Post-Traumatic Arthritis of the Shoulder

Patrick Graham

Introduction

Osteoarthritis (OA) is one of the most common diagnoses seen in orthopaedic practice. Those with symptomatic osteoarthritis will present with variable amounts of joint pain and dysfunction that may be of an acute or chronic nature. In the United States, an estimated 21–27 million people are affected by symptomatic OA, with approximately 12% being attributed to a posttraumatic etiology. This is most commonly associated with a fracture, or impaction-type injury, that disrupts the articular surface and may also be seen in the setting of a dislocation, or other ligamentous injury, which leaves the joint unstable. Other risk factors include age, severity of injury in regard to force applied, residual articular disruption, and the specific joint involved. Although these risk factors are well known and understood, the mechanism by which articular irregularity develops to symptomatic posttraumatic arthritis is not (Brown, Johnston, Saltzman, Marsh, & Buckwalter, 2006; Buckwalter & Brown, 2004; Doherty & Abhishek, 2017; Howe, 2018; Murphy & Helmick, 2012; Olson, Furman, & Guilak, 2012; Schenker, Mauck, Ahn, & Mehta, 2014).

Case Presentation

A 48-year-old, right-hand-dominant woman presented with approximately 6 months of gradually worsening left shoulder pain and stiffness. She denied any recent injury or incident but did note a prior "left shoulder fracture" from a fall sustained 5 years previously. This was treated conservatively, and she reported "good healing" with a successful recovery, noted as a resumption of all preinjury activities including exercise. For retrospective radiographic review, see Figure 1.

Her symptoms began as intermittent aches and pains. Some days the shoulder would be sore upon waking in the morning but would "loosen up" after she was up and about, getting ready for her day. This gave way to more consistent, constant, aching throughout the day that eventually warranted her using over-the-counter nonsteroidal anti-inflammatory drugs (NSAIDs) on a daily basis. In following months, the NSAIDs became less and less effective and she contacted her primary care provider who prescribed her tramadol and advised consultation with orthopaedics.

Upon presentation was an alert, oriented, affect-appropriate female in no apparent distress. She postured with a left shoulder slump. There was no appreciable swelling, discoloration, or abnormal warmth. She noted generalized tenderness about the glenohumeral joint, most notably anterior. There was crepitation with range of motion which was limited in all planes. She displayed 4+/5 strength and a negative drop arm. She was found to be distally neurovascularly intact.

Radiographs obtained at time of evaluation included anteroposterior, Grashey, and axillary views of the left shoulder (see Figure 2). These were significant for irregularity of the glenohumeral joint associated with deformity of the humeral head. These findings, in light of her prior trauma, are consistent with posttraumatic arthritis of the shoulder.

Management

The current management of posttraumatic arthritis mirrors that of primary symptomatic osteoarthritis. Options discussed with the patient included continuation of oral medications, trialing a course of physical therapy, administration of an intra-articular corticosteroid via injection, or referral to a shoulder surgeon for consideration of arthroplasty. The patient elected for intra-articular steroid injection and was performed at the clinic visit. She was also provided a home exercise program. She noted continued relief 1 month following the injection and had improved range of motion in doing daily stretching (Doherty & Abhishek, 2017; Howe, 2018).

Discussion

Posttraumatic arthritis is a common etiology seen in orthopaedic practice. The advanced practice provider should take care in gathering a thorough history, including any remote injury that would be applicable to the affected joint. Although this does not significantly impact options for treatment, it is an important distinction for clinical documentation and associated coding.

At the time of injury, it is important to discuss the potential for developing posttraumatic arthritis despite

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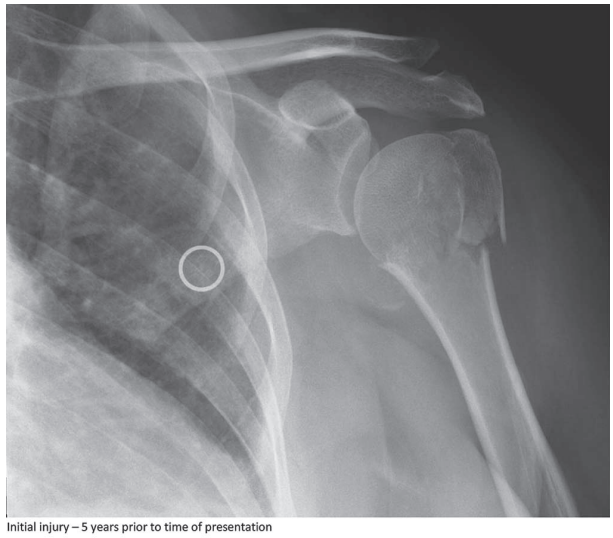
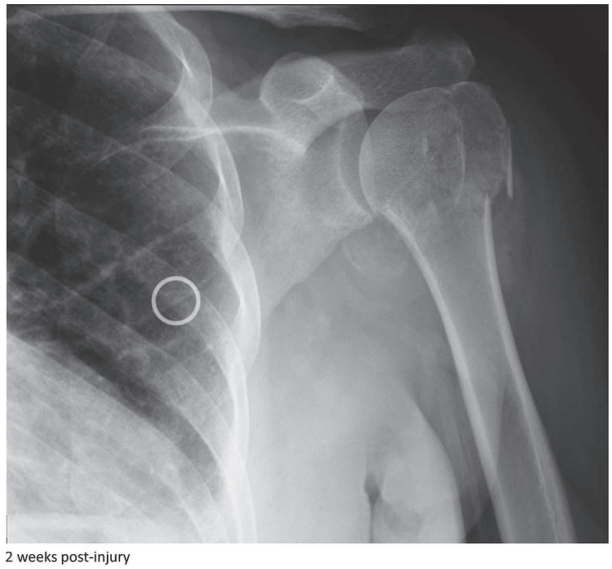
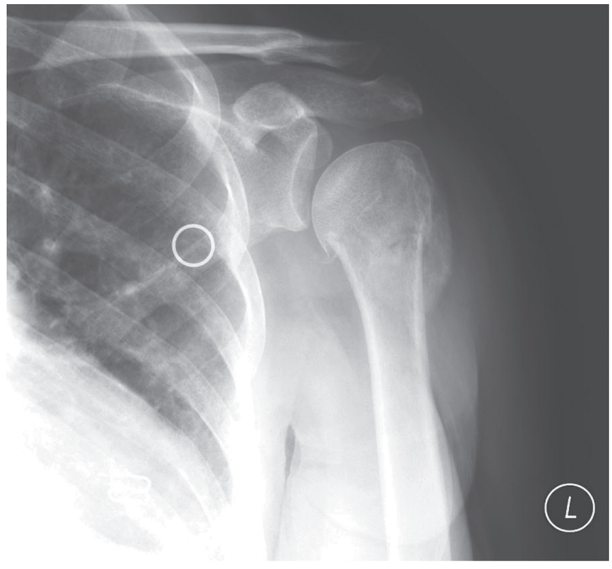


