

CONSIDERATIONS ON POST-TRAUMATIC ABSORPTION OF THE OUTER END OF THE CLAVICLE

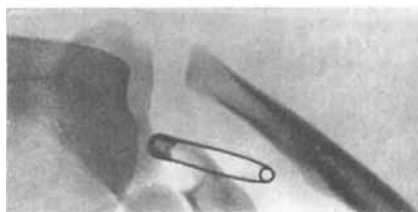
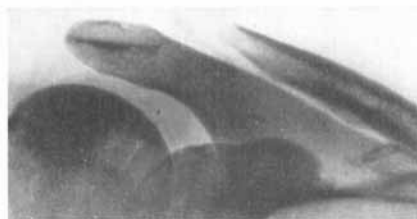
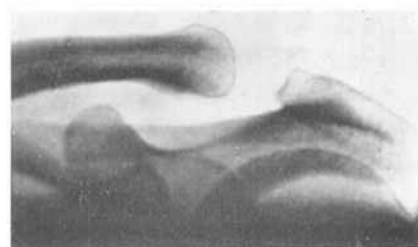
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Traumatic injury in the region of the acromio-clavicular joint is not uncommon. Treatment seldom presents any difficulties and persistent symptoms are rare. No matter whether the injury consists of simple distortion, a subluxation or dislocation of the acromio-clavicular joint, functional capacity is practically always recovered with time. (Millbourn 1950 and others). A good anatomical result is not indispensable to a good functional result. Any persistent deformity seems to be of minor importance once the patient has accustomed himself to it.

However, obstinate pain, difficult to alleviate and liable to limit working capacity does sometimes occur. It seems that such persistent pain may at least partially be ascribed to injury of the meniscus sometimes present in the acromio-clavicular joint (*De Palma*, 1950). The calcification of the soft parts in the region of the coraco-clavicular ligament does not seem to be related to the pain. In some cases, however, the picture is dominated by altogether different features, namely rarefaction and erosion of the outer end of the clavicle, and though these changes cannot *explain* the pain, they do seem to be an accompaniment of it.

Case 1. T.A. 481/48.—The patient was a tinsmith, aged 28. He fell head first from a rope ladder, landed on the right shoulder and thereby dislocated the acromio-clavicular joint (Fig. 1). The dislocation was not detected and the patient received physical therapy and then roentgen therapy, but without demonstrable effect. Re-examination 3 weeks later (Fig. 2), showed the same picture as before but also commencing absorption of the lateral end of the clavicle. The surface of the acromial end of the latter seemed to be indented and the bone was rarefied. When first seen at the orthopaedic department 2 months after the accident the area over the acromio-clavicular region was swollen and extremely tender to palpation. Movement of the joint was painful but not limited. Radiologic examination (Fig. 3) revealed an increased distance between the acromion and the outer end of the clavicle, the acromial end of which had by now undergone absorption. During the

*Fig. 1.**Fig. 2.**Fig. 3.**Fig. 4.**Fig. 5.**Fig. 6.**Fig. 7.**Fig. 8.*

following 12 months the condition of the patient remained on the whole unchanged with more or less severe, refractory pain, especially on movement, and reduced working capacity. The absorption progressed (Figs. 4 and 5). The later course of the injury is unknown because the patient refused to present himself for further examination.

Case 2. S.K. 1183/47.—The patient was a seaman, aged 34. The right shoulder had sustained a sharp jerk and then a severe blow by a wire hawser when the patient was casting loose the cables. Consequent dislocation of the shoulder joint

was readily reduced and caused no further trouble. However, pain and tenderness persisted in the region of the acromio-clavicular joint. The first radiological examination, performed more than 2 months after the accident, revealed (Fig. 6) subluxation of the acromio-clavicular joint, an irregular, "woolly" outline of the acromial end of the clavicle and rarefaction, as well as small densities in the soft parts at the proximal and distal surfaces of the clavicle. There was then slight gradual improvement until after a second (doubtful) trauma, when the symptoms again became severe. When reviewed 1 year after the first accident there was still tenderness over the acromio-clavicular joint, which was painful on movement. The radiograph showed an increase in the space between the acromion and the clavicle because of absorption of the acromial end, an irregular "woolly" outline and rarefaction (Fig. 7). This patient could not be examined later either (insane).

Similar, though less pronounced, changes are fairly common in patients with inveterate dislocation and are sometimes seen in subjects who have sustained only slight traumatic injury in the acromio-clavicular region. They appear as small erosions in the articular surface of the clavicular joint or as small areas of subchondral rarefaction, but never assume proportions severe enough for them to be classed as absorption of the bone of the type seen in the two cases described above (Fig. 8). *Urist* (1946) reported that such changes disappear after anatomical and functional restitution of the limb. This view was also put forward by *Thorndike & Quigley* (1942).

