

POSTER ABSTRACTS

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[P01] Does Early Wound Leakage from Antibiotic Carriers Affect Outcome in Patients Treated for Osteomyelitis and Fracture-related Infection?

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Introduction: Local antibiotic carriers are widely used to treat osteomyelitis and fracture-related infection (OM/FRI). We studied a large group of patients having absorbable local antibiotics as part of their surgery, to determine if clinical outcome was affected by postoperative wound leakage from the carrier.

Methods: 418 patients treated for OM/FRI with local antibiotics, were prospectively reviewed for wound leakage. Patients were followed for a mean of 4.5 years (range 1.3-8.3 years) and outcomes determined.

Results: 179 patients received a calcium sulphate carrier (CS), 180 received a calcium sulphate/hydroxyapatite carrier (CG) and 59 received a combination of both carriers (CS-CG). All carriers delivered aminoglycoside antibiotics.

Wound leakage occurred in 68/418 (16.3%) cases (CS;20.1%, CG;10.6%, CS-CG;22%). Infection recurred in 34/418 (8.13%) cases (CS;11.2%, CG;4.4%, CS-CG;10.2%). Wound leakage and recurrence were more frequent with CS and CS-CG vs CG; $p < 0.0001$.

There was no difference in reoperation rates between patients with or without wound leaks (4/68 vs 10/350; $p = 0.2$).

Infection recurred in 9/68 (13.2%) patients with wound leaks and in 25/350 (7.1%) without leaks ($p = 0.093$). 87% of recurrences occurred in patients without an early wound leak.

Conclusion: Wound leakage affects 10-20% of patients. Frequency is related to the proportion of calcium sulphate implanted. Almost 90% of wound leaks healed normally without surgical intervention or recurrence. It is reasonable to have an initial conservative approach to management of early leakage. These data reinforce the importance of good soft tissue closure, to prevent wound leakage, but we found no evidence that this predisposes to recurrence.

[P02] Evaluation of Multiplexed PCR to support diagnosis of Bone and Joint infection in the Department of Microbiology at Oxford John Radcliffe Hospital

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Septic arthritis is a serious medical condition with potential for significant morbidity and mortality and is routinely diagnosed using gold standard culture techniques. The aim of this study was to evaluate the FilmArray* Joint Infection Panel for native joint fluids. The FilmArray* was compared to gold standard culture methods on 57 presumed native joint samples received sequentially at the Oxford University Hospitals (OUH) Microbiology lab between 6/4/21 and 28/6/21. When patient details were analysed retrospectively, however, it transpired 7 were from prosthetic joints and 3 were bursa rather than joint fluids. Excluding these, we analysed samples from 47 native joints (39 knee, 2 hip, 2 shoulder, 2 elbow, 1 ankle and 1 sacro-iliac joint).

A total of 9 positives were identified on the FilmArray* and 4 out of 48 samples were positive by both FilmArray* and Culture. The sensitivity was 100% and the specificity was 86.6%. The mean turnaround time of the FilmArray* was one hour and culture was 49.5 hours with the standard deviation of 5.9 hours. Rapid results from the BJI were assessed clinically and were concluded as having potential clinical impact on patient management, thus the assay could be used, in addition to standard culture methods, for adult and paediatric patients based of specialist advice. Some organisms are not included in the BJI panel that may be clinically significant and may limit the use and value of this test for prosthetic sample types.

*Disclaimer: FilmArray is a Biofire product.

[P03] Late-onset prosthetic hip joint septic arthritis caused by *Campylobacter fetus*: a clinical case report

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This case report describes an uncommon presentation of late-onset prosthetic hip joint infection caused by *Campylobacter fetus*, a highly unusual pathogen. Here we present the events leading to admission, clinical course, diagnostic findings and management of a 70-year-old patient who is 5 years on from his primary total hip replacement.

He is non-smoker with a history of well controlled non-diabetic hyperglycaemia. His main risk factor for *C. fetus* infection was identified to be consumption of poorly cooked liver products, but he had no preceding gastrointestinal illness which is commonly seen with campylobacter infection. The patient's main complaint was hip pain radiating to the thigh and being unable to bear weight bear on the ipsilateral leg. His bloods revealed high CRP, but the no acute signs of infection were seen on xray or CT imaging.

The initial culture of synovial fluid aspirate was negative, despite positive Synovasure point of care testing. *C. fetus* infection was only diagnosed following 16S rRNA PCR analysis, following which a culture positive result was achieved using campylobacter medium. The patient had a successful first stage revision surgery during admission and made a good post-operative recovery. He was treated with outpatient oral doxycycline.

This report aims to contribute to the understanding of prosthetic joint infections caused by unusual pathogens and emphasizes the importance of a multidisciplinary approach, thorough history taking and diligent monitoring in the management of similar cases.

