



What is the effect of postoperative scapular fracture on outcomes of reverse shoulder arthroplasty?

Matthew J. Teusink, MD^a, Randall J. Otto, MD^b, Benjamin J. Cottrell, BS^c,
Mark A. Frankle, MD^{d,*}

^aDepartment of Orthopaedic Surgery and Rehabilitation, University of Nebraska Medical Center, Omaha, NE, USA

^bPremier Care Orthopedics and Sports Medicine, Saint Louis, MO, USA

^cFoundation for Orthopaedic Research, Tampa, FL, USA

^dFlorida Orthopaedic Institute, Tampa, FL, USA

Background: Postoperative scapular fracture is a common complication after reverse shoulder arthroplasty (RSA). The purpose of this study was to determine its effect on RSA patient outcomes.

Methods: A retrospective, case-control study of 25 nonoperatively treated postoperative scapular fractures after RSA were analyzed with a minimum 2-year follow-up from surgery and 1-year follow-up from fracture. Eligible patients were matched 1:4 to a control group for age, sex, follow-up time, surgery indication, and primary operation vs revision. Outcome measures, including American Shoulder and Elbow Surgeons (ASES) score and range of motion, were compared between fracture cases and controls. Also analyzed were radiographic features, including fracture location (acromion vs scapular spine) and healing.

Results: Incidence of scapular fracture after RSA in this series was 3.1%. Fractures occurred from 1 to 94 months postoperatively. The revision rate was higher in the fracture group (8% vs 2%) but did not reach statistical significance ($P = .18$). Fracture patients had improved (Δ ASES, 21) but inferior clinical outcomes, with a postoperative ASES score of 58.0 compared with 74.2 ($P \leq .001$). Change in range of motion also diminished in the fracture group, with a mean gain of 26° forward elevation compared with 76° ($P < .001$). Fracture location ($P = .54$) or healing ($P = .40$) did not affect outcome.

Conclusion: Postoperative scapular fractures may occur at any point postoperatively; increasing incidence is likely as longer follow-up becomes available. This complication leads to inferior clinical results compared with controls. However, patients show improvement compared with their preoperative measurements, even at longer-term follow-up. Patients with postoperative scapular fractures may have increased risk of revision.

Level of evidence: Level III, Case-Control Study, Treatment Study.

© 2014 Journal of Shoulder and Elbow Surgery Board of Trustees.

Keywords: Scapular fracture; acromial fracture; reverse shoulder arthroplasty; nonoperative treatment; postoperative complication; outcomes

The Western Institutional Review Board determined this study was exempt from review.

*Reprint requests: Mark A. Frankle, MD, Florida Orthopaedic Institute, 13020 N Telecom Pkwy, Tampa, FL 33637, USA.

E-mail address: mfrankle@floridaortho.com (M.A. Frankle).

Reverse shoulder arthroplasty (RSA) is a common procedure for the management of difficult shoulder problems, such as massive and irreparable rotator cuff tears, with and without glenohumeral arthritis, rotator cuff deficiency

secondary to proximal humeral fractures, and revision shoulder arthroplasty.^{1-4,6-10,18-20,23,24,27,28} Approximately 10,000 RSAs were performed in 2007, with estimates that 30,000 were performed in 2012.¹⁴ Although RSA has been shown to be a successful procedure at short-term and midterm follow-up,^{1,3,4,6,7,10,18,19,23,24,27} complications continue to be a concern, especially with increasing numbers of the procedure being performed.

Scapular fractures after RSA have been reported in 0.8% to 7.2% in published studies.^{1-3,5-7,11,12,14,17,20,23,25,26,28} A stable fulcrum in RSA is provided by an appropriately tensioned deltoid, which allows active shoulder elevation and a stable prosthesis. Failure to appropriately tension the deltoid may lead to prosthetic instability, neurologic injury, deltoid insufficiency, or scapular fractures. The acromial origin of the deltoid is important in deltoid tensioning and ultimate performance of the implant. Fractures that disrupt the appropriate tension of the deltoid may lead to deleterious consequences for the overall function of the implant.

