

# AN UNUSUAL KIND OF FRACTURE

A. J. ARENAS, T. PAMPLIEGA

**We present two patients with avulsion-fractures involving the superior scapular edge. One of the fractures was bilateral. The treatment for both patients was conservative and gave excellent functional results. The different mechanisms that produced the lesions are discussed. It is our opinion that the mechanism was indirect in each case.**

**Keywords :** avulsion-fractures ; scapula ; upper scapular edge ; omohyoid muscle.

**Mots-clés :** fractures par avulsion ; omoplate ; rebord scapulaire supérieur ; muscle omohyoïde.

## INTRODUCTION

Scapular fractures are relatively rare lesions, constituting only 1% of all fractures and only 5% of those involving the shoulder, as the scapula is well protected by overlying muscles (2, 3, 5, 10, 13). Moreover, since the scapula does not support heavy loads, the functional repercussions of such lesions are relatively unimportant (with the exception of those involving the glenoid (3)).

Among scapular fractures, those involving the upper area are notably scarce (12, 13). Fractures of the scapular spine are very rare and occur most frequently in combination with fractures of the body (5, 17). Even more rare are avulsion-fractures of the superior edge of the scapula (7, 9). De Palma, in his treatise of 1985, did not mention this type of fracture (2). These lesions may be isolated (8, 10, 18), or in combination with others nearby (e.g. coracoid avulsion-fracture ; acromioclavicular dislocation (1, 10, 16, 19)). Bilateral fracture of the scapula in a single patient may be considered very rare (6, 11, 15, 17, 18), especially

when the fracture is located on the upper edge of both bones (18).

The purpose of this paper is to comment on some aspects of the two cases of avulsion-fracture of the superior scapular edge, one of which was a bilateral fracture.

## CASE REPORTS

### Case 1

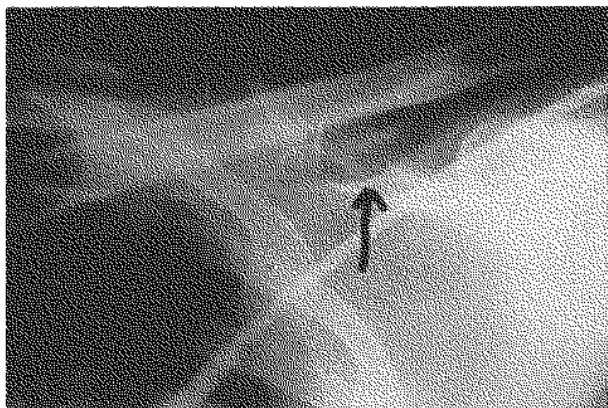
A 23-year-old male suffered a vehicular accident, with the seat belt secured. He did not lose consciousness, but suffered multiple bruising to the face, upper thorax and left arm, together with moderate thoracic trauma. Abdominal exploration revealed no internal injuries. X rays showed a fracture of the first left rib and an avulsion-fracture of the upper edge of the left scapula, with a spinal fracture of the same bone (fig. 1).

Following surgical treatment of his wounds, the patient was transferred to an intensive care unit because of the thoracic trauma. The scapular fractures were treated conservatively, involving immobilization of the left upper limb with a Velpeau bandage for three weeks. The evolution was satisfactory, and the patient had resumed all normal activities by 4 months after the accident.

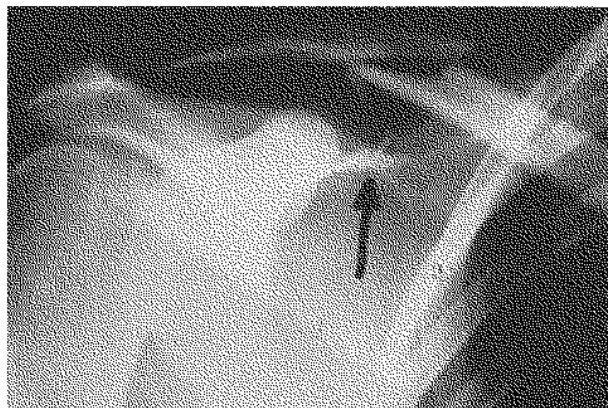
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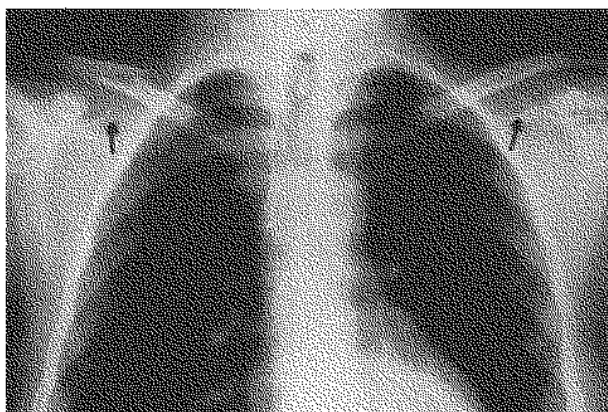
*Fig. 1.* — X-ray of the left shoulder region in case 1, showing an avulsion-fracture in the upper edge of the scapula and a fracture of the first left rib (see arrow).