[P04] Experience of a Nurse-Led Clinic in Monitoring Adverse Drug Reactions to Fluoroquinolones at a Specialist Orthopaedic Hospital: A Cohort Study

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Introduction: Fluoroquinolones (FQs) are widely used to treat bone and joint infections. However, recent warnings from the Medicine and Healthcare Products Regulatory Agency (MHRA) have raised concerns about severe and potentially permanent adverse drug reactions (ADRs) associated with FQs. This study evaluates the effectiveness of our nurse-led clinic in detecting and managing ADRs in patients treated with FQs for bone and joint infections (BJIs).

Methods: We conducted a retrospective review of data collected prospectively for patients who received FQs for BJIs between April 2017 and March 2023.

Results: The study included 175 patients treated with ciprofloxacin for a mean duration of 52 days (range 14 to 91 days). Forty-five patients (26%) reported an ADR, including gastrointestinal disturbance (20 cases), dermatological or allergic reactions (rash 6, angioedema 1, thrush 2), arthralgia (5), neurological disorders (headache 1, increased seizure frequency 1, sleep disturbance 2), haematological disorders (neutropenia 2, anaemia 1), myalgia (2), and acute kidney injury (2).

Eighteen ADRs necessitated discontinuation of treatment, while six required dose adjustment. All 11 reactions subject to the recent MHRA warning were managed by drug discontinuation. All observed ADRs were reversible following treatment cessation.

Conclusion: A significant proportion of patient treated with FQs experience an ADR emphasising the need for careful monitoring and intervention. Our findings support the value of a nurse-led clinic in effectively recognising and managing these reactions to prevent long-term or irreversible harm from FQ treatment.

[P05] Can calcium sulfate beads loaded with antifungals be effective in inhibiting drug resistant strains of *Candida auris* in vitro?

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Introduction: The Center for Disease Control (CDC) issued an urgent threat level warning regarding *Candida auris* multi-drug resistant (MDR) strains causing severe infections with high transmission rates. This study tested the impact of antifungals loaded into a calcium sulfate antibiotic carrier* on three strains of MDR *C. auris*.

Methods: Calcium sulfate was loaded with 200mg fluconazole, 70mg caspofungin or 100mg of amphotericin B per 10CC and moulded into 6mm beads (CSB). One bead was placed onto a lawn of each *C. auris* strain (NCPF-8971, NCPF-8977 and NCPF-8984) in triplicate, and the zone of inhibition (ZOI) was measured after 3 days. To determine minimum inhibitory concentration (MIC), antifungal dilutions were added to the strains and recovery performed following 24 hours.

Results: NCPF-8971 was sensitive to caspofungin released from the CSB (ZOI of 28mm), no zones were observed with amphotericin B or fluconazole. NCPF-8977 was sensitive to caspofungin and amphotericin B (ZOI's of 29mm and 10mm respectively), but was resistant to fluconazole. NCPF-8984 had a ZOI for caspofungin (33mm) and amphotericin B (8mm) but not fluconazole. The MIC was above 500µg/mL and 250µg/mL for all strains for fluconazole and caspofungin respectively. For amphotericin B NCPF-8971 and NCPF-8977 had an MIC of 31.25µg/mL and NCPF-8984 an MIC of 7.80µg/mL. These are above the tentative breakpoints listed by the CDC.

Conclusion: Antifungals released from CSBs can be effective against MDR *C. auris* in vitro. We propose this is because CSBs release antifungals at very high concentrations for sustained time periods.

*Stimulan Rapid Cure (Biocomposites, UK)

[P06] Osteoclast degradation activity on sintered S53P4 bioactive glass scaffolds

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Introduction: S53P4 bioactive glasses recognized for its osteostimulative, angiogenic and antimicrobial properties is commonly employed in osteomyelitis treatment. There is limited information about the cellular degradation therefore this study explores the cellular activity of mature osteoclasts and human peripheral blood mononuclear cells (hPBMCs) on porous scaffolds fabricated from sintered S53P4 bioactive glass. Several production parameters, including mold material (hexagonal boron nitride (h-BN) and graphite) and three different sintering temperatures, were varied to investigate their impact on cellular degradation activity.

Methods and Results: Scaffold discs with a diameter of 15 mm and porosity 30% - 45% were used in the experiments. Mature differentiated osteoclasts displayed resorption pits on all discs. Discs produced in the graphite mold at lowest temperature showed highest activity. In a subsequent experiment with undifferentiated hPBMCs, successful osteoclastic differentiation was observed, with varying cell density on scaffolds produced in different molds. Increasing sintering temperature correlated with enhanced cell density and osteoclastic activity. Overall, scaffolds produced in the graphite mold at the highest temperature exhibited the highest cellular activity.

Conclusion: The results indicate a correlation between cell differentiation status, cellular activity, mold material, and sintering temperature. Notably, osteoclasts exhibited activity following a standard resorption pattern on sintered S53P4 bioactive glass scaffolds. However, further investigations are needed to elucidate the relationship of cell state, mold material and sintering temperature on cellular responses. Additionally, the extent to which osteoclasts can degrade the calcium phosphate layer, silica layer, and bioactive glass materials remains to be investigated.

