

## **Mid-Term Outcomes of 36-mm Delta Ceramic-on-Ceramic Total Hip Arthroplasty: Results from a Post-Approval Study**

Shahriar Seddigh, Sean Croker, Edward Vasarhelyi

### **INTRODUCTION:**

Delta ceramic-on-ceramic (CoC) bearings in total hip arthroplasty (THA) offer superior wear resistance and biocompatibility, making them ideal for younger and more active patients. While clinical outcomes are generally favorable, concerns remain regarding complications such as squeaking and ceramic fracture. This study reports mid-term implant survivorship, clinical outcomes, and radiographic findings following THA using a 36-mm Delta CoC bearing.

### **METHODS:**

This prospective, multicenter observational study enrolled 170 patients who underwent primary THA using a 36-mm Delta CoC bearing. The primary endpoint was implant survivorship at five years. Secondary outcomes included changes in Harris Hip Score (HHS), Subject Hip Outcomes questionnaire, radiographic findings, and the incidence of adverse events including ceramic fracture and noise-related events. Patients were evaluated preoperatively, at six weeks postoperatively, and annually for a minimum of five years.

### **RESULTS:**

At five years, implant survivorship was 95.3% (95% CI, 90.8–97.6%). Eight patients (4.7%) underwent revision: three for dislocation, three for infection, one for aseptic loosening, and one for periprosthetic fracture. The mean Harris Hip Score improved from 51.3 preoperatively to 92.5 at five years. Radiographic evaluation of the acetabular component demonstrated radiolucent lines in 0.9% of cases and osteolysis in 0.9%, with no evidence of component migration. The femoral stem showed radiosclerotic lines in 6.4% of patients, with no cases of osteolysis. No postoperative ceramic fractures were observed, although one liner rim fracture occurred intraoperatively during impaction. Postoperative noise was reported in 21.5% of patients, including squeaking in 14.0%. At final follow-up, 97.2% of patients reported satisfaction with their THA.

### **DISCUSSION AND CONCLUSION:**

At five years, the 36-mm Delta CoC bearing demonstrated excellent survivorship and clinical performance, with a low rate of ceramic-related complications. Although noise-related events, including squeaking, were more prevalent than previously reported, these events did not adversely affect patient satisfaction or implant longevity.