate, and tube formation assay to evaluate angiogenic potential.
Results: Cell viability was significantly decreased at GM concentrations above 4000, 3000, and 2000 μg/mL at 4, 7, and 14 days after GM exposure. Apoptosis rate was significantly increased at GM concentrations above 2000 μg/mL. Angiogenic potential was significantly decreased at GM concentrations above 500 μg/mL 14 days after GM exposure.
Discussion: In this study, GM had a concentration-dependent effect on HUVECs. We have previously investigated the effect of GM on human bone derived cells, and found that cell viability was significantly decreased at GM concentrations above 250 μg/mL after 14 days of GM exposure and apoptosis rate was significantly increased at concentrations above 750 μg/mL. Comparing the results of that study, it is possible that vascular endothelial cells are more resistant to higher concentrations of GM than human bone derived cells. However, angiogenic potential was affected at relatively low concentrations. So further studies such as evaluation of migration ability by transwell invasion assay and analysis of gene expression by PCR are required.
Conclusion: Increasing GM concentrations led to a dose-dependent decrease in cell viability, increased apoptosis rates, and reduced angiogenic potential in vascular endothelial cells. Further studies are required to determine the optimal concentration of GM in CLAP.

P-10

Effective Use of Ultrasound-Guided Aspiration and Lavage for Lower Leg Soft Tissue Infection Caused by Group A Streptococcus in a Professional Rugby Player

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Background Purpose
A professional rugby player developed a soft tissue infection in the lower leg caused by Group A Streptococcus during the competitive season. Despite presenting with fever and elevated inflammatory markers, early and repeated ultrasound-guided aspiration and lavage led to rapid clinical improvement and return to play. We report this case to highlight the efficacy of this minimally invasive approach in a high-performance athlete.

Material and Methods
The patient was a 24-year-old male professional rugby player who sustained a contusion to his left lower leg during a match. Pain and swelling developed the following day. On day 3, he developed a fever, and on day 4, he visited an orthopedic clinic. His temperature was 38.4; blood tests revealed a white blood cell count of 15,000 and CRP of 23 mg/dL. He was admitted with a diagnosis of cellulitis. Ultrasound-guided aspiration revealed a subcutaneous abscess, and Gram-positive cocci were identified on Gram staining. Empiric therapy with a penicillin-based antibiotic was initiated. MRI showed extensive infection involving the fascia of the lower leg and subcutaneous abscess formation. On day 5, culture results confirmed Group A Streptococcus. Daily ultrasound-guided aspiration and lavage with normal saline were performed. By day 7, his temperature had normalized to 36, and laboratory findings improved (WBC 6,300; CRP 3.13 mg/dL). He was discharged on day 8 and resumed training on day 9. He returned to competition and participated in a match on day 13.

Results
Ultrasound-guided aspiration and lavage effectively reduced infection and inflammation without the need for surgical debridement. Rapid clinical and laboratory improvement was observed, enabling early return to professional sports activity.

Conclusion
Group A Streptococcus can cause severe infections such as necrotizing fasciitis. In this case, although MRI indicated extensive fascial involvement, early and repeated ultrasound-guided lavage prevented disease progression and enabled rapid recovery. This approach may be an effective and minimally invasive treatment option for managing soft tissue infections in athletes.

P-11

Clinical outcomes of Continuous Local Antibiotics Perfusion (CLAP) for finger osteomyelitis: A case series

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Background: Finger osteomyelitis is challenging, often requiring multiple operations and prolonged treatment, and sometimes resulting in amputation. This study describes clinical outcomes of Continuous Local Antibiotics Perfusion (CLAP) for finger osteomyelitis.

Purpose: This study aimed to evaluate the clinical outcomes of CLAP for nine patients with finger osteomyelitis.

Material and Methods: This retrospective study included nine patients (7 males, 2 females; mean age, 60 years) who underwent CLAP for finger osteomyelitis between 2020 and 2024. All patients received irrigation and debridement followed by CLAP for 7 days. The following variables were assessed: patient demographics (age, sex, diabetes, and other immunocompromised conditions), infection-related factors (onset, infection site, duration, and causative pathogens), treatment details (CLAP, arthrodesis, gentamicin (GM) blood concentration, and number of operations), and clinical outcomes (remission, recurrence, length of hospital stay, joint fusion, and patient complaints).