[P07] Pseudo-outbreak of *Burkholderia cepacia* complex related to contamination of a sonicator

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Burkholderia cepacia complex (BCC) species are Gram-negative environmental bacteria found in soil and water but may also colonise medical environments. BCC has been implicated in hospital-associated outbreaks from contaminated disinfectant, eye-rinse, mouthwash and nebuliser solution. ^{[1][2]} UKHSA notified our specialist orthopaedic hospital (RNOH) that an isolate of *Burkholderia cepacia* taxon K, a complex within BCC thought to be part of a potential national outbreak, had been identified in one of our patients. Here we report our subsequent investigation.

We identified all isolates of *Burkholderia cepacia* complex from RNOH between 2017 and 2023 and saved isolates were sent to UKHSA for typing. Six were identified as the lineage involved in the national outbreak and these patients were investigated for potential links. The majority had undergone upper limb surgery but had been operated on by different teams in different theatres over an extended time period. Most did not have infection suspected clinically and in no case was the BCC specifically treated.

Only samples undergoing sonication and none of the associated tissue samples yielded BCC taxon K making us suspicious of environmental contamination. Environmental screening was performed within the laboratory and the sonicator was found to be colonised. Following thorough cleaning it was found to be clear and no further isolates have been identified.

This was a pseudo-outbreak of BCC linked to a contaminated sonicator which was only discovered due a national investigation of a potential outbreak of an unusual organism, highlighting the need to interpret cultures from sonicated samples with caution.

[P08] The Free Hemi Latissimus Dorsi flap: A review of technique, versatility and functional outcomes for soft tissue reconstruction in cases of osteomyelitis from the Oxford Nuffield Bone Infection Unit

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Introduction: The complete latissimus dorsi (LD) muscle flap is a widely harvested flap for extremity reconstruction but can be bulky or affect residual shoulder function. Our aims were to describe a technique for harvesting the subtotal lateral portion of the muscle, indications within the setting of bone and joint infection and identify functional complications that affect rehabilitation and longer term activities.

Methods: Patients were identified from the Electronic Patient Records at the Nuffield Orthopaedics Centre in Oxford from the time period December 2016-December 2023. Patient demographics, indication for the flap, intra and postoperative complications and longer term functional outcomes were reviewed. Adapted Quick DASH and EQ 5D 5L outcome scores were used to identify concerns in relation to functional impairment.

Results: 22 free Hemi LD flaps were used for cases of lower limb osteomyelitis. 11 pedicled LD flaps were used for upper limb osteomyelitis cases. 2 cases of free flap failure occurred due to venous congestion. There were no documented post-operative donor complications such as seroma that required intervention. The free Hemi LD group reported no restrictions caused by donor site pain or weakness during their post-operative rehabilitation.

Conclusion: Harvesting the lateral half of the muscle is performed with the patient lying supine permitting a two team operative approach. The remaining LD muscle has an intact origin, insertion and neurovascular supply. The hemi latissimus dorsi muscle flap offers bespoke soft tissue coverage of small to medium sized defects with minimal functional donor site complications in the short and longer term.

[P09] *Corynebacterium* spp. in metalwork associated infections: a retrospective case control series

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Introduction: *Corynebacterium* spp. prosthetic joint infections (PJI) and fracture related infections (FRI) pose a challenge in management due to limited antimicrobial options. This retrospective case control series evaluates the outcomes in PJI and FRI in which *Corynebacterium* spp. was isolated during deep sampling.

Methods: We queried the Bone and Joint Multidisciplinary Team Meeting (BJMDT) notes in NHS Tayside for cases of PJI and FRI isolating a *Corynebacterium* species between June 2021 – August 2023 in patients > 18 years old. We describe the clinical characteristics, species prevalence of *Corynebacterium* spp with its sensitivity trends, management and outcomes.

Results: Out of 165 patients discussed at the BJMDT, 22 of the had a PJI/FRI which isolates a *Corynebacterium* spp. The presentation was polymicrobial in 86% of cases. *C. striatum* was the predominant species in 73% of cases. All isolates were sensitive to vancomycin and linezolid with 90% of cases being treated with IV vancomycin as part of the initial treatment regimen. Median duration of IV treatment was 6 weeks. *C. striatum* showed increased likelihood to demonstrate doxycycline resistance than other species (81% vs 50% respectively). 10 cases involved PJI of the hip, 6 of them had a DAIR and 3 had treatment failure defined by mortality or recurrence of infection at 6 months. Of the 10 FRIs reviewed, all were met with clinical cure following removal of metalwork.

Conclusion: *Corynebacterium* spp. involvement in PJI/FRI remains a considerable issue. Our case series demonstrated that PJIs managed with 2 stage revision and initial IV treatment with vancomycin had favourable outcomes.

[P10] Salvage Orthoplastic Reconstruction for Complications of Tendoachilles Injury

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Introduction: Share our experience of salvage orthoplastic reconstruction for complications following tendoachilles injury.

