

[Primary Care]

Scapular Stress Fracture in Water Polo: A Case Report

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Water polo is an intense sport with extreme physical contact and repetitive shoulder motion that predisposes to injury. The continuous scapular motion and recruitment of the scapular stabilizers to maintain buoyancy expose water polo athletes to the risk of scapular stress fracture. Suspicion should arise when evaluating water polo athletes presenting with shoulder pain.

Keywords: fracture; stress fracture; scapula; water polo; shoulder

Fractures of the scapula account for approximately 1% of all fractures and are typically associated with significant trauma.¹⁴ Stress fractures have been reported at the acromion in a football lineman,¹² golfer,⁷ and elite tennis player.¹⁰ Coracoid stress fractures have occurred in a cricketer³ and trapshooter.² Within the body of the scapula, there are only 4 reported cases in athletes: baseball player,⁸ cricketer,⁵ gymnast,⁹ and a runner with hand weights.¹¹

Water polo has a high incidence of shoulder complaints, ranging from 24% over a 13-year period¹ to as high as 80% in elite athletes.^{4,13} This is intuitive given the nature of the sport, with repetitive throwing, swimming, blocking, and support to maintain the upright position. The range of injuries includes rotator cuff, impingement, traumatic instability of the glenohumeral and acromioclavicular joints, suprascapular nerve injury,⁴ and labral tears.⁶

CASE REPORT

An 18-year-old healthy, right-hand-dominant woman with a history of Hodgkin lymphoma presented with 2 weeks of left shoulder pain without injury. With the recent start of high school water polo, she noted worsening pain, particularly with sculling and a spin maneuver. Internal rotation (reaching behind) and opening a heavy car door provoked symptoms. She described diffuse shoulder pain without popping, instability, swelling, bruising, numbness, or tingling but continued practicing water polo.

Three years prior, she was diagnosed with stage IV nodular sclerosing Hodgkin disease. At that time, she had left shoulder pain and axillary lymphadenopathy and responded well to chemotherapy treatment. Two months before symptoms began, a recent oncology follow-up showed no evidence of disease,

with negative positron emission tomography; chest radiograph; computed tomography of the chest, abdomen, and pelvis; laboratory work; and normal physical examination.

A complication of her chemotherapy was amenorrhea, necessitating estrogen replacement for diminished ovarian reserve. In addition to chemotherapy, she received steroids. Radiation was not utilized.

On physical examination of the left shoulder, there was swelling and tenderness in the superior scapula. Motion was intact with discomfort in the terminal 30° of abduction. She had minor posterior discomfort with resisted external rotation. She had a positive subscapularis lift-off test for pain but no weakness. Neurovascular examination was normal, and she had full strength. No axillary lymphadenopathy or masses were palpable.

Plain radiographs of the left shoulder revealed a nondisplaced fracture of the superior border of the scapula (Figure 1). Magnetic resonance imaging (Figure 2) detailed the stress fracture without a pathologic lesion. Bone density (DEXA) was within normal limits for her age.

The patient rested from water polo and weightbearing activities involving the affected arm for 6 weeks. She eased back into water polo activities in efforts to compete in the state finals during her senior season and began gentle strengthening. At 8 weeks, she was pain-free. Her physical examination results were normal, without tenderness and with excellent strength. Final radiographs showed callous formation consistent with her clinical healing (Figure 3).

DISCUSSION

The average time to healing for scapular body stress fractures and return to play is 8 weeks.^{5,8} This patient showed radiographic healing at the 8-week follow-up. At 9 months

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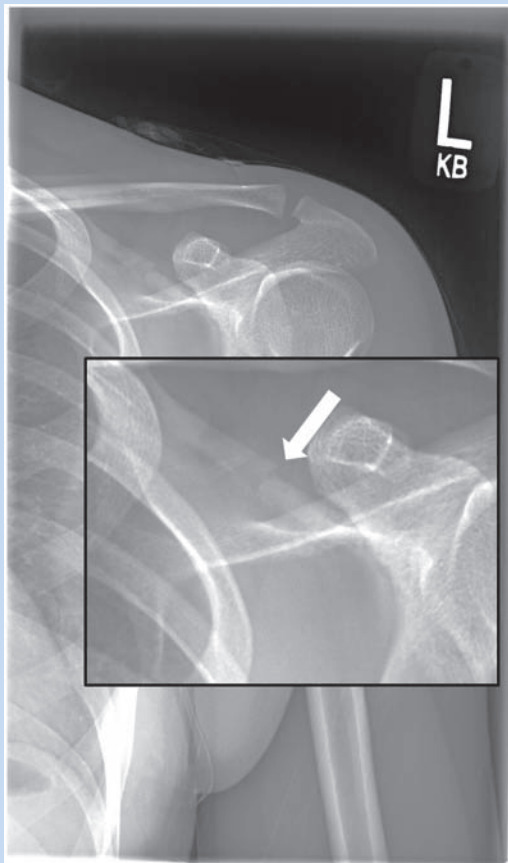


Figure 1. Nondisplaced fracture of the superior scapula.

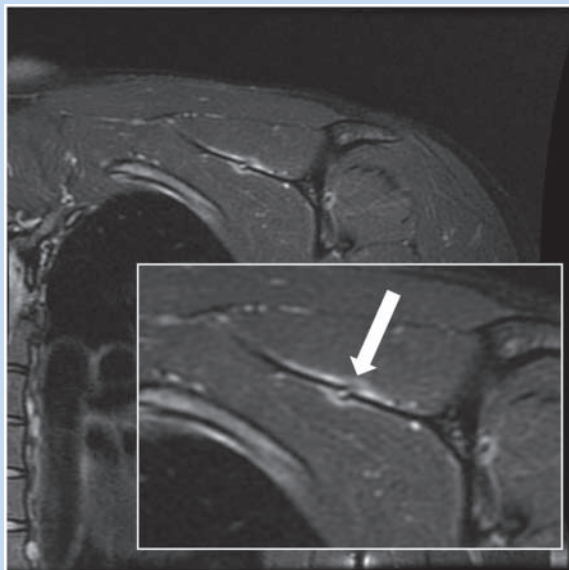


Figure 2. Coronal T2 fat saturation image showing nondisplaced fracture of the superior aspect of the scapular body without evidence for underlying mass lesion.

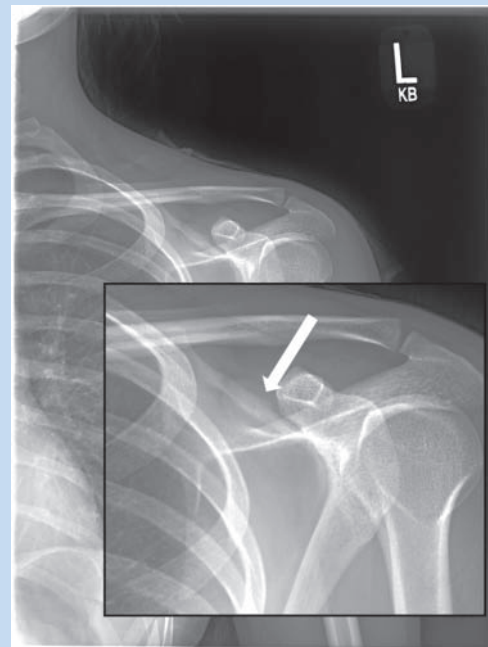


Figure 3. Healing fracture of the superior scapula with callous formation.

from injury, she was doing very well, without symptoms, and was participating in collegiate water polo. This case illustrates an excellent prognosis with conservative treatment and the potential for full return to sport.

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