Results: Three patients had diabetes, and no other immunocompromised conditions were identified. The identified causes of infection were animal bites (n = 4) and trauma-related complications (n = 2). The infection sites were located as follows: the distal phalanx in two patients, the middle phalanx in one patient, the distal and middle phalanx in five patients, and the middle and proximal phalanx in one patient. The mean duration before surgery was 5.8 weeks. In four patients, the causative pathogens could not be identified. In all cases, CLAP was performed as intramedullary antibiotics perfusion (iMAP). The CLAP route was constructed by bone marrow needles in six cases, and by insertion of ATOM tube into the medullary cavity in three cases. Terminal tendon rupture was identified in seven patients. No treatment interruptions were observed due to elevated GM blood levels or other complications. All patients achieved remission following a single operation, with no recurrence during a one-year follow-up. The median length of hospital stay was 10 days. Arthrodesis was performed in four patients, while joint fusion was not achieved in two patients. At the time of final follow-up, no patients reported any complaints.

Conclusion: In nine patients with finger osteomyelitis treated with CLAP, all achieved remission after a single surgery, with no recurrence.

P-12

Treatment of Infection after Knee Osteotomy with Continuous Local Antibiotic Perfusion (CLAP): Report of Four cases

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Back ground:
The management of infections following knee osteotomy remains controversial, and in most cases, plate removal surgery is required.
Purpose:
This is a report of four post operative infection cases that we have encountered, to provide the usefulness of continuous local antibiotic perfusion (CLAP) in managing knee osteotomy-related infections.
Material and Methods:
We reviewed and compared four cases of knee osteotomy-related infections in our department since 2022. Two cases were treated with debridement and plate removal surgery, while the other two cases were managed using the CLAP technique.
Results:
All the cases were successfully treated. Patients who underwent debridement and plate removal surgery required a non-weight-bearing period. In contrast, those treated with the CLAP technique were able to retain the plate; therefore, weight-bearing restrictions were not required.
Conclusion:
CLAP was effective in managing infections after knee osteotomy, allowing plate preservation without weight-bearing restrictions.

P-13

Evaluation of the effects of high-concentration antibiotics on rat femur using the iMAP model

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Background: Continuous local antibiotic perfusion (CLAP) therapy is a method for controlling infections by continuously perfusing high-concentration antibiotics locally. In vitro studies have shown that high concentrations of antibiotics have a relatively large impact on bone tissue-derived cells; however, their effects in vivo remain unclear. In this study, we created an intra-medullary antibiotic perfusion (iMAP) model in the rat femur, one form of CLAP therapy, and investigated the effects of high-concentration antibiotics on cells within bone tissue.
Purposes: To investigate the effects of high-concentration antibiotics on cells within bone tissue, renal function, and drug blood concentration in the rat femur iMAP model.
Material and Methods: Eighteen-week-old Wistar rats were used in the study. An iMAP pin for rat (Cubex Medical) was inserted into the femoral fossa, and a micro-infusion pump (iPRECIO SMP-200, Primetech) continuously delivered gentamicin (GM) at a rate of 15 μL/hr for one week. GM was administered at six different concentrations (0, 100, 250, 500, 1000, and 2000 μg/mL; n=5 per group). After one week, we assessed cell viability in bone tissue, gene expression of bone differentiation and angiogenesis-related markers in both bone and bone marrow using real-time RT-PCR, and potential systemic side effects by measuring blood GM levels and renal function.
Results: Cell viability significantly decreased at 2000 μg/mL, however remained above 80% at concentrations of 1000 μg/mL or lower. Gene expression analysis revealed that in bone tissue, RUNX2 expression was significantly reduced at 2000 μg/mL, and VEGF expression decreased at concentrations of 750 μg/mL or higher. In bone marrow tissue, OSX expression was significantly reduced at 2000 μg/mL, however no significant differences were observed at lower concentrations. Both cell viability and gene expression showed a dose-dependent decline with increasing GM concentration. However, systemic side effects were minimal, with no significant increases in blood GM levels or renal dysfunction observed.
Conclusion: Using a rat femur iMAP model, we demonstrated that GM at 1200 μg/mL, the concentration currently used in CLAP therapy, may have mild negative effects on local bone tissue cells in vivo. However, the overall impact appears to be limited, and no significant systemic toxicity was detected. Since this study only examined short-term effects, further long-term investigations are needed to fully assess the safety and efficacy of CLAP therapy with GM.