Methods: Single-arm, prospective cohort study including consecutive patients who underwent salvage reconstruction for complications following tendoachilles injuries at Stoke Mandeville Hospital between Nov 2020 and Feb 2024.

Results:

- Total 8 cases, all male. Mean age: 51 (34-66)
- Aetiologies: primary tendoachilles repair (2), FHL transfer (2), Haglund's excision (2), penetrating injuries (2)
- 4 cases showed features of osteomyelitis involving the os calcis on pre-operative MRI.
- Microorganisms: *S. aureus/capitis*, *Acinetobacter radioresistens*, *Enterococcus faecalis/bugadensis/cloacae*, *Aggregatibacter aphrophilus*
- Single- or two-stage reconstruction: 3 single, 5 multi-stage
- Tendon repair strategies: vascularized fascia lata, FHL transfer, hamstring graft
- Soft tissue cover: All free flaps: 7 anterolateral thigh flap, 1 Tensor Fascia Lata flap, 1 gracilis flap
- Complications: 1 case of wound dehiscence requiring a 2nd free flap (gracilis)
- Follow up duration: 1 month to 1 year
- Post-op function: all full weight bearing and ambulant without aid

Conclusion: Complications following injury to the tendoachilles complex are limb-threatening. A tailored patient-centric, orthoplastic approach in conjunction with microbiological guidance is required to 1) eradicate deep infection, 2) reconstruction the tendoachilles complex and achieve robust soft tissue coverage.

[P11] Treatment of Osteomyelitis in People with Spinal Cord Injuries: A Two-Year Retrospective Single Centre Cohort Study

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Introduction: Report the experience of flap reconstruction for osteomyelitis (OM) in the National Spinal Injuries Centre UK.

Methods: A single centre retrospective cohort study of adults with spinal cord injuries (SCI) who underwent surgical treatment for OM between 2020-2022 inclusive. Patients were identified by interrogation of theatre records. Patient demographics, level of SCI, location of OM, radiology, type of surgical intervention, intraoperative microbiology and histology results and outcomes were recorded.

Results: 32 patients were treated. Mean age = 57.2 years; 94% were male. All were related to pressure ulcers except one case of metalwork related infection. OM was reported on MRI in 22/32 patients (7 false-negatives). The most common site of OM was the ischium (19), followed by sacrum/coccyx (14), trochanter (6), heel (3) and femoral shaft. Most patients underwent excision of OM + flap reconstruction (87.5%); the remainder underwent excision of OM only. 40 locoregional flaps and 2 free flaps were used. Local antibiotic-eluting bone substitute was used in 6 patients. Microorganisms were grown in 25/32 cases. Common microorganisms included *Staph. Aureus*, *Proteus Mirabilis* and *Enterococcus faecalis*. All histology samples showed features of OM; none exhibited cellular atypia or malignancy. Overall complication rates was 56%, including partial wound breakdown (28%), recurrence after 6 months (16%), haematoma/seroma (18.7%) and flap loss (9.3%).

Conclusion: OM is most commonly related to pressure ulcers in the SCI population. Surgical management largely consisted of excision of OM + locoregional flap reconstruction. Such procedures are associated with a high complication rate, consistent with existing literature.

[P12] CT Angiography and Temporary Balloon Catheter Placement as a Pre-Operative Tool to Prevent Vascular Complication in Case of Revision of infected THR with Intrapelvic Hardware. A Case Series

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Introduction: Performing revision THR (Total Hip Replacement) surgery in infected THR is always challenging. Infection is commonly seen in patients with intrapelvic migration of acetabular cup. In these patients with infected THR with Acetabular cup loosening and intrapelvic migration of hardware close to branches of significant vessels and pelvic viscera, there is an increased chance of life-threatening complications during revisions.

Methods & Results: We present 5 cases with intrapelvic migration of hardware in which a CT angiogram was used to find the proximity of hardware to significant vessels, and either permanent or temporary occlusion of vessels was performed to prevent intraoperative vascular complication. A temporary catheter was placed in the internal Iliac artery in 2 patients during the surgery so that the balloon could be inflated in case of vascular damage.

Conclusion: Revision THR comes with miscellaneous intraoperative complications. Pre-operative CT angiogram and occlusion of desired vessels give the surgeon the liberty to perform such surgeries with ease and give the window period to call the vascular surgeon to take over if injury to significant vessels happens unpremeditatedly.

Keywords: CT Angiography, Revision THR, Balloon Catheterization, Embolization, Infected THR

[P13] Langerhans Cell Histiocytosis masquerading as infection of Proximal Femur after Total Hip Arthroplasty in an adult - A Case Report

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The occurrence of osseous Langerhans Cell Histiocytosis (LCH) is rare in adults. We present a case of middle-aged male who presented to us with pain in his left upper thigh. He presented us with pain and limping from an operated limb after 4 years of hip replacement. He had a history of intertrochantric femur fracture that was treated with proximal femoral nail 8 years back in another hospital. Later, he underwent a series of local debridement, prolonged intake of antibiotics and finally implant removal for chronic osteomyelitis of the proximal femur. Then, his total hip was replaced for non-salvage femur head.

