

Unexpected Positive Intraoperative Cultures in Aseptic Revision Hip Arthroplasty – Prevalence, Management, and Infection-Free Survivorship

Justin Leal, Christine J Wu, Thorsten M Seyler, William A Jiranek¹, Samuel Secord Wellman², Michael P Bolognesi³, Sean Patrick Ryan

¹Duke University, ²Duke Hospital, ³Duke Univ. Med. Ctr. - Duke South

INTRODUCTION:

This study aimed to describe the management and outcomes of aseptic revision total hip arthroplasty (arTHA) with unexpected intra-operative positive cultures (UPCs) compared to those with sterile cultures.

METHODS:

A single tertiary center's institutional database was retrospectively reviewed for arTHA from January 2013 to October 2023. Pre-operative Musculoskeletal Infection Society (MSIS) scores were assigned to patients based on available infectious workup and those who met criteria for periprosthetic infection (PJI), received antibiotic spacers, or had less than 1 year follow-up were excluded. Patients were grouped and compared according to intra-operative culture results: sterile cultures, 1 UPC with a new organism, 1 UPC with the same organism as prior periprosthetic joint infection (PJI), ≥ 2 UPCs with different organisms, and ≥ 2 UPCs with the same organism.

RESULTS:

There was a total of 604 arTHAs included in this study of which 0.8% [5/604] had ≥ 2 UPCs with different organisms, 1.5% [9/604] had ≥ 2 UPCs with the same organism, 9.8% [59/604] had 1 UPC with a new organism, 0.2% [1/604] had 1 UPC with an organism from prior PJI, and 87.7% [530/604] patients had sterile cultures. When comparing 5-year infection-free survival between patients with 1 UPC with a new organism and sterile cultures there was no difference ($P = 0.40$); however, patients with ≥ 2 UPCs with different organisms ($P < 0.001$), patients with ≥ 2 UPCs with the same organism ($P = 0.001$), and patients with 1 UPC of an organism from prior PJI ($P < 0.001$) had statistically worse infection-free survival compared to patients with sterile cultures.

DISCUSSION AND CONCLUSION:

Infection-free survival at five years was similar between patients with 1 UPC with a new organism and those with sterile cultures; however, ≥ 2 UPCs and history of PJI are both significant risk factors for re-revision for infection after arTHA.

