

Scapular Spine and Acromion Stress Fractures Following Reverse Shoulder Arthroplasty Have a High Rate of Failure Following Operative Treatment.

Michael Coons, Estelle Strangmark, Abhishek Ganta, Joseph D Zuckerman, Kenneth A Egol

INTRODUCTION: Fractures of the scapular spine and acromial process are rare but serious complications following reverse total shoulder arthroplasty (RTSA). These fractures, typically resulting from insufficient bone stock or altered biomechanics after RTSA, present substantial challenges in both diagnosis and management. Despite the increasing prevalence of RTSA procedures, optimal strategies for the repair of these fractures remain unclear. Investigating the outcomes of operative repair is essential to inform surgical decision-making, improve patient outcomes, and guide the development of more effective treatment protocols.

METHODS: All adult patients who were treated operatively for a stress scapular spine or acromial fracture following a RTSA at a single center between 2013 and 2024 were identified. All patients underwent operative repair with plate and screw fixation with or without adjunctive bone grafting. Data collected included patient demographics, injury characteristics, fracture classification, surgical details, radiographic findings, and clinical outcomes, which were based on chart review of follow-up visits and revision surgeries.

RESULTS:

Over the study period, 2006 RTSA procedures were performed at a single academic center. Sixteen patients (0.8%) developed an acromial or scapular stress fracture and underwent operative fixation. Mean follow up was 23 months. Of the 16 patients included, 10 (62.5%) were female. All fractures were the result of an insufficiency mechanism. All underwent ORIF via a direct approach to the scapula and 69% had either traditional bone grafts, or biologics consisting of demineralized bone matrix and bone marrow aspirate. Of the 16 patients, only 6 (37.5%) healed successfully without secondary intervention. A total of 8 patients (50%) required multiple revision surgeries following their initial RTSA procedure, and 10 patients (62.5%) continue to experience ongoing problems, including secondary fractures and nonunion.

The number of plates utilized, and implant positions used between patients that healed and that experienced ongoing complications did not differ ($p=0.264$).

DISCUSSION AND CONCLUSION: Stress scapular spine and acromion fracture following RTSA is a very uncommon but challenging condition to manage successfully and should be carefully considered during surgical decision-making between patients and surgeons. These findings indicate that a single operative treatment of these fractures was rarely successful using standard techniques. These data suggest that a different approach should be investigated.