The clinico-radiological diagnosis was in favour of pseudo-tumor or peri-prosthetic infection. A core biopsy was done which revealed an unexpected diagnosis of LCH. This experience taught us the importance of core biopsy and phenotyping in patients with doubtful cystic-lytic lesions over adjunct bone to prosthesis.

Keywords: Langerhans Cell Histiocytosis, Pseudotumor, Total Hip Arthroplasty, Infection, Osteomyelitis

[P14] Development of an orthoplastic limb trauma service for Ireland: Patterns of compliance with the BOA/BAPRAS standards for open fractures in a Major Trauma Centre

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Introduction: The orthoplastic approach to open long bone fractures has been shown to reduce the complication of deep infection. The 2020 BOA/BAPRAS Standards for the Management of Open Fractures provide evidence against which orthoplastic centres can compare their performance. As a dedicated orthoplastic service in Ireland's first Major Trauma Centre, this study aims to quantify our compliance with the standards during our first year of service.

Methods: A prospective database of all open fractures attending our service, since the appointment of a Plastic Surgeon with the remit of orthoplastic trauma reconstruction in January 2023, was collated.

29 open lower limb fractures presented over a 1-year period. The standards examined were time to initial debridement, the presence of orthopaedic and plastic surgery consultants at debridement and time to definitive reconstruction.

Results: We were compliant with time to debridement in 89% of cases. Definitive reconstruction occurred within seven days of injury in 91%. In 28% of cases there was no plastic surgery consultant presence at fracture debridement. In several cases this was due to delayed communication.

Conclusion: In a resource constrained and evolving Major Trauma Centre, the most modifiable area for improvement in compliance is dual consultant presence. These findings have been presented to at a new orthoplastic MDT meeting, and this measure will be re-audited at regular intervals.

Although, to date there have been no secondary infections or non-unions in our cohort, compliance with the BOA/BAPRAS standards is imperative to ensure a low complication rate in open fractures.

[P15] Spinal infections epidemiology, diagnosis, and outcome from a single centre

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Introduction: Hospital admissions due to spinal infections have risen sharply in the UK. Evidence to guide management is scarce with guidelines relying on low-quality recommendations. This retrospective analysis reviews diagnostic and management practices amongst patients admitted to University Hospital Southampton (UHS) with radiologically-confirmed spinal infection.

Methods: The central UHS PACS database was interrogated for cases of radiologically-confirmed spinal infection between 01.11.2017 and 30.11.2019. Patient records were reviewed from admission to 100 days post-discharge to enable collation of demographic, investigation and outcome data. Data from survivors and non-survivors was compared using Chi-squared and Mann-Whitney U test for categorical and continuous variables respectively. Time to radiological diagnosis was compared using log-rank test.

Results: Interrogation of PACS yielded 53 cases of radiologically-diagnosed native spinal infections in adults. Methicillin sensitive *Staphylococcus aureus* was the most prevalent pathogen (41.5%), followed by Gram negative bacteria (11.3%). Patients aged >80 years old were more likely to have spinal infection of Gram negative bacterial aetiology. ($p < 0.001$). Non-survivors had higher rates of diabetes (43.8% vs 8.1% respectively, $p < 0.001$) and longer time-to-radiological diagnosis (9 vs 2 days $p = 0.002$). Time to radiological diagnosis was shorter amongst patients with typical signs and symptoms vs. those without (median 2 and 6 days respectively, $p = 0.018$).

Conclusion: Atypical clinical presentations of spinal infections were common and associated with a delay in radiological diagnosis, underscoring the importance of a low index of suspicion. Gram negative bacteria were more prevalent in patients >80 years old which has implications for empirical antibiotic choice.

[P16] How Should Surgical Antibiotic Prophylaxis be Optimised after Endoprosthetic Replacement in Orthopaedic Oncology? Insights from a Cohort Study of Endoprosthetic Infections

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Introduction: Endoprosthetic replacement (EPR) is the preferred method of limb salvage in the surgical treatment of musculoskeletal tumours involving bone. However, infection rates range from 8 to 12%.

We aimed to investigate the likely impact of antibiotic prophylaxis at primary implantation on the development of deep infection.

Methods: A retrospective analysis of EPR patients treated from 2010 to 2021 identified prosthetic joint infections (PJIs) based on EBJIS criteria. PJIs were divided into two groups according to whether they were reasonably attributable to the primary procedure or a secondary cause. The first group included early (<3months) or delayed (3-24months) infections with an uncomplicated post-operative course, and the second group comprised patients with either postoperative wound problems or a delayed/late (>3months) infection presenting acutely (<28days of symptom onset).

Results: Of 1,001 patients, 81 (8.1%) developed PJI within a median follow-up of 25.6 months (IQR 8.8-52.7). There were 30 early infections, 26 delayed infections, and 25 late infections.

78% of all PJIs were attributed to a secondary cause, comprising 29 patients with delayed or late acute infections and 34 who had wound complications (29) or underwent reoperations for reasons other than infection (5).

