FROM THE SURGICAL CLINIC OF THE ACADEMIC HOSPITAL, UPSALA
HEAD: PROFESSOR GUNNAR NYSTRÖM

LUXATIO ACROMIO CLAVICULARE
An After-Examination

BY
HERMAN WAHREN

The luxation of the acromioclavicular joint is a comparatively uncommon injury and is not often mentioned in the extensive traumatological literature of later years. Most papers on the subject deal with different methods of treating this injury, operatively or conservatively. After-examinations of treated patients, however, are rather sparse.

As an introduction, something ought to be said about the anatomy of the acromioclavicular joint, which is of importance to the understanding of the origin and treatment of the luxation. The lateral part of the clavicle is connected with the scapula partly through the capsule of the acromioclavicular joint, in which ligamentum acromio claviculare is only a poorly developed reinforcement. The most important lateral ligaments are the particularly massive ligamenta coraco clavicularia, two fascicles attached to the processus coracoideus (fig. I.).

If only the acromioclavicular capsule is ruptured, nothing but a slight dislocation between the acromion and the lateral part of the clavicle ensues. On the other hand, if the coracoclavicular ligaments are severed, the result is, firstly, a much more important difference in the level of the clavicle and the acromion and, secondly, a dislocation of the shoulder, resembling what is seen in a fracture of the clavicle. The diagnosis of this luxation does not give any difficulty; in the incomplete form, however,—where only the acromioclavicular capsule is injured

—the periacromial swelling may mask the elevation of the clavicle. In cases of complete luxation, the changed outline of the shoulder speaks for itself, the only other diagnosis possible being a fracture of the clavicle, which may, of course, be combined with a luxation. In this connection, it ought to be emphasized, that the injury is much more easily recognized by clinical than by roentgenological examination. In order to make

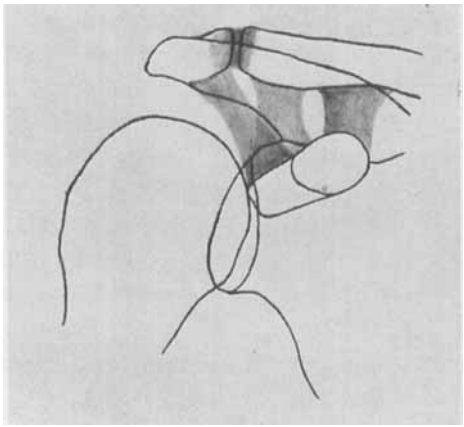

Fig. I.

the injury visible on the plate it is most important to make identical exposures on both sides.

The treatment may be either conservative or operative. As a general remark it may be said that reposition is easy, but fixation difficult.

A large number of splints and other technical devices have been invented by Malgaigne, Hartung, Desault and in later years by Böhler, Shaar and Trynin. In spite of all these arrangements, it must be pointed out that the fixation of a complete acromioclavicular luxation after reposition is exceedingly difficult.

As early as in the sixties, the first attempts at operative treatment are reported. It is natural that the operator tried to restore the anatomical conditions, either by renewing the acro-

mioclavicular connection or by repairing the coraco-clavicular ligaments. Both methods have been used, either separately or combined. Cooper, König and Wilms, Kent, Riedl and others fix the lateral part of the clavicle through the acromion by means of suture. Different materials have been employed, silk, catgut, silver wire, tendon of kangaroo etc. Other authors stress the importance of the coraco-clavicular ligament. Watkins, for instance, has successfully treated three cases by boring holes in the clavicle and processus coracoideus and joining them with a thick silk thread. The acromioclavicular ligaments are also repaired. The arm is then fixed at maximal elevation. Cotton and Morrison report—1934—that they have successfully treated six cases with a similar method. Büdinger—1900—followed a different principle of treatment, which was again used in the clinic of Bier, as described by Mannheim in 1931. After reposition and preparation of the acromioclavicular joint, a thin steel wire is obliquely bored through the acromion and the adjacent part of the clavicle. The wire is removed after four weeks.

As already mentioned, after-examinations are comparatively rare. In the earlier literature on the subject we find some general remarks regarding prognosis. Dittmer—1896—for instance, has a rather pessimistic view of the prognosis, whereas Thiem has had better results.

In the above-mentioned paper of Mannheim ten cases have been subjected to after-examination. Eight of these cases had been treated conservatively, one case operated upon according to the method of Büdinger, and one case treated with transplantation of a bone graft from tibia. The functional results of a conservative treatment seem to be rather good, but the dislocation of the shoulder remains.

In 1934, Krieger-Lassen published (in Danish) an after-examination of 31 cases from the Municipal Hospital of Copenahgen. 27 of these patients were treated conservatively and 4 operatively. 14 out of the conservatively treated patients were free from any symptoms whatsoever, the remainder suffered only from comparatively slight troubles. Out of those operatively treated, two patients were free from symptoms, one had pains

yhen lying on the affected side; in this case the suture had burst. In the last of the operated cases a complete ankylosis in the acromioclavicular joint had developed, causing some stiffness of the shoulder and pain when moving.

Considerable ossification round the acromioclavicular joint (see fig. II) has been observed in a great many cases—as for instance in the cases from Upsala published below. This ossification would seem to arise from the lacerated periosteum, possibly combined with haematoma.

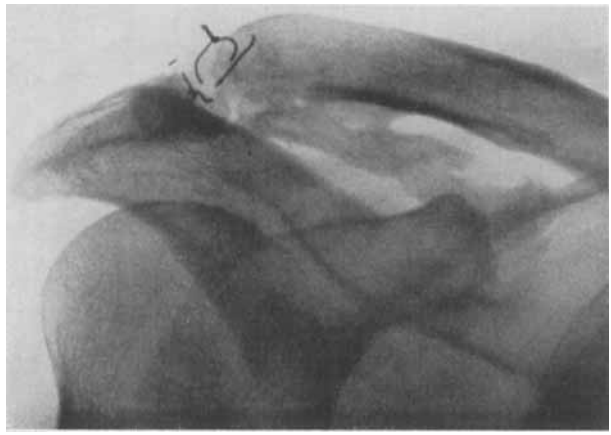

Fig. II.

Krieger-Lassen has also studied the material from the Danish Directorate of Accident Insurance, which consists of 52 cases, out of which 9 were operated upon. The figures and results that are the outcome of this investigation seem to favour the operative method of treatment. In most cases the compensation period does not amount to one year.

The material computed below in tabular from consists of 12 cases, mostly belonging to the labour class. In all cases the injury was caused by a direct trauma against the shoulder. 10 patients were treated at Upsala Clinical Hospital and 2 at Nyköping's Hospital. 8 cases have been treated with osteosynthesis between the acromion and the clavicle. Various types of suture

	Nr. of case-notes: Employment	Age Years	Position of the shoulder	Suture	Inability to work after injury Weeks	Reexamined after Years
OPERATED	584/28 Employed in gasworks	42	Dislocated	Catgut	5	6½
	1480/29 Employed in brickyard	51	Dislocated	Catgut	7	4
	2392/31 Farm hand.	50	Not dislocated	Silk. Catgut	5	3
	1672/31 Employed in sawmill	31	Dislocated	Silk. Tendon of kangