Sonication fluid culture as an adjunct for orthopaedic implant-associated infections (OIAI) diagnosis

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Orthopaedic implant-associated infections (OIAI) are a severe complication and can result in considerable costs and morbidity.[1] Accurate laboratory diagnostics are required to optimise antimicrobial therapy. Culture-based techniques remain the cornerstone of OIAI diagnostics as it allows for organism identification with antimicrobial susceptibility testing.[2] The drawback is that most culture techniques lack the sensitivity to adequately identify pathogens. For this reason, multiple samples should be sent for evaluation (tissue, synovial fluid, etc.).[2]

A principal feature in all types of prosthetic infections is biofilm formation.[1,3] Sonication is a method used to disrupt these biofilms from the surface of the removed prosthetic material.[1,3] Multiple studies have reported improved performance of culture-based diagnostics when sonication is used as an adjunct.[4–8] It also has utility when combined with molecular investigations.[9]

Lancet Laboratories in Richmond, Johannesburg, now offers sonication culture of removed prosthetic material. Double-packed, autoclave sterilised, rigid polypropylene containers will be made available to surgeons who alert the laboratory in advance of surgery.

The removed prosthetic material should be placed aseptically in the containers in theatre. NO FLUID should be added to the container with the prosthesis. A patient information sticker should be placed on the container lid to aid identification. The tightly sealed containers will be sent to the laboratory, along with the necessary forms and patient details. Fluid MC&S can be requested for logging purposes.

An aliquot of the sample will be stored for any molecular (broad range pan-pathogen PCR) testing that may be required afterwards, if not requested upfront (the sample will be stored for 7 days).

Please clearly indicate on the form if the removed prosthesis should be returned after testing. If no such request is received, any material will be discarded as laboratory waste after processing.

Available container sizes:

- 500 mL: Mouth inner diameter 43 mm
- 1000 mL: Mouth inner diameter 53 mm
- 2000 mL: Mouth inner diameter 88 mm

When requesting containers from the laboratory please specify the size and quantity of containers that will be required.

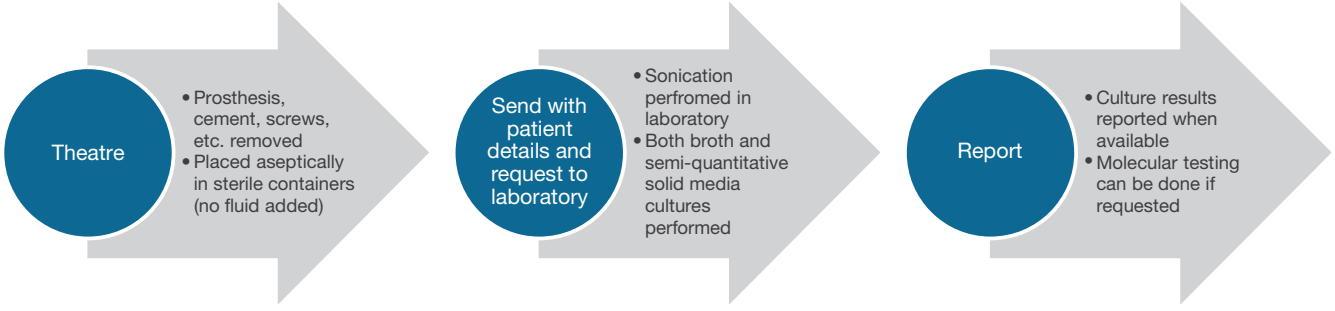

Figure 1. Workflow process for sonication culture of removed prosthetic material

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