*Fig. 3.* — Detail from fig. 2 of the right scapular-clavicular area.

## Case 2

A 32-year-old female, with Steinert's myotonic muscular dystrophy, was admitted to hospital following a traffic accident (head-on collision with a tree). The patient was not wearing a safety belt. She did not lose consciousness. X-ray investigation revealed a fracture of the middle third of the right clavicle and avulsion-fractures of the upper edges of both scapulas. The lesions were practically symmetrical (figs. 2, 3). Subsequent abdominal ultrasonographic studies revealed no abnormalities of note.



*Fig. 2.* — P-A x-ray of the thorax in case 2, showing the clavicular fracture and the bilateral scapular avulsions on the upper edge (see arrows).

The treatment was conservative, using a figure-of-eight bandage and two slings, with the objective of immobilizing the upper limbs as much as possible.

The bandage and slings were removed 6 weeks after the accident and physiotherapy was started. Development has been entirely satisfactory, with the patient showing no negative symptoms 3 months after the injuries were sustained.

## DISCUSSION

The majority of scapular fractures are related to traffic accidents, with lesions frequently associated (2, 17). The cause of the majority of these fractures is direct and is associated with violent trauma to the bone, such as severe crushing (2, 7, 10, 17). Much rarer are those fractures caused indirectly (2, 4, 6, 7, 9, 10, 11, 14, 15, 18), which are related to violent and sustained muscular contraction, causing a bone avulsion of some of the scapular muscular insertions (2, 7, 10, 11, 14, 15, 18). This situation may also occur during a generalized convulsive seizure, or during electric shock treatment (11, 14, 15).

During recent years some papers have attributed fractures of the upper scapular edge to sudden contractions of the omohyoid muscle, which provokes a retraction of the scapular bone in the area of insertion (10, 18). Because the morphology of the two presented fractures, the way in which they

were caused, and the scapular area which was affected are all very similar to those presented by Ishizuki *et al.* and by Williamson and Wilson-MacDonald, we believe that the same mechanical cause may be attributed in the two presented cases.

With respect to the treatment applied to this type of lesion, it may be said that the majority of scapular fractures not involving joints (spine, body, superior edge), respond well to conservative treatment consisting of a short period of immobilization followed by physiotherapy as early as possible (5, 8, 10, 11, 13, 17, 18, 19, 20). Evolution is usually satisfactory with this treatment, achieving complete, painless recovery of the upper limb within a short time, with no non-union complications (8, 10, 17, 18, 19). The treatment of our two patients was conservative and achieved completely satisfactory results, restoring full and painless shoulder movement in both cases. We believe that the main difficulty is that because of the severity of associated lesions, the condition may be misdiagnosed.

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## SAMENVATTING

*J. ARENAS, T. PAMPLIEGA. Een ongewone fractuur.*

De auteurs rapporteren 2 patiënten met een avulsiefractuur van de bovenrand van de scapula. Bij een patiënt ging het om een bilateraal letsel. De conservatieve behandeling werd in beide gevallen gevolgd met een uitstekend functioneel resultaat. Bespreking van de verschillende mogelijke mechanismen, die het letsel veroorzaken. Volgens de auteurs was het mechanisme, in de beide gevallen, onrechtstreeks.

## RÉSUMÉ

*J. ARENAS, T. PAMPLIEGA. Une fracture inhabituelle.*

Les auteurs présentent 2 cas de fracture par arrachement du bord supérieur de l'omoplate. Chez un malade, la lésion était bilatérale. Dans les 2 cas le traitement fut orthopédique et donna un excellent résultat fonctionnel. Analyse du mécanisme de cette fracture. Dans les 2 cas présentés le mécanisme était indirect.