

# **A Retrospective Analysis of Outcomes in Articulating vs. Static Spacers for Prosthetic Joint Infections following Total Hip and Total Knee Arthroplasty**

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## **INTRODUCTION:**

The two-stage revision arthroplasty is a common approach for treatment of prosthetic joint infections (PJIs). The first stage involves removal of the original implant components and placement of an antibiotic spacer that is either static, which immobilizes the joint, or articulating, allowing for range of motion. While articulating spacers may allow for increased mobility, there is concern over lack of infection control. The purpose of this study is to compare outcomes of articulating spacers compared to static spacers following implant removal for PJIs.

## **METHODS:**

We conducted a single-center retrospective chart review of patients with prosthetic joint infections following total hip arthroplasty (THA) and total knee arthroplasty (TKA) between the dates January 1, 2016, to June 14, 2021. For this study, we included patients who had a static or articulating spacer placed after implant removal of their infected prosthetic joint. For patients who underwent multiple spacers, we used the spacer type most recent to their last known follow-up visit. We excluded acetabular spacers. All statistical analyses were performed. A Chi-Squared Test was used for unbiased variables and a Fischer's Exact Test was applied for variables that expressed bias.

**RESULTS:** A total of 112 patients were identified for inclusion in this study; 77.7% underwent placement of articulating spacers and 22.3% underwent placement of static spacers. Static spacers were more likely to fail at clearing infection compared to articulating spacers (OR 2.96 [1.07, 8.11], p-value 0.04). Static spacers were also over five times more likely than articulating spacers to result in death (OR 5.19 [1.28, 21.09], p-value = 0.03). The distribution of functional status expressed significance between articulating and static spacers (p-value = 0.008). Based on this distribution, static spacers had a greater prevalence of amputation, wheelchair use, or death. In those who underwent a second stage reimplantation procedure, articulating spacers were more likely to not fail compared to static spacers (OR 5.52 [1.39, 21.89], p-value = 0.03). When comparing infection etiologies of PJIs, there was no significant difference between rates of polymicrobial organisms (p-value= 0.63) or antibiotic resistant organisms (p-value= 0.81) in articulating vs. static spacers. However, among bacterial, culture negative, fungal, and acid-fast organisms, PJIs with a bacterial source were more common in articulating spacers, while PJIs with fungal sources were more common in static spacers (p= 0.004).

**DISCUSSION AND CONCLUSION:** In a retrospective analysis of patients from a single medical center who underwent placement of an antibiotic spacer for a prosthetic joint infection following THA and TKA, outcomes were superior for articulating spacers compared to static spacers in terms of functional status at last follow up, reimplant success, infection eradication rates, and likelihood of death.