



## CASE REPORT

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# Medial Clavicular Epiphysiolysis with Anterior Dislocation

## ABSTRACT

Fractures of the medial portion of the clavicle occur infrequently in children and account for only about 5% of all pediatric clavicular fractures. In many males, a clavicular medial physis does not close completely until 24 to 26 years of age.<sup>1</sup> In our case report, 17-year-old male was injured following a direct fall on shoulder. In the Emergency Department, we identified a medial clavicle physeal fracture with anterior dislocation after standard chest radiography and "serendipity" view. In total intravenous anesthesia, we reduced the fracture and immobilized with Desault cast for 21 days and figure- of- eight dressing 3 weeks more. We didn't notice any functional deficit nor cosmetic defect.

**Keywords:** Physeal clavicle fracture, Hobbs view, "serendipity" view.

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## Introduction

Physes are a specific layer of tissue, unique to immature bone, providing longitudinal and diametrical bone growth. The growth of primary and secondary ossification center narrows the space of physis and eventually, it completely disappears and the growth stops.<sup>1</sup> Epiphysiolyses include all fractures that affect the coupling cartilage. In these cases, the fracture goes through physis and can affect metaphysis, epiphysis or both. The most widely used classification, however, is the Salter–Harris system. Physeal injuries have been reported to occur in approximately 30% of children's long bone fractures.<sup>1</sup>

A fracture of the medial portion of the clavicle occurs infrequently in children and accounts for only about 5% of all pediatric clavicular fractures.<sup>2</sup> Medial physeal fractures are more common than medial shaft fractures, and the former can mimic sternoclavicular joint dislocations. Forces in children and adolescents usually produce a physeal injury rather than an actual dislocation

of the sternoclavicular joint because the capsule of the sternoclavicular joint is more resistant to injury than the physis which does not close completely until 24 to 26 years of age in many males. The most common mechanism of injury is axial compression of the shoulder toward the midline.<sup>1</sup> Different imaging modalities are used such as plain radiography, specific radiographic views like Heinig, Hobbs and "serendipity" as well as CT and MRI.<sup>2</sup> Nondisplaced fractures of the medial portion of the clavicle can be managed symptomatically and have a good prognosis. In anteriorly displaced fractures, closed reduction can be attempted with longitudinal traction and direct pressure over the fracture. Usually, reduction is easily obtained but difficult to maintain, with frequent re-displacements.<sup>1</sup>

## Case report

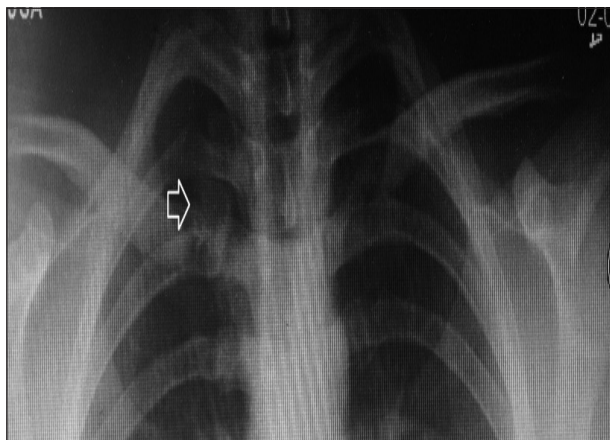
17-year-old male, a basketball player, presented at the Emergency Surgical Department of University Clinical Center Banja Luka with injury sustained in direct fall on right shoulder. An objective evaluation demonstrated

patients arm in fixed position along the body, flexed at the elbow, deformity and swelling in the projection of the medial clavicle and movements in the shoulder caused severe pain. Neurocirculatory status was intact. Standard chest radiography didn't reveal signs of fracture (Picture 1). Additional "serendipity" view identified a right medial physeal clavicle fracture (Picture 2).

**Picture 1.** Standard chest radiography

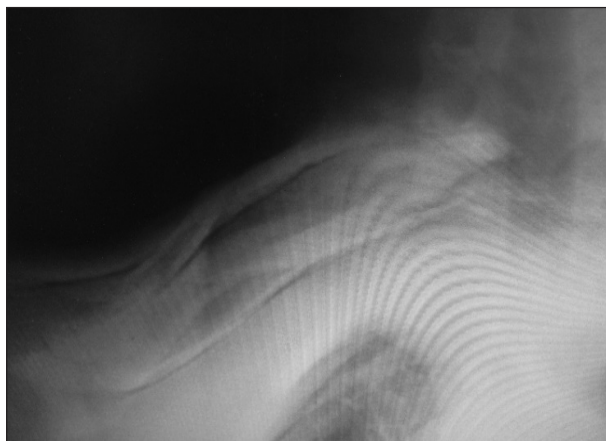


**Picture 2.** "Serendipity view"



In total intravenous anesthesia, closed reduction was performed with longitudinal traction of arm and direct pressure over the fracture with utilization of a sandbag placed between the shoulders. After closed reduction, during total anesthesia, we noticed re-dislocation. We performed reduction again and set figure- of- eight dressing which didn't retain the achieved reduction. After the second reduction, we immobilized the shoulder with Desault cast and we set gauze as compression material on the site of the fracture due to the retention of fragments. Hobbs view showed good reduction (Picture 3).

**Picture 3.** Reduction of medial physeal clavicle fracture stabilized with Desault cast and gauze



We took immobilization off after 21 days. Clinical examination showed hematoma in resorption without swelling and no visible deformities. We set a figure- of – eight dressing for a period of 3 more weeks. The control examination, clinically and radiologically, confirmed a good position of fragments (Picture 4).

**Picture 4.** Radiography (Hobbs view) 6 weeks after reduction of medial clavicular epiphysiolysis



Instructions were given on the exercises at home. Eight weeks after the injury, the patient had no subjective complaint, with fully functional shoulder and without cosmetic defect. We recommended avoiding severe physical work another 6 weeks. An excellent clinical result was confirmed at the controls after 6 months, one and three years.

### Discussion

Medial clavicle injuries are rare.<sup>1-3</sup> There are no specific

outcome scores that specifically evaluate sternoclavicular joint injuries. These fractures are uncommon, and as a result, there is little information available in the literature.<sup>4</sup> In a prospective study of 222 patients with radiologically proven fractures of clavicle, Nowak and al. showed that the risks for persistent symptoms following nonoperative treatment was far higher than expected.<sup>5</sup>

In our case report of medial physeal clavicle fracture with this method of treatment, excellent result was obtained.

There are no clear recommendations in the literature for this type of injuries. If reduction fails or re-displacement occurs, further intervention is rarely indicated.<sup>1</sup> Some authors believe that these injuries only cause a minor cosmetic defect.

### Conclusion

If there are clinically insecure signs of a sternoclavicular joint injury, besides standard chest radiography, Hobbs and "serendipity" views need to be done. After the closed reduction, we recommend Desault cast with additional compression with gauze on the fracture site in the first 21 days, and another three weeks with figure- of- eight dressing. After three years follow-up, we got a result

without neither functional nor cosmetic deficits.

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## Luksacioni prednji epifiziolizarni prelom medijalnog dijela klavikule

### SAŽETAK

Povrede medijalnog okrajka klavikule su rijetke i učestvuju sa 5% svih povreda ove kosti kod djece. Ploča rasta se kod klavikule medijalno zatvara između 24-te i 26-te godine života. U prikazu ovog slučaja, povrijeđen je 17-godišnji muškarac prilikom direktnog pada na rame. Na prijemu su urađeni klinički pregled, RTG- standardni snimak ramena i „serendipity“ snimak i dijagnostikovan fizarni prednji luksacioni prelom medijalnog okrajka desne klavikule. U kratkotrajnoj intravenskoj anesteziji uradili smo zatvorenu repoziciju i postavili imobilizaciju po Dezolu u trajanju od 21 dan, a potom „osmica“ imobilizaciju u trajanju od 3 nedelje. U toku trogodišnjeg praćenja, nismo primjetili oštećenje funkcije niti estetske defekte.

**Ključne riječi:** Fizarni prelom klavikule, Hobsov snimak, „serendipity“ snimak.