

Case Report

Simultaneous anterior shoulder dislocation and Salter Harris type 2 fracture in Senegalese wrestling match

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Received: 06 February 2025

Accepted: 20 March 2025

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ABSTRACT

Anterior shoulder dislocation with proximal humerus fracture in children is rare. We report the case of a 16 years old boy with anterior shoulder dislocation and proximal humerus fracture separation Salter Harris type 2. A 16 years old boy, right-handed, was involved in a wrestling accident. He was received for delayed left shoulder traumatism associated with a filling of the deltopectoral groove, an emptiness of the glenoid cavity without axillary nerve impairment. Anterior shoulder dislocation with Proximal humerus fracture-separation type 2 Salter Harris was made. The dislocation was reduced through external manoeuvre. A Kirschner wire fixation was done for both the fracture and the glenohumeral joint. At the last follow up, the shoulder was painless, stable, with satisfactory motion. The consolidation was obtained. Anterior shoulder dislocation with proximal humerus fracture separation Salter Harris type 2 is rare. Good management restores shoulder motion and function.

Keywords: Anterior shoulder dislocation, Fracture-separation, Proximal humerus

INTRODUCTION

Proximal humerus fractures (PHFs) are rarer than other fractures in children. They comprise approximately 2% of all pediatric fractures.¹ They are usually caused by sport injuries, motor vehicle accidents, or birth trauma. The usual mechanism of injury is hyperextension combined with external rotation of the shoulder.² In younger children, most PHFs involve the physis with the classification of Salter Harris type 1 and 2 injuries; whereas in the 5 to 12 years old group, metaphyseal fractures are observed more often.^{3,4} The diagnosis is based on plain radiographs.⁵

The fractures are classified according to their severity and anatomic location.⁶ Fractures involving the growth plate are classified with the Salter Harris fracture classification.⁷ Surgical fixation has traditionally been recommended in proximal humerus fractures.⁸ Percutaneous Kirschner wire pinning is the most usual fixation in children, often

combined with closed reduction.² In contrast to adults, traumatic shoulder dislocation is a rarely observed condition among children.⁹ The combination of fracture and shoulder dislocation is extremely rare, except for obstetrical injury.¹⁰ In existing literature, there are a few reports of shoulder dislocation combined with PHF in pediatric patients.¹¹ In this study, anterior shoulder dislocation (ASD) is combined with proximal humerus fracture separation (PHFS) Salter Harris type 2. This case inspiring care recommendations describes this injury emphasizing on the mechanism, the clinical presentation and the treatment.¹²

CASE REPORT

A 16 years old boy, right-handed, without any historical both medical and surgical background fell down onto his left shoulder during a wrestling match with his friend. After being through bone setter treatment over 19 days, he was received at the emergency department for delayed left

shoulder trauma. We noticed a shoulder deformity, limb functional impairment, filling of the deltopectoral groove, significant shortening of the arm and an emptiness of the glenoid cavity without axillary nerve impairment. The standard radiograph of the shoulder showed a PHFS Salter Harris type 2 and ASD figure (Figure 1). Within the same day, under general anesthesia, the dislocation was reduced through external maneuver.

An axial force was applied to the limb with the elbow flexed, countertraction and anteroposterior force to the humeral head. Through a trans deltoid approach, the fracture reduction was done according to the tire changer maneuver, associated with Kirschner wire fixation under image intensifier control Figure 1. An additional mayo clinic immobilization was done.

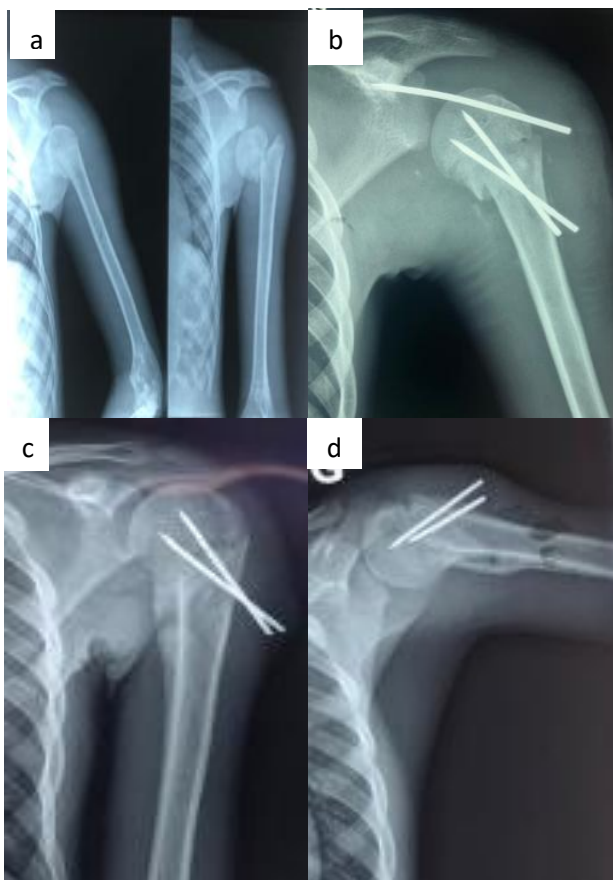


Figure 1: Radiographic aspects of (a) a simultaneous anterior shoulder dislocation and salter and Harris type 2 fracture of the proximal humerus; (b) dislocation reduction, Kirschner wire fixation of the fracture and the glenohumeral joint; (c, d) Glenohumeral Kirschner wire removal with bone union.

At three weeks follow up, a control radiograph was performed. The glenohumeral wire was removed, the reduction was maintained Figure 1. At 6 weeks after the surgery, the shoulder motion was limited. A physiotherapy was prescribed for the patient. At 6 months follow up, the shoulder was painless, stable, with satisfactory motion

Figure 2. The consolidation was obtained and the dislocation reduction was maintained Figure 1.

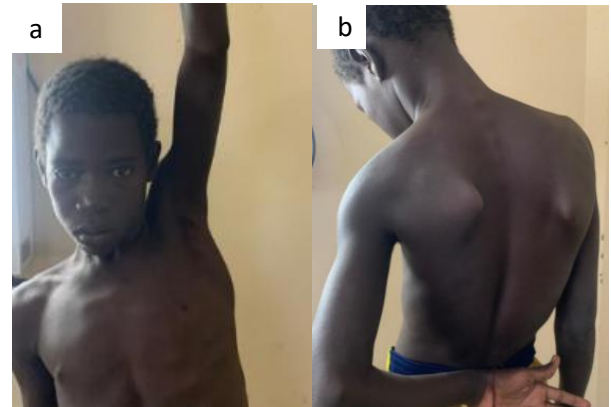


Figure 2 (a and b): Shoulder motion at the last follow up.

At 12 months follow up, the bone remodelling was almost achieved (Figure 3).

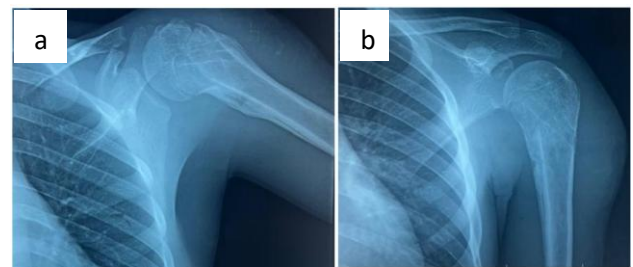


Figure 3 (a and b): The bone remodeling at 12 months follow-up.

DISCUSSION

The association of ASD to PHFS Salter Harris type 2 is a rare injury. This injury was secondary to Senegalese wrestling. The standard radiograph made the diagnosis. An external maneuver allowed to reduce the dislocation. The fracture was treated surgically. The bone union was obtained and the dislocation reduction was maintained at the last follow up. The shoulder motion and function were satisfactory.

PHFs are rarer than other fractures in children.¹ They are seen generally in early childhood and adolescence.¹³ Traumatic shoulder dislocation is also a rarely observed condition among children.⁹ The combination of fracture and shoulder dislocation is extremely rare.¹⁰ PHFs without shoulder dislocation are more frequent among children.⁹ The injury was secondary to direct trauma to the shoulder. For PHFs in children, there are two common responsible mechanisms, namely a backwards fall onto an outstretched hand with the arm hyperextended and externally rotated, or direct trauma to the lateral aspect of the shoulder in older children typically result from moderate-energy trauma during high-contact sports.^{2,14}

The dislocation was reduced by external maneuver. The fracture was managed surgically with additional glenohumeral Kirschner wire fixation. The bone union was obtained with satisfactory function. Mustafa et al reported a case of a 7 years old child with traumatic shoulder fracture dislocation treated surgically by Kirschner wire fixation.⁹ Shoulder dislocation combined with PHF, most authors recommend to do the articular reduction and internal fixation to avoid the complications such as limited range of motion, asymmetry of shoulders, and recurrent dislocations.¹⁵⁻¹⁷

PHFs that occur prior to skeletal maturity rarely lead to a functional or cosmetic deficit for a number of reasons.¹³ First, they have a profound ability to remodel, due to the proximal humeral growth plate being responsible for 80% of overall humeral longitudinal growth.^{18,19} Second, the periosteum in the immature humerus is metabolically active, which enhances its ability to rapidly consolidate fractures and heal.²⁰ Third, the glenohumeral joint has the widest range of motion of any joint in the body, meaning it can accommodate a large degree of displacement and angulation without causing any significant functional impairment.²¹

CONCLUSION

The combination of anterior shoulder dislocation to proximal humerus fracture separation Salter Harris type 2 is rare. Often secondary to a direct trauma to the shoulder. Surgical treatment is necessary to restore shoulder motion and function.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Camara IS, Diallo HL, Conde MS, Hachim M. Simultaneous anterior shoulder dislocation and Salter Harris type 2 fracture in Senegalese wrestling match. *Int J Res Orthop* 2025;11:900-2.