The conditions described above may perhaps be classed under the heading of some disease resembling Sudeck's atrophy, even though the clinical pictures do differ from one another in certain respects. At any rate, they are probably the result of hyper-reaction to the trauma or are possibly caused by absorption in fine fracture lines in the acromial end of the bone. *Urist* described small subchondral compression fractures seen at operation in a few cases. The radiographic appearance suggested aseptic necrosis rather than fracture. Such a possibility can be ruled out in the two cases under discussion.

In case 1 the changes resembled to a certain extent those seen in the enigmatic and rare condition known as phantom bone or cryptogenic, local progressive osteolysis (see *Coley*, 1950). In those few cases on record the changes in this type of osteolysis were usually localised to the bones of the shoulder girdle. In most cases the disease started in the clavicle, sometimes after slight trauma or fracture, and then gradually but steadily progressed and destroyed not only the clavicle but also the scapula, the proximal humerus, ribs and sometimes also cervical and thoracic vertebrae. Biopsy has not been able to furnish a satisfactory explanation. The disease is not of neoplastic or infectious nature, but is usually ascribed to some unknown local disturbance, possibly of neurogenic origin. In one case described in the literature

destruction was arrested by roentgen radiation. *Werder* (1950) described a case in which he accidentally observed osteolysis of the outer end of the clavicle after injury to an acromio-clavicular joint that had been dislocated once, long before. Here, the disease had progressed but had not produced any symptoms whatsoever, with the result that it had remained concealed and untreated. This case suggests that changes of this type may be more common and more frequently asymptomatic than usually supposed. Therefore, in order to form an idea of the true frequency of such changes, all injuries to the clavicle and of the acromio-clavicular joint should be followed up radiologically for a fairly long period.

As only a few cases are on record, it is not possible to say whether any effective treatment is available. As mentioned above, roentgen therapy has arrested the changes in some cases but not in others. It would therefore perhaps be wise to direct more attention to prophylaxis. Common to the cases on record is the fact that they did not receive adequate treatment from the beginning: the injury was at first either undetected or underestimated. It does not sound unreasonable to suppose that such a simple measure as immediate immobilisation of the arm for some time in order to give the soft parts an opportunity to heal would have prevented the development of the condition. A point in favour of this possibility is that changes of the type described were not seen in patients in whom the injury was recognised immediately and treated properly from the very beginning.

SUMMARY

Analysis of the literature and observations made in two personal cases of post-traumatic absorption of the outer end of the clavicles suggested the following conclusions.

1. Absorption of bone is liable to occur if the injury is not immediately recognised and properly treated with immobilisation of the joint.
2. Absorption of bone may develop and progress for some time without producing symptoms.
3. As changes of this type may be more common and more frequently asymptomatic than usually supposed, injuries to the acromio-clavicular joint should be followed up radiologically for a fairly long period.

RESUME

Une analyse de la littérature et des observations faites dans deux cas personnels d'observations post-traumatiques de l'extrémité extérieure de la clavicule appelle les conclusions suivantes:

1. L'absorption de l'os peut se produire lorsque la lésion n'est pas immédiatement décelée et traitée de manière adéquate par l'immobilisation de l'articulation.

2. L'absorption de l'os peut se développer et progresser pendant quelque temps sans provoquer de symptômes.

3. Etant donné que les modifications de ce genre sont peut-être plus communes et plus fréquemment asymptomatiques qu'on ne le suppose généralement, les lésions de l'articulation acromioclaviculaire doivent être contrôlées radiologiquement pendant une période assez longue.

ZUSAMMENFASSUNG

Durchsicht des Schrifttums und Beobachtungen, die in zwei eigenen Fällen von posttraumatischer Resorption des äusseren Endes des Schlüsselbeines gemacht wurden, führten zu folgenden Schlussfolgerungen.

1. Resorption des Knochens wird am ehesten auftreten wenn der Schaden nicht unmittelbar erkannt und dementsprechend mit Ruhigstellung des Gelenkes behandelt wird.

2. Resorption kann sich entwickeln und einige Zeit hindurch fortschreiten ohne Symptome hervorzurufen.

3. Da Veränderungen dieser Art häufiger ohne Symptome verlaufen als man gewöhnlich annimmt, sollten Schäden des Akromio-klavikulargelenkes längere Zeit hindurch röntgenologisch kontrolliert werden.

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