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POSTERIOR DISPLACEMENT OF A PROXIMAL EPIPHYSEAL CLAVICLE FRACTURE

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□ **Abstract**—Posterior clavicle dislocations are uncommon injuries but are associated with serious complications based on their proximity to mediastinal structures. In children, the physis is the weakest point structurally, making a displaced Salter I fracture more common than a true sternoclavicular joint dislocation. This injury may be missed on exam and routine radiographs unless a high suspicion is maintained. A CT scan with contrast may be helpful for diagnosis of this injury and detection of complications to mediastinal structures. Emergent reduction is required in cases where there is vascular compromise. © 2007 Elsevier Inc.

□ **Keywords**—clavicle; epiphysis; sternoclavicular; child; dislocation; fracture

INTRODUCTION

Although seen much less commonly than its anterior counterpart, posterior clavicular dislocations carry potentially serious morbidity and can be difficult to diagnose on physical and radiographic exam. The injury may occur by a variety of mechanisms. It is important that the emergency physician be familiar with potential complications and emergent reduction techniques. As in the case presented here, children and young adults are more likely to suffer a displaced Salter I fracture rather than a true joint dislocation, although the treatment is similar.

CASE REPORT

A 12 year-old boy presented 2 days after a fall onto his left shoulder while playing football. The patient described immediate pain and an inability to flex, extend, or abduct the shoulder. On the day of the event, he presented to an outside Emergency Department (ED) where he was evaluated and transferred to a pediatric center. According to the patient's mother, plain films were taken there but no specific injury was diagnosed. He was discharged in a sling. He presented almost 48 h later to our ED, complaining of persistent pain and the limitations in range of motion described above. He denied dysphagia, hoarseness, shortness of breath, dizziness, or numbness in the affected arm.

On physical examination, he was an otherwise healthy-appearing boy with his left arm in a sling. Vital signs were normal. The patient was noted to have an obvious step-off deformity near the left sternoclavicular joint, which was moderately tender to palpation (Figure 1). He was not able to actively abduct the shoulder past 10°, nor could he flex the arm actively past 45° due to pain. Passive range of motion was also limited by pain in both abduction and flexion. Internal and external rotations of the joint were minimally affected. He had no shoulder tenderness or deformity. There was no erythema or edema, no sensory loss, and he had full strength in the left extremity.



Figure 1. Patient photograph demonstrating swelling and abnormality of the left sternoclavicular joint.

Plain films of the chest and clavicle were unremarkable. Computed tomography (CT) scan demonstrated posterior displacement of the proximal clavicle without compression of mediastinal structures (Figures 2, 3). The orthopedics service was consulted and the following day, the patient had the fracture reduced in the operating room under general anesthesia. The patient was sent home in a figure-of-eight harness.

DISCUSSION

The sternoclavicular joint relies on its ligamentous support to maintain its integrity. Two sets of ligaments, the periarticular (capsular) ligaments and the extra-articular

(costoclavicular) ligament, provide this support (1,2). The posterior capsule has been shown to be the most important restraint for posterior as well as anterior translation of the sternoclavicular joint (3). The costoclavicular ligament does little to prevent dislocation or displacement of the clavicle.

Due to the strong ligamentous restraints, posterior sternoclavicular dislocations are uncommon injuries, representing less than 1% of all joint dislocations and 3% of dislocations occurring in the upper extremity (4). Owing to their proximity to the vital structures of the mediastinum, posterior sternoclavicular dislocations and posteriorly displaced epiphyseal fractures may be associated with serious complications. The innominate artery and vein run directly posterior to the joint adjacent to the left common carotid artery and the subclavian vein.



Figure 2. CT scan demonstrating left posterior sternoclavicular joint dislocation.



Figure 3. 3-D reconstruction of CT scan demonstrating left posterior sternoclavicular joint dislocation.

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