Fractures of the Shoulder Girdle

Editorial Comment

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Published online: 8 October 2011
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This symposium is a collection of manuscripts dealing with current concepts in the evaluation and management of fractures of the shoulder girdle. Given the relatively high incidence of fractures about the shoulder, particularly those of the proximal humerus, operative techniques and implant technology continue to evolve.

The use of locked plating has improved the treatment of proximal humerus fractures in elderly patients with osteoporosis. In patients with osteoporosis or comminuted fractures, however, fixation failure may still occur as the fracture settles during healing, potentially leading to screw penetration within the glenohumeral joint. Strategies to mitigate this complication may include the use of fibular strut allograft within the medullary canal and the use of suture augment within the rotator cuff combined with locked plating while avoiding long locked screws close to the subchondral surface.

In general, nonoperative treatment for Neer one-part proximal humerus fractures restores function with minimal or no pain. The use of locked plating for more severe fracture patterns may be associated with worse function compared with its use in less displaced fractures. Further, age may predict function after treatment of displaced proximal humerus fractures less than the initial fracture pattern. Patients can more accurately be advised of their potential function after operative treatment. The incidence of deep venous thrombosis after shoulder surgery appears to be higher than previously thought. The use of aspirin and mechanoprophylaxis after surgery for proximal humerus

Fig. 1 Dr. Konrad I. Gruson is shown.

fractures may provide sufficient treatment to reduce its incidence.

Certain proximal humerus fractures are not amenable to plate and screw fixation and are more reliably treated with shoulder arthroplasty. The use of hemiarthroplasty for displaced proximal humerus fractures in the elderly has been associated with variable function but reliable pain relief. It has become clear the healing of the greater tuberosity to the humeral stem represents the most important factor in long-term function. Therefore, the use of a fracture-specific stem over a conventional humeral implant may improve tuberosity healing and, ultimately, patient function. The reverse shoulder prosthesis has been used successfully in the setting of rotator cuff-deficient arthritis. While requiring confirmation, its use for treating fractures appears to be less reliant on greater tuberosity healing for achieving pain relief and overhead elevation.

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Surgery for select displaced midshaft clavicle fractures has increased given the higher reported incidence of nonunion and symptomatic malunion. As such, implants for clavicle fracture fixation have evolved to lower-profile, precontoured locked plates. The use of precontoured plates may reduce the need for hardware removal, resulting in higher patient satisfaction and clinical results comparable to those of noncontoured conventional plates. Distal clavicle fractures represent a difficult subset of clavicle fractures. The use of precontoured distal clavicle plates with supplemental use of sutures around the coracoid or coracoclavicular screw fixation may more reliably restore function with minimal pain. In the case of operatively treated midshaft clavicle fractures, a plateau in clinical improvement appears to be reached at 1 year after surgery. This may provide a prognostic timeline of recovery for patients who undergo this surgery.

Concern over prominent hardware used to treat clavicle fractures has led to further interest in the use of intramedullary devices. The use of the Rockwood pin for displaced midshaft clavicle fractures has been associated with a substantial complication profile, especially wound breakdown, pin prominence, and fracture nonunion. Cautious use of this implant should perhaps be advised. Titanium elastic intramedullary nailing, combined with careful intraoperative fluoroscopy to assess lateral penetration and

a more conservative postoperative rehabilitation protocol, may represent an alternative to conventional plate and screw fixation.

In general, strict indications for surgery of scapula fractures have remained elusive. The majority of the extraarticular fractures can be treated without surgery without complications while restoring function. The appropriate radiographic evaluation has traditionally included trauma views, which are variable in quality and positioning. The use of CT imaging with three-dimensional reconstruction may allow for more accurate and reproducible measurements of fracture angulation and displacement. Furthermore, surgery for substantially displaced or angulated scapular fractures appears to yield comparable rates of healing and restoration of function to patients managed nonoperatively for less displaced fractures. If surgery is indicated, selective incisions may provide sufficient access to the major fracture lines while minimizing soft tissue dissection.

The authors of these articles are to be congratulated for their contributions to our understanding of the diagnosis, operative management, and potential complications of fractures of the shoulder girdle. It is my sincere hope that this symposium will stimulate discussion and raise further questions so as to continue to advance the treatment of shoulder fractures. I hope you enjoy this symposium.