P-14

A Modified Induced Membrane Technique for the Forearm Infected Segmental Bone Loss

Ahmad S. Allam

Banha University

Introduction: The use of a temporary bone cement spacer followed by bone grafting, is one of the recent treatment strategies for post-traumatic bone defects, especially in the presence of infection. External fixators are integral part of the 1st. stage of this technique with the added complications of external fixation in the forearm.
Patients and Methods: This is a prospective study that included a series of 16 patients with infected long bone defects in the radius or ulna. Patient`s age was from 9 - 46 years. Average bone loss was 6.5 cm. (range: 4.5 – 11 cm.). A special novel modification in the original technique; was bone stabilization during 1st. stage using special K. wires *internal* construct in a special configuration (instead of *external* fixation), following placement of the antibiotic-loaded cement spacer. All patients were treated in the 2nd stage with the application of free non-vasculized bone grafting (mainly fibula) and plate fixation.
Results: All cases showed bone union with sound consolidation in all; with persistence of infection in only one case. Total complications were few and minor after a minimum follow-up of two years (range 3-4.5 y.).
Conclusion: This modified Masquelet induced membrane technique is a satisfactory option in the management of infected segmental forearm bone defects at a low complication rate.

P-15

HYDATID DISEASE OF THE FLEXOR SYNOVIAL SHEETH OF THE FOREARM & THE HAND, A CASE REPORT

Ahmad S. Allam

Banha University

Background: Hydatid disease is caused by the tapeworm Echinococcus. Parasitic infestation is common among sheep farmers, (in the form of visceral involvement, mainly the liver) but bone lesions are rare. Subcutaneous involvement is rarer. According to the best of my knowledge, intrasynovial or intrabursal affection has not been reported before.

Patient: A 35 years old; male patient working as a sheep butcher, was presented with a painful distal forearm and palm soft tissue (cystic) swelling with communication (+ve cross fluctuation test) to another swelling on the volar aspect of proximal phalanx of the little finger of his right hand; of more than 2 y. duration. This hand was operated upon (due to miss diagnosis) three times during these last two years: the first operation was a release for carpal tunnel syndrome, the second was just a drainage (under local anesthesia) for a suspected infection, and the last was an excision for a suspected compound palmar ganglion. All surgeries were followed by progression of the condition.

Management: Nerve conduction study showed complete degeneration of the median nerve. MRI examination showed mild diffuse thickening of the synovial wall of the bursa surrounding the flexor tendons at the distal forearm and hand regions. The bursa was markedly distended with fluid and numerous symmetric rice like bodies of low T1 and T2 signals. Surgical exploration gross findings and histopathological examination confirmed the diagnosis of hydatid disease with numerous small double walled cysts and scolices formation

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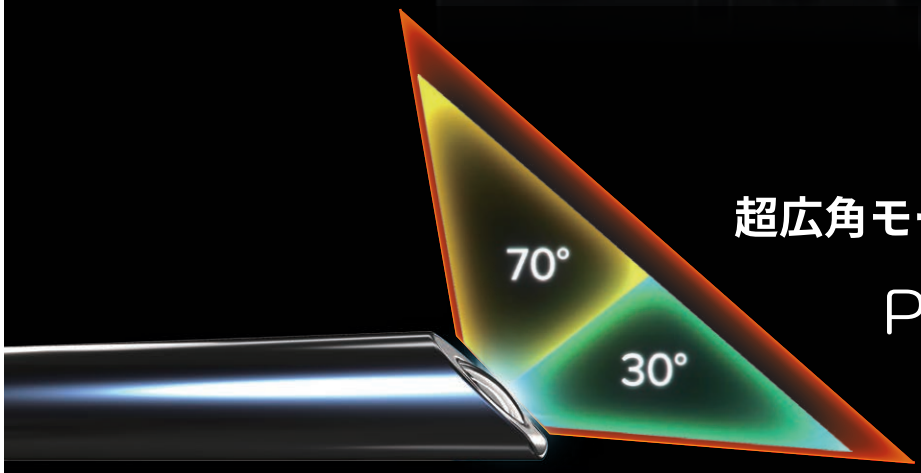

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