Characteristics of Failed Two-stage Revision Total Knee Arthroplasty for Periprosthetic Joint Infection

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INTRODUCTION:
Two-stage revision is considered the gold-standard of treatment for total knee arthroplasty (TKA) chronic periprosthetic joint infection (PJI). However, management of recurrent infection after a failed two-stage exchange remains debated and the outcome of these complex cases is unclear. This study investigates patient characteristics, pathogen types, final PJI control success rate and outcomes for recurrent PJI after failed two-stage revision surgery.
METHODS:
A multi-center retrospective review of TKA patients who underwent two-stage revision for treatment of PJI from 2003-2019 and had recurrent PJI was conducted. Patients were selected if they had at least 2-year follow-up after their latest revision surgery. Microorganisms, any subsequent revision, PJI control status, and final joint implants were collected.
RESULTS:
A total of 44 patients with recurrent PJI after 2-stage revision TKA were identified. Recurrent PJI surgical interventions included: debridement and irrigation with liner exchange (n=12, 27.3%), one-stage revision (n=1, 2.2%) and repeat two-stage revision (n=31, 70.5%). Of the repeat two-stage revision cases, 22 (71.0%) patients completed their 2nd stage revision and 9 (29.0%) remained with the first-stage temporary implant at two years. The subsequent PJI microorganism was in concordance with the initial PJI in 18.2% of the cases. At latest follow up, thirty-two (72.7%) patients had a standard total knee replacement implant, 7 (15.9%) had a temporary knee implant, and 5 (11.4%) underwent amputation. Only 26 (59.1%) patients were classified as tier 1 for controlled PJI. 17 (38.6%) patients were on lifelong suppressive antibiotic treatment. The overall mortality rate was 13.6% but none were directly related to PJI.
DISCUSSION AND CONCLUSION:
While the majority of patients had a successful PJI control, failed two-stage revision due to recurrent PJI may lead to worse patients' outcomes including lifelong antibiotic treatment and high amputation rate. Patients must be counseled accordingly and different modes of treatment should be considered.