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Case report: Sonication in Prosthetic Joint Infection

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INTRODUCTION:

The numbers of joint replacement surgeries are currently increasing which inevitably leads to increasing prosthetic joint infection (PJI) incidence. This catastrophic complication can be very devastating to treat if no accurate identification of causative organisms and its sensitivities are obtained.

REPORT:

A 65 years old woman had her successful right total knee replacement (TKR) in the year of 2020 and decided for her left knee replacement surgery in March 2021. Two months after her left TKR, she started to experience an unusual pain over her left knee which was associated with swelling and warmness with occasional episodes of fever. Her visit to a general practitioner had improve her symptoms after being started on some analgesia and a short course of oral antibiotics. Due to some unavoidable circumstances and symptom free events, she did not turn up for her clinic visits with us.

A year and a half later, she visited us after again starting to have pain and swelling over the left knee. X-rays showed lytic bone destruction with tibia implant component loosening and her infective markers were raised. She underwent removal of implant with insertion of articulating cement spacer. Multiple samples of tissue and bone were sent for culture. The removed implant was transported immediately to the microbiology lab in a sterile container. The implant was than submerged into a sterile air-tight container filled with saline which was then put in an ultrasound bath where it goes through a process of vortex and sonication (at frequency of 40kHz). The fluid obtained after sonication is than cultured. All tissue, bone as well as the sonication fluid for culture grew pseudomonas aeruginosa. She was started on antibiotics based on the culture sensitivity and her infective markers showed progressive improvement.

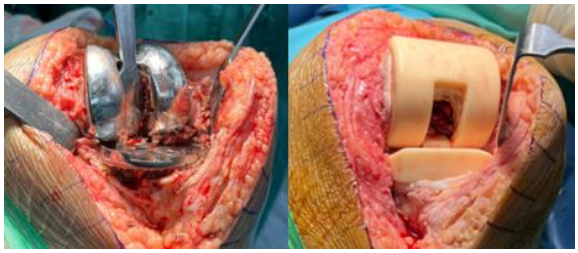

Figure 1: Intra operative image showing the tibia bone destruction and insertion of articulating cement spacer.

Figure 2: Image of sonicator and the air-tight container in ultrasound bath.

CONCLUSION:

Sonication is a cost effective and simple procedure that can be done in most microbiology laboratories. In PJI, culture obtained from sonication of explanted prostheses yields a better sensitivity than periprosthetic-tissue cultures. It also improves detection of polymicrobial organism in PJI as well as providing a better sensitivity and specificity in patients who have been on anti-microbial therapy prior to surgery.

REFERENCES:

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