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## Topics in Sports Medicine

# Shoulder Internal Derangement and Osteoarthritis in a 25-Year-Old Female Softball Athlete



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### Key Indexing Terms:

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### Abstract

**Objective:** The purpose of this report is to describe osteoarthritis and internal derangement of the shoulder in a collegiate softball player.

**Clinical Features:** A 25-year-old female softball athlete presented with a history of chronic right shoulder pain. A thorough clinical examination and multiple imaging studies were performed. Osteoarthritis was demonstrated on radiographs, and ligamentous and rotator cuff tendon tears were displayed on magnetic resonance imaging. The patient's treatment plan included full spine manipulation, cold laser therapy, kinesiotaping, stretching, and neuromuscular reeducation of the right shoulder.

**Interventions and Outcomes:** The patient reported a decrease in symptoms after 1 month, although treatment was sporadic because of poor patient compliance.

**Conclusion:** Osteoarthritis and internal derangement may occur in overhead-throwing athletes, and correct imaging is needed for timely and accurate diagnoses. Following a timely diagnosis, the young patient in this case had a good recovery with multimodal chiropractic care.

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## Introduction

Internal derangement (eg, rotator cuff tears, tendinopathy, and labral tears) and osteoarthritis (OA) are not pathologies typically associated with a young healthy athlete, but the occurrence of shoulder injuries or

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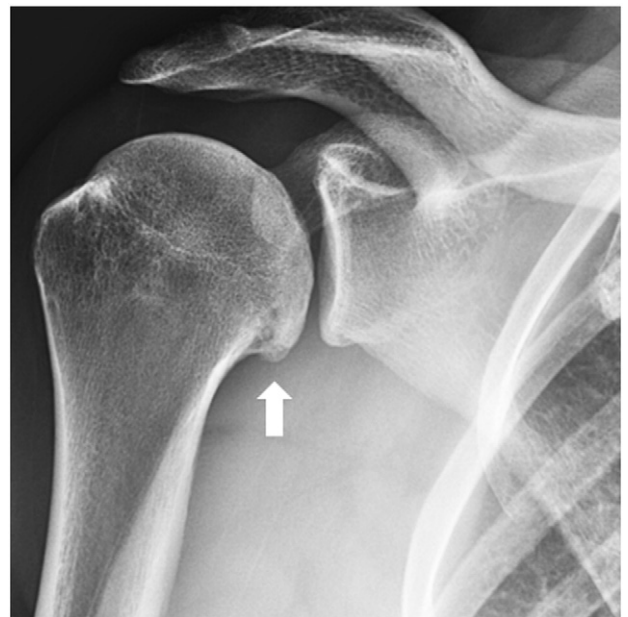
instability in overhead-throwing sports, such as baseball, softball, volleyball, tennis, or football, is increasingly prevalent.<sup>1-6</sup> The rotator cuff and other muscles are dynamic stabilizers, whereas the glenoid labrum, glenohumeral ligaments, joint capsule, and osseous structures are the static stabilizers of the glenohumeral joint.<sup>7</sup> Diagnosis of rotator, labral, or osseous pathologies of the shoulder can be obtained with a variety of imaging modalities, but which structures are best seen, by which modality, has been a topic of ongoing controversy.<sup>8-14</sup> To our knowledge, there have been no case reports demonstrating OA and internal derangement to this severity in a young female softball athlete. Therefore, the purpose of this report is to describe chiropractic management and the diagnostic imaging findings of OA and internal derangement of the shoulder in a collegiate softball player.

## Case Report

A 25-year-old woman presented at her initial visit with a variety of complaints including chronic right shoulder pain. Her shoulder pain began in high school insidiously related to softball and working out. She played short stop on her high school and college softball teams. In 2005, she had a labrum reattachment on her right shoulder. Following surgery, she underwent 9 months of physical therapy. In 2009, she reinjured her labrum but did not have reparative surgery. She had 5 intraarticular cortisone injections in the right shoulder, the last in 2012. She stated that these helped relieve the pain but temporarily. She had pain involving the entire right shoulder and rated the pain at a 3 of 10 on numeric pain scale, with 10 being the worst pain ever. Pain was elicited at the end ranges of external rotation, internal rotation, and 90° of abduction. All remaining right shoulder ranges of motion were within normal limits and absent of pain. Speed's test and Yergason test results on the right shoulder were positive. The patient also elicited a positive result in supraspinatus press test, empty can test, shoulder impingement sign, and posterior drawer test on the right shoulder. Allen test, Adson test, Wrights test, and Roos test results on the right shoulder were negative. She stated that sometimes the pain was achy and throbbing, and other times, she described it as sharp and stabbing. The pain was usually worst in the morning or after physical activity. Occasionally, her right arm, forearm, and hand went numb. She has played competitive softball prior to adolescence and maintained a healthy diet with daily exercise. Her workouts often included lifting heavy weights. At the

time of the initial examination, she was undergoing physical therapy for her right shoulder as prescribed by her medical physician. The remainder of the physical examination was unremarkable. Initial working diagnosis of her right shoulder was bicipital tenosynovitis and supraspinatus tendinosis complicated by repetitive injury to the shoulder, and outside imaging was obtained.

Imaging studies included a radiographic examination (internal/external rotation and glenohumeral joint views) and magnetic resonance imaging (MRI) with intraarticular contrast injection examination of the right shoulder. The findings consisted of small subchondral cystic changes with cortical irregularity on the greater tubercle as well as cortical irregularity and an inferior osteophyte on the humeral head (Fig 1) indicating mild OA using the classification outlined by Reineck et al.<sup>3</sup> Pertinent findings on the MRI included a subacromial/subdeltoid bursal fluid collection inferior to the acromion process, articular surface partial-thickness tearing of the supraspinatus/infraspinatus junction (Fig 2) extending posteriorly to the bursal surface of the infraspinatus tendon, tendinosis of the supraspinatus and subscapularis tendons, a labral tear at the 12 o'clock position including the anchor of the long head of the biceps tendon, and extravasation of the imaging contrast agent into the adjacent soft tissues with no evidence of the posterior band of the inferior glenohumeral ligament (Fig 3). This injury to the inferior glenohumeral ligament, the most important



**Fig 1.** Anteroposterior radiograph of the right shoulder demonstrating cortical irregularity, sclerosis, and a large inferior osteophyte (arrow) of the humeral head.

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