

Mid-Term Survivorship and Outcomes of Two-Stage Revision for Infected Total Hip Arthroplasty

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INTRODUCTION: Periprosthetic joint infection (PJI) continues to be one of the leading causes of failure following total hip arthroplasty (THA). There have been few reports on mid-term survivorship and clinical outcomes of patients who have undergone a two-stage revision THA. The purpose of the current study was to 1) determine the mid-term survivorship of two-stage revision THA, 2) the causative organisms for repeat two-stage revision THA, and 3) the clinical outcomes of patients who had their infection controlled with two-stage revision THA and of those who failed two-stage revision THA due to recurrent infection.

METHODS:

We retrospectively reviewed 328 patients who underwent two-stage revision THA for periprosthetic joint infection. Prospective data was collected on each patient including demographics, causative organisms, complications, and type of reoperation (septic versus aseptic). Patient-reported outcome measures (PROMs), including VR12, Harris Hip Score, and WOMAC score, were obtained prior to two-stage revision surgery and annually as part of standard clinical and radiographic follow up.

RESULTS:

There were 171 males and 157 females, with a mean age of 67.45 ± 12.51 at the time of two-stage revision and a mean BMI of $30.60 \pm 7.68 \text{ kg/m}^2$. Mean follow up was 4.31 years (± 3.55). At time of final follow up, 242 (73.8%) patients were deemed infection free. Of these cleared infections, 194 (59.1%) had a successful two stage revision, 35 (10.7%) had a first stage revision and elected not to proceed to a second stage, and 13 (4%) were on chronic antibiotic suppression.

Of the patients who required further surgical intervention, 44 (13.4%) required an irrigation and debridement and 33 (10.1%) required repeat two-stage revision. Of infecting organisms, staphylococcus species were most common, comprising 106 (32.3%) of all infections with staphylococcus aureus being the most common species. Multiorganism infections comprised 59 (18%) of infections and 94 (28.6%) of revisions did not grow any bacterial species.

Infecting organisms appear to affect rerevision rates in the series with 37.5% of patients who grew MRSA and 32.2% of patients with multiorganism infections requiring additional surgery. This is in comparison to rerevision rates of 22.2% and 20.2% of patients infected with a single organism or those with culture negative infections, respectively.

Patient WOMAC scores improved from preoperative to latest postoperative follow up. The average WOMAC score was 49.6 (± 21.0) before revision and 66.24 (± 22.3) after the second stage. Similarly, VR12 Physical component score (28.7 vs. 34.35) and Harris Hip Scores (33.7 vs. 75.0) increased at last clinical visit.

DISCUSSION AND CONCLUSION:

Two-stage revision THA is associated with a moderate success rate in treatment of PJIs at mid-term follow up. MRSA or polymicrobial infections are a poor prognostic factor, making eradication of infection difficult. Management of periprosthetic joint infections continues to be a major challenge for orthopaedic surgeons.