Low Incidence but Similar Outcomes for Patients Who Satisfy Typical Indications for One-Stage Revision Arthroplasty for Chronic Periprosthetic Joint Infection

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INTRODUCTION:

Single-stage exchange arthroplasty has become increasingly popular to treat chronic periprosthetic joint infection (PJI), with indications proposed by the 2018 International Consensus Meeting (ICM). To date, a single study has evaluated if meeting ICM criteria for single-stage exchange confers increased treatment success. The purpose of our study was to determine 1) what percentage of chronic PJI patients in our institution met ICM criteria for single-stage exchange and 2) determine the risk of persistent/recurrent infection for patients who met one-stage criteria versus those who did not.

METHODS:

A retrospective review was performed of all chronic PJI patients treated with two-stage exchange within our institution from 2017-2020. Included cases met 2011 MSIS criteria for PJI, occurred $\geq$3 months following index surgery, and were followed for a minimum of two years. Treatment success was defined as Tier 1A in the 2019 MSIS working group definition. ICM single-stage criteria included: non-immunocompromised host, absence of sepsis, adequate soft tissue for closure, known preoperative pathogen, and susceptibility. Kaplan-Meier survivorship curves and Fisher's exact test were calculated, with an alpha level of 0.05 denoting statistical significance.

RESULTS:

A total of 294 chronic PJI patients who underwent two-stage exchange were included. Only 13% (n=37) met ICM criteria for single-stage exchange. Patients who met ICM criteria were significantly older (68.9 vs. 65.0 years; p=0.032) had significantly longer hospital stays (11.8 vs. 8.9 days, p=0.044), but had significantly better McPherson host grades (p=0.003). There was no difference in body mass index, gender, prevalence of diabetes, ASA, or Charlson comorbidity index scores. There was no significant difference in infection-free survivorship between patients that did or did not meet single-stage criteria (83.8% vs. 81.3%, respectively; p=0.836).

DISCUSSION AND CONCLUSION:

We found that a very limited proportion of chronic PJI patients were suitable for a single-stage exchange. Furthermore, the supposition that healthier hosts with known pathogens (the basis of the ICM criteria) yield better PJI treatment outcomes were not observed. These results justify the ongoing multicenter randomized control trial comparing single-stage versus two-stage treatment for chronic PJI.