The microbiological profile of the groups differed significantly, with infections from skin flora related to primary implantation and a high proportion of other bacteria (Gram-negatives and Enterococci) attributable to secondary infections.

Conclusions: Skin flora are likely responsible for infections attributable to the primary procedure, and antibiotic prophylaxis should be optimised accordingly. Different approaches are needed to prevent secondary infections.

[P17] Early detection of Colon Cancer following the detection of Clostridium Septicum in the joint fluid of an infected Total Knee Replacement: A Case Report

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Introduction: Prosthetic joint infections (PJI) following total knee replacements (TKR) are rarely caused by organisms like Clostridium septicum and Clostridium perfringens. These cases are associated with bowel malignancies. Hereby describing a case where a multidisciplinary team discussion helped us to diagnose a bowel malignancy in a case of PJI caused by C.septicum.

Methods: A 79-year-old female who had an infected total knee replacement, underwent a Debridement, Antibiotics and Implant Retention procedure, and fluid samples showed growth of C.septicum. In the multidisciplinary team meetings, our microbiologist explained an association of C.septicum with bowel malignancy. A caecal tumour was diagnosed on a CT scan and confirmed with colonoscopy. Prompt right hemicolectomy was done by the surgical team and adjuvant chemotherapy started as advised by oncologist. Chemotherapy initiation raised concerns about PJI recurrence, highlighting the delicate balance between oncological and orthopaedic management.

Results: An association exists between C.septicum and gastrointestinal malignancies. Perforation of gastrointestinal epithelium allows C.septicum spores to enter the blood causing bacteremia and PJIs. This might be the first presentation of malignancy, which if undetected, can add to malignancy-related mortality. Hence a high degree of clinical suspicion and awareness is essential. It also signifies the importance of a multidisciplinary approach, requiring the combined effort of orthopaedic, microbiology, surgical and oncology teams in the timely detection and prompt treatment of the patient.

Conclusion: This case underscores the importance of high clinical suspicion, collaborative care, and timely diagnosis and intervention in complex medical scenarios involving prosthetic joint infections and unknown underlying malignancies.

[P18] Daptomycin-Impregnated PMMA Cement against Vancomycin-Resistant Germs

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Introduction: The number of periprosthetic joint infections caused by vancomycin-resistant pathogens is increasing. Currently, no PMMA cement is commercially available to cover VRE. Daptomycin shows promising results in treating infection, offering a good safety profile and a reduced risk of developing resistance.

Methods: We investigate on the mechanical stability, handling properties, elution behavior, and antimicrobial effectiveness of PMMA cement loaded with daptomycin concentrations in comparison to commercially available antibiotic-loaded bone cement (ALBC).

Mechanical properties and handling characteristics (ISO 5833, DIN 53435), HPLC elution, antimicrobial effectiveness with proliferation assay (DIN 17025), and inhibition zone testing were investigated.

Results: All tested daptomycin concentrations met the ISO and DIN standards for mechanical strength. Loading of 40 g of PMMA cement with 0.5 g of daptomycin did not show any antimicrobial effectiveness, in contrast to 1.0 g and 1.5 g. PMMA cement with 1.5 g of daptomycin was the best in terms of elution and effectiveness, and it showed good ISO mechanical strength; ISO doughing was sticky for a little longer and setting was faster compared to the vancomycin-containing reference cement.

Conclusion: PMMA cement containing 0.5 g of gentamicin and 1.5 g of daptomycin could be a good alternative to the already established COPAL® (Wehrheim, Germany) G+V for the treatment of PJIs caused by VRE.

[P19] Modelling approaches and pathway validation for the diagnosis and management of joint infections in the UK NHS: Rapid literature review of economic models and interviews with clinical experts in the diagnosis and management of joint infections to inform health economic modelling

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Introduction: Acute joint infections (JIs) are a medical emergency associated with a high burden of illness and mortality rate of up to 11%. Faster diagnosis could increase the success rates of surgical and antimicrobial interventions. The aim of this study was to develop a conceptual economic model to inform a prospective clinical study that compares rapid BioFire JI Panel test to standard culture techniques.

Methods: A rapid literature review of economic models capturing the care pathway of JIs was conducted to gain insights into relevant modelling approaches. Search terms used were "joint infection" and "economic evaluation". Semi-structured interviews were also conducted with clinical experts to validate the proposed care pathway.

Results: 1,027 studies were identified in the rapid review, and seven papers were eligible for analysis. All studies focused on prosthetic JIs. Analysis of these suggested that conducting a cost-utility analysis, from a healthcare system perspective, using a Markov model with at least one-year time horizon to capture long-term consequences of morbidity, is a feasible approach for an economic evaluation.

Six UK NHS clinical experts were interviewed. The most practical application of the BioFire JI panel was proposed to be in patients with suspected native JIs for faster targeted antibiotic prescribing. Potential scenario analyses could be of paediatric patients and adult patients separately.

