

Trapezius interposition of a distal third clavicular fracture in a child: A case report

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ABSTRACT

We report an 11-year-old child with fracture of the distal clavicle who was denied conservative treatment because the medial end of the clavicle was anchored into the trapezius muscle fiber by an extreme posterior displacement. Surgical reduction was indicated.

Key words: child, clavicle, fracture, open reduction

INTRODUCTION

Fracture of the distal clavicle in children is infrequent and usually undisplaced in spite of direct violence. Most cases without displacement require little other than a simple sling for 2 or 3 weeks. Fracture of the distal clavicle in children usually heals quite rapidly with conservative treatment because the inferior periosteal tube remains intact and produces new bone to heal the fracture. However, we encountered an 11-year-old child with a fracture of the distal clavicle for which it was difficult to obtain closed reduction. There was no report to require surgical reduction in this fracture due to anchoring of the medial end of the clavicle into the trapezius muscle fiber.

Case report

An 11-year-old boy, while riding a bicycle, bumped against a car and fell down, hitting the posterior region of his left shoulder directly on the ground. He was brought to our emergency department, and a roentgenogram showed the fracture of the clavicle end (Fig.1a). On clinical examination, a sharp prominence of the medial end was perceived immediately beneath the skin (Fig.1b, black arrow) and a skin abrasion was seen posterior (Fig.1b, white arrow).

Closed reduction of the fractured clavicle was tried with an acromioclavicular commercial harness and alternatively a conservative figure-of-eight bandage, after injecting percutaneous local anesthesia of one per cent procaine into the hematoma. However, reduction was still not obtained while the patient complained of severe pain (Fig.1c). Surgical intervention was indicated because the medial end was caught in the trapezius. A longitudinal incision toward the direction slightly curved posteriorly to the left clavicle joint was made. The medial end of the clavicle was markedly displaced posteriorly and anchored into the trapezius muscle (Fig.1c).

After the trapezius muscle was divided from the medial end of the clavicle, a Kirschner wire was inserted obliquely through the anterior cortex of the clavicle into the medial clavicle to stabilize the distal fragments after reduction into its periosteal sheath, because of the muscle contracture due to conservative figure-of-eight bandage with malposition. Cast fixation

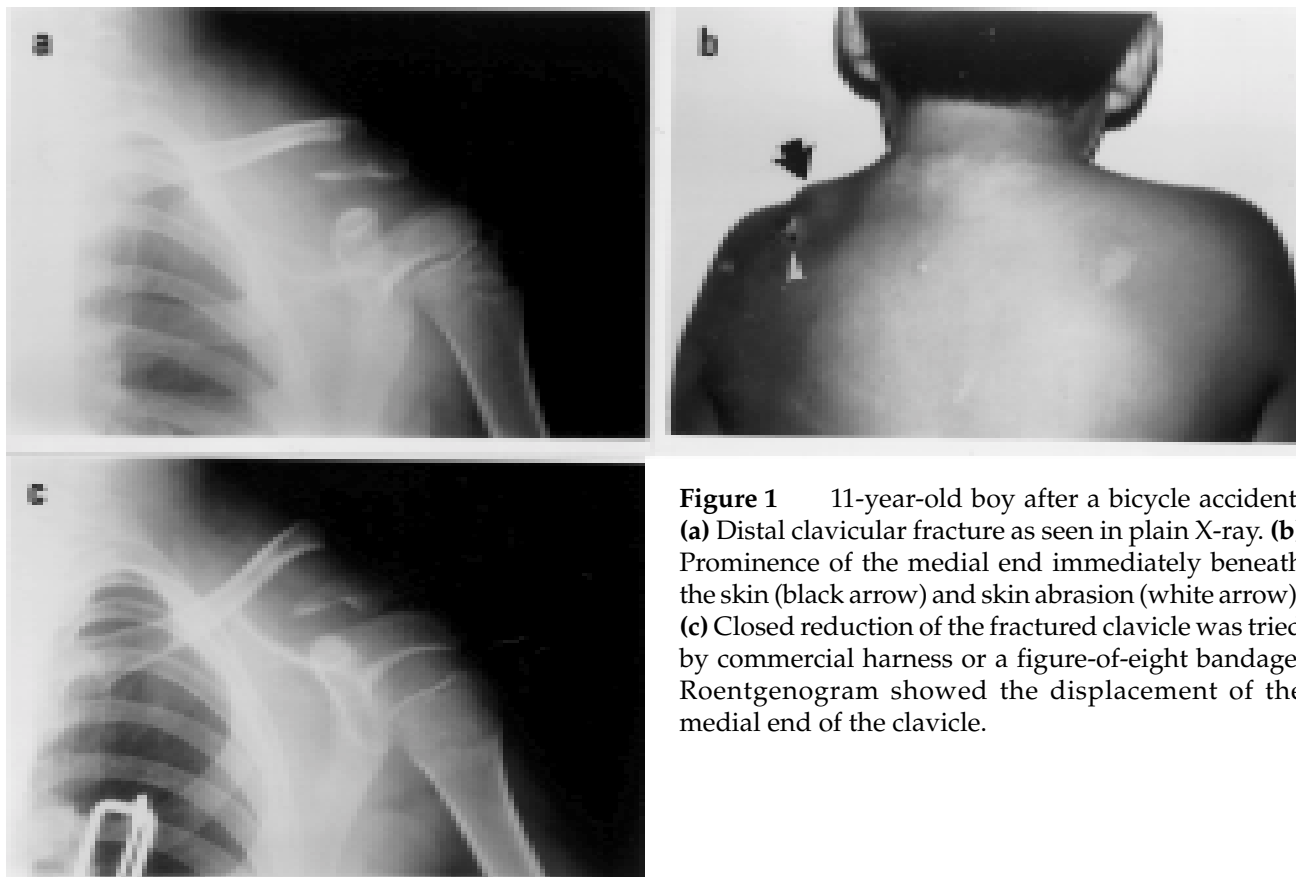


Figure 1 11-year-old boy after a bicycle accident. (a) Distal clavicular fracture as seen in plain X-ray. (b) Prominence of the medial end immediately beneath the skin (black arrow) and skin abrasion (white arrow). (c) Closed reduction of the fractured clavicle was tried by commercial harness or a figure-of-eight bandage. Roentgenogram showed the displacement of the medial end of the clavicle.

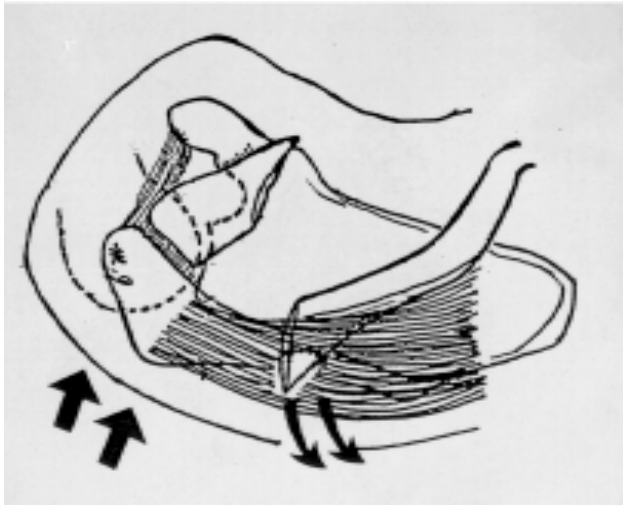
was applied for 3 weeks. Subsequently, there were no functional disturbances of the shoulder joint.

DISCUSSION

Fractures of the shaft of the clavicle are common in children. Pollen reported that 90% of such cases were usually fractures in the medial shaft, being incomplete fractures or green-stick fractures.¹ Closed treatment is performed without residual deformity resulting from remodeling in the course of the ensuing years. On the other hand, fractures of the lateral end and medial end of the clavicle are relatively rare, 10% or less. According to Rang, separation or fracture of the medial end of the clavicle is difficult to diagnose in patients younger than age 18 by a normal antero-posterior radiograph.² A 45° upshot view described by Rockwood³ is necessary and open reduction is indicated with manipulation under general anesthesia. On the other

hand, any mechanism that applies a force to the top or to the point of the shoulder in a child usually results in a fracture of the distal clavicle and not a disruption of the acromioclavicular joint. A distal clavicular fracture is usually undisplaced, and open reduction of a fractured clavicle is contra-indicated in children because the periosteal tube around the clavicle is quite thick and strong. The results for fractures of the distal clavicle in children are excellent for a normal shoulder by a conservative figure-of-eight bandage or a commercial harness.

In case of a severely dislocated fracture of the clavicle, non-invasive reduction is considered to be most effective under local anesthesia. However in our clavicular impacted case into the muscle fiber, surgical intervention was indicated. The mechanism of its occurrence was assumed to be due to direct force, as seen in the acromioclavicular dislocation by which the distal end of the clavicle was displaced into or through the trapezius muscle fiber.³ (Fig.2)



◀ **Figure 2** The mechanism of the fracture. Direct trauma to the shoulder. The medial end of the clavicle is captured in the trapezius muscle.

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