Initial injury – 5 years prior to time of presentation



2 weeks post-injury



6 weeks post-injury

FIGURE 1. Retrospective review of left shoulder radiographs from time of initial injury, 5 years prior. Note progressive callus formation consistent with satisfactory healing of the fracture with overall alignment maintained.

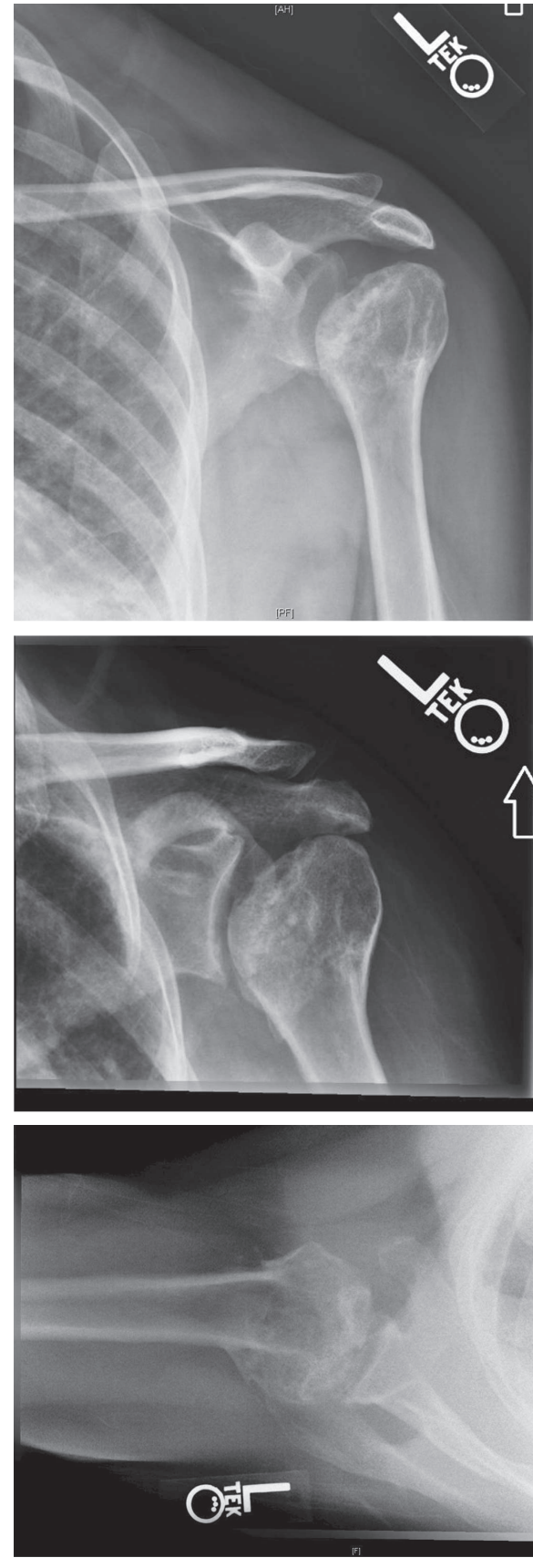


FIGURE 2. Anteroposterior, Grashey, and axillary radiographs of the left shoulder. Note irregularity of the glenohumeral joint and associated deformity of the humeral head consistent with posttraumatic arthritis.

optimal surgical intervention and outcomes. Some studies have reported rates as high as 75% following knee trauma. There are several proposed pathways as to how posttraumatic arthritis evolves, but none have been confirmed and thus preventive treatments are not yet available. Further research into the use of varying surgical techniques, potential for the administration of biological agents at time of surgery, or other interventions to stop the progression of acute joint injury to posttraumatic arthritis is certainly warranted (Brown et al., 2006; Buckwalter & Brown, 2004; Doherty & Abhishek, 2017; Howe, 2018; Murphy & Helmick, 2012; Olson et al., 2012; Schenker et al., 2014).

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