Early Complications Following Reverse Shoulder Arthroplasty Using Custom Metallic Glenoid Components

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Introduction. Management of glenoid bone loss in both primary and revision reverse shoulder arthroplasty (RSA) remains a substantial clinical challenge. In recent years, custom glenoid components have become available to compensate for severe glenoid bone loss when off-the-shelf components are deemed inadequate and bone grafting is deemed undesirable. However, little is known about the post-operative outcomes and complications of custom glenoid components in reverse shoulder arthroplasty.

Materials & Methods. All shoulders that underwent RSA by one of three board-certified, fellowship-trained shoulder and elbow surgeons at a single academic tertiary referral center between March 2021 and November 2022 were reviewed. A total of 863 primary and 227 revision RSAs were performed. A minimum of 1-year-follow-up was required for inclusion in final analysis, which was conducted on 14 shoulders with implantation of a custom metallic glenoid component (10 females and 4 males) with a mean age of 69 years. Two RSA were primary and 12 revision RSA. Thirteen patients received the glenoid Vault Reconstruction System (VRS; Zimmer-Biomet), while 1 patient received a 3D printed custom glenoid from Restor3d. Radiographs were reviewed at final follow-up for evidence of component loosening or hardware failure. All complications were documented.

Results. A total of 3 shoulders (21%) experienced postoperative instability, 2 of which failed repeat open reduction and went on to resection arthroplasty, while the third was successfully managed with a closed reduction under general anesthesia in the operating room. Three additional patients (21%) had evidence of glenoid component loosening. Overall failure, defined as conversion to a resection arthroplasty or glenoid component loosening was seen in 5 shoulders (36%). All failures occurred in shoulders undergoing revision RSA.

Discussion. In the present study, there was a high rate of complications in patients who underwent RSA using a custom metallic glenoid component. Of the patients who underwent revision RSA using a custom glenoid component, 50% experienced either instability or failure of bony ingrowth. Further research is required to identify the patients at highest risk for failure in RSA using custom glenoid components for severe glenoid bone loss as well as alternative design features that may improve upon these results.

Disclosures

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