Previous studies have reviewed the outcomes of scapular fractures after RSA at short-term follow-up. Hamid et al¹¹ reported 8 fractures, all treated nonoperatively, at mean follow-up of 35 months and found poor elevation and American Shoulder and Elbow Surgeons (ASES) scores, with 6 of the 8 fractures going on to nonunion.¹¹ Similarly, Hatstrup reported 9 postoperative scapular fractures managed nonoperatively and found decreased active elevation and ASES scores compared with other patients undergoing RSA who did not experience a fracture.¹² Walch et al²⁶ similarly showed poor outcomes in 4 patients with postoperative scapular fractures; however, they also showed that preoperative lesions (os acromiale and acromial fragmentation) did not affect clinical outcomes in 41 patients with preoperative scapular insufficiency. They concluded that preoperative scapular lesions are an entirely different entity from postoperative fractures, which have deleterious consequences on outcomes.

Although these studies showed that postoperative acromial fractures likely lead to inferior outcome scores in the short-term compared with patients who did not experience this complication, none of these studies demonstrated whether these results remained consistent with longer-term follow-up from the fracture. Whether revision rates are affected by postoperative fractures, despite a report that scapular fractures led to subsequent instability, has also not been shown.¹⁷ Although there has been speculation that scapular spine fractures lead to inferior outcomes compared with acromial fractures,^{11,26} whether the fracture location is prognostic of outcome remains unclear. The 49 postoperative scapular fractures documented in previous reports occurred as early as 2 months and as late as 48 months.^{5,11,12,17,26} However, little information exists about the time period at which patients are at risk to develop this complication.

This study used case-control methods to determine whether patients with nonoperatively treated postoperative scapular fractures have inferior outcomes after RSA. We

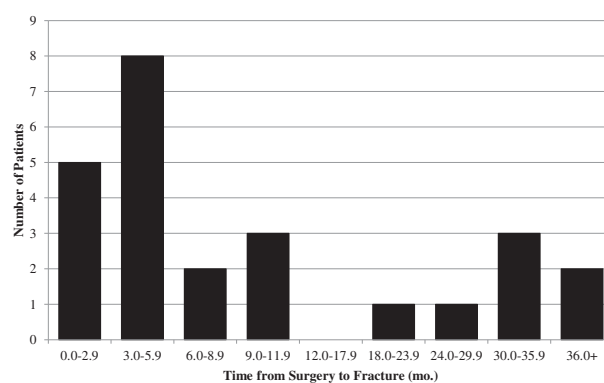


Figure 1 Incidence of postoperative scapular fracture at length of follow-up from surgery.

hypothesized that patients with postoperative scapular fractures would continue to have inferior clinical outcomes compared with matched controls without fractures at comparable postoperative follow-up. We also hypothesized that scapular fractures would lead to an increased reoperation rate compared with controls.

Finally, we sought to determine which features of scapular fractures might predict a poor outcome. We hypothesized that fracture healing would lead to improved outcomes compared with patients with nonunion and that scapular spine fractures have inferior outcomes compared with acromial fractures.

Materials and methods

A retrospective analysis of a consecutive, nonselected series of all RSAs performed by the senior surgeon (M.A.F.) from February 1, 2003, through May 31, 2010, was performed to evaluate for the complication of postoperative scapular fracture. During this interval, the senior author performed 1018 RSAs using the Reverse Shoulder Prosthesis (DJO Surgical, Austin, TX, USA). All procedures were performed through a standard deltopectoral approach.

The presence of a scapular fracture was determined by the senior surgeon, with a clinical presentation of pain over the acromion or scapular spine and radiographic confirmation. A total of 32 postoperative scapular fractures in 32 patients were identified. Of these, 27 were diagnosed with clear identification on plain radiographs and 5 with plain radiographs and a confirmatory computed tomography (CT) scan.

Inclusion criteria were all patients undergoing RSA by the senior author who sustained a postoperative scapular fracture and were managed nonoperatively with a minimum of 2 years of follow-up from the time of arthroplasty and 1 year of clinical follow-up since the documented scapular fracture. The analysis excluded patients who died or were lost to follow-up before clinical follow-up a minimum of 1 year from the fracture was obtained.

All postoperative scapular fractures were managed nonoperatively during the study period. Treatment consisted of sling immobilization for 6 weeks and then advancing activities as tolerated.

Download English Version:

<https://daneshyari.com/en/article/4073193>

Download Persian Version:

<https://daneshyari.com/article/4073193>

[Daneshyari.com](https://daneshyari.com)