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The importance of cleanliness in PJI surgery: A comparative review of the introduction of the 'clean phase' concept

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Aim: The purpose of this single center study was to analyze the robustness and thoroughness of debridement and irrigation in first stage procedures for periprosthetic joint infections in which the latter had been confirmed by fulfilling the PJI criteria produced by the musculoskeletal infection society.

Method: After introduction of 'a clean phase' concept in our center, we developed a method of using new instrumentation sets and waterproof cover sheets as well as sets of gloves and aprons after thorough debridement followed by copious irrigation under a splash sheet, once the prosthetic components were removed during which several (6 to 8) tissue biopsies and cultures were harvested. 'Clean phase' tissue specimens ad random were again obtained and cultured and compared with 'dirty phase' cultures and sonication results. Our zero hypothesis was that we were not able to entirely eradicate bacterial colonization. We tested this hypothesis during a period of 18 months in a consecutive series of first stage revisions for PJI at our center after introduction of the clean phase concept.

Results: We were able to reject our zero hypothesis in that 'clean phase' tissue cultures were either negative or that they did not match 'dirty phase' tissue cultures suggestive of bacterial contamination. Descriptive statistical analysis was utilized.

Conclusion: Our findings suggest that our procedures and methods of debridement and irrigation in first stage PJI revision procedures are robust and thorough. Further investigation is required to determine whether 'clean phase' culture negativity is matching with a successful outcome in the run up and after the second stage revision procedure.

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