Conclusions: We established that the relevant population for a clinical study and economic evaluation is native JIs. The lack of existing published evidence makes it imperative for a clinical study focused on native JIs to be conducted.

[P20] A Multifaceted Challenge: *Listeria monocytogenes* Meningoencephalitis, Endocarditis, Sepsis, and *Staphylococcus aureus* Osteomyelitis in an Immunocompromised Patient: case report

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Introduction: *Listeria monocytogenes* is a formidable pathogen that poses a significant threat to immunocompromised and might cause rare atypical forms of the disease. We present a case of a patient with *Listeria monocytogenes* meningoencephalitis, endocarditis, sepsis, and *S. aureus* osteomyelitis, highlighting the complexities of managing disseminated polymicrobial infection.

Methods & Results: A 64-year-old female with multiple myeloma treated with chemotherapy presented with fever, altered mental status, nausea, and diarrhea to the emergency department. The patient was sick for 7 days, and fainted upon arrival. During the physical examination, the patient was feverish, had a hemorrhagic rash, abscess on the right thumb. Neurologically – nuchal rigidity was seen and the finger-nose test was abnormal. Blood and cerebrospinal fluid analysis were consistent with bacterial meningitis. The roentgenogram revealed osteomyelitis involving the right thumb. Later *Listeria monocytogenes* was identified in blood and cerebrospinal fluid cultures. The abscess was drained, and pus culture identified *Staphylococcus aureus*. Echocardiography revealed vegetation on the aortic valve. The patient initially was treated with ceftriaxone, ampicillin, gentamicin, with clindamycin and ciprofloxacin for osteomyelitis and later with ampicillin/sulbactam and ciprofloxacin to cover both pathogens and pathologies. An allergic reaction to ampicillin appeared therefore treatment was changed to vancomycin. The patient was treated for 4 weeks of antibiotic therapy in total. The patient recovered and continued chemotherapy for multiple myeloma.

Conclusion: this case emphasizes the intersection of hematological malignancy, chemotherapy-related immunosuppression, and subsequent severe disseminated bacterial infections. Prompt diagnosis and adequate treatment of the disease and its complications is key to the successful recovery.

[P21] Septic Arthritis: Joint Care Gives Better Outcomes?

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Introduction: We present a case of septic arthritis in a prosthetic joint that highlights the importance of a MDT approach involving orthopaedics and infection specialists.

Methods: A 65 male underwent a total knee replacement for osteoarthritis. This was complicated by a pulmonary embolism (PE). Six months later he presented with a 2 day history of knee pain and immobility on the replaced side with no history of trauma. Examination demonstrated a tender moderate effusion with boggy induration, a warm erythematous joint with a low grade fever (37.8). WCC was 19.5 with a neutrophil count of 16.6 and a CRP of 315. Aspiration was carried out the same day (36 ml blood stained) and the patient was started on meropenem and teicoplanin. This grew MSSA sensitive to flucloxacillin and his antibiotic regime was optimised.

11 days following admission a 2 stage revision was planned. 1st stage demonstrated florid infection with purulent material with infection present under the tibial tray - a full synovectomy was performed. A Size 8074 Vancogenix Spacer K implant cemented with 160mg Palacos R+G with 8g vancomycin. Flucloxacillin was continued and the patient was enrolled into the short arm of the SOLARIO trial.

Results & Conclusion: This complex case illustrates the importance of an MDT approach to prosthetic joint infections as delayed recognition and planning results in high morbidity as described by BOAST. Antimicrobial stewardship and evidence based changes to help reduce resistance whilst spacers impregnated with antibiotics has helped to reduce total time patients are on long term antibiotics.

[P22] A little more back pain: second case report of *Brachybacterium* spp., causing vertebral osteomyelitis

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We present a case of vertebral osteomyelitis in a patient that had a blood stream infection with a *Brachybacterium* spp, an infection reported only once before. The patient was a 64-year-old male with a background of multiple sclerosis, treated with dimethyl fumarate. His occupation included manual handling and exposure to fowl. He presented with forty-eight hours of back pain that was investigated for cauda equina syndrome; his initial MRI scan was reported to be normal. He was febrile and initial blood cultures grew an unidentified gram positive bacillus. Subsequently, a further two blood cultures isolated a gram positive bacillus and the patient was commenced on intravenous vancomycin. The isolates were referred to a reference laboratory who confirmed that the sequenced bacterium did not match any valid named species, but did match at 99% to an unpublished sequence in a similar case from Japan (*Brachybacterium* sp. MML3913). The patient was transitioned to oral ciprofloxacin and treated for 12 weeks. A follow-up MRI after 4 weeks showed extensive osteomyelitis involving L1 and L2 vertebral bodies with an associated epidural abscess.

This case highlights 2 important points; firstly, any organism can be considered pathogenic if the clinical picture is consistent, and secondly, imaging can be false negative in early disease and confirmatory testing should be sought if the suspicion is high.

[P23] Free flap reconstruction for fracture related infection of the ankle

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Introduction: Deep infection of the lower extremity is challenging. We present our recent experience of limb preservation surgery for ankle infection following a fracture including excisional surgery and free tissue transfer for soft tissue reconstruction.

Methods & Results: Between January 2020 and January 2024, we conducted a prospective single centre cohort study of adults who had fracture related infection of the ankle requiring reconstructive surgery using free flaps.

All patients underwent excisional surgery and free flap reconstruction. Almost all patients were treated with 6 weeks of antibiotics post-operatively. 13 ankles were reconstructed in 13 patients: 6 males and 7 females. The mean age was 62 years and 4 patients had diabetes mellitus. A total of 14 free flaps were performed. All cases underwent excisional and reconstructive surgery in a single stage. There were 2 partial flap failures; none required further flap reconstruction. There was 1 total flap failure in a patient with peronea arteria magna. At latest follow up, none had recurrence of deep infection; all limbs were salvaged and all patients with foot-preserving procedures were ambulant.

Conclusion: A combined approach of surgical excision and free flap reconstruction followed by rational antibiotic treatment offered a high rate of limb salvage and low early recurrence rates. Free tissue transfer is a reliable reconstructive option for limb preservation in the context of fracture related infection of the ankle.

[P24] First Case of Actinomycetoma Caused by *Gordonia rubripertincta*

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Introduction: Mycetoma is a rare chronic infectious disease typically caused by bacteria or fungi, most commonly localized and affecting the skin, deep tissues and bones. In this case, mycetoma involving bone is presented in an immunocompetent patient. To our knowledge, this is the first case of actinomycetoma caused by *Gordonia rubripertincta*.

Methods & Results: We present the case of a 25-year-old male who complained of severe pain and deformation in his left foot. He reported that the symptoms began five years ago when he stepped on a wire. The patient underwent surgery, including incision, which initially improved his condition. However, the pain recurred, and the affected area expanded, leading to progression of pain and deformation. Skin biopsies were performed, and treatment with doxycycline was initiated but proved ineffective. Subsequently, the patient was diagnosed with actinomycetoma, and *Gordonia rubripertincta* was identified in culture. Treatment with amoxicillin-clavulanate initially improved the condition, but disease worsening was observed during follow-up. Long-term penicillin treatment was prescribed, and surgical excision was performed due to negative dynamics on radiological tests. Despite these efforts, symptoms continued to progress, prompting a bone biopsy after at least a 2-week antibiotic-free interval, which yielded no microorganism growth. Treatment with ampicillin-sulbactam and ciprofloxacin was initiated for at least six weeks, with offloading. Pain decreased, and radiological findings remained stable.

Conclusion: Due to the rarity of cases, there is no universally established treatment protocol for *Gordonia* infections. While mycetoma is more common in tropical regions, this clinical case highlights the challenges in diagnosing and treating this rare disease.

[P25] Infection following Total Knee Arthroplasty with an Uncommon pathogen: *Achromobacter xylosoxidans*

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Introduction: *Achromobacter xylosoxidans* is an uncommon opportunistic organism, mainly causing infection in immune-compromised hosts. *Achromobacter xylosoxidans* is a non-fermenting Gram-negative bacillus. Being closely associated with *Alcaligenes* species was also called *Alcaligenes xylosoxidans*.

Methods: A few cases of periprosthetic infection by *A. xylosoxidans* has been reported outside India. A periprosthetic infection with *A. xylosoxidans* following a total knee arthroplasty is reported in a female.

Conclusion: *A. xylosoxidans* is a pathogen capable of causing prosthetic joint infection even in immunocompetent patients. Thorough debridement and appropriate antibiotic treatment is essential for the success of revision surgery

Keywords: Prosthetic Joint Infection, Total Knee Arthroplasty, *Achromobacter xylosoxidans*

[P26] Uncovering Mucormycosis of the Distal Radius: The Mysterious Duo of Fungal Infections and Osteomyelitis

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Diagnosing and treating osteomyelitis is challenging enough for surgeons worldwide, but when fungal infections enter the equation, the complexity intensifies. Fungal osteomyelitis often hides in the shadows of more common culprits, rarely considered in the initial differential diagnosis due to its infrequent occurrence. While they may remain indolent in healthy individuals, these infections can become aggressive and relentless in those with compromised immunity. As reports of fungal infections affecting both the spine and limbs rise globally, the need for a deeper understanding and refined management protocols becomes even more pressing.

Mucormycosis, a term encompassing fungal infections caused by the enigmatic Zygomycetes of the order Mucorales, joins the ranks of common fungal foes alongside *Candida* and *Aspergillus*. Even with aggressive surgical interventions and potent antifungal therapy, the reported mortality rate associated with osteoarticular mucormycosis remains around 24%, highlighting its formidable nature. This case report details the successful management of a middle-aged diabetic woman with mucormycotic osteomyelitis of the distal radius through a combination of radical debridement, fusion, and oral posaconazole. The utilization of posaconazole highlights its efficacy in minimizing drug-related complications. The report emphasizes the importance of early diagnosis and a comprehensive approach to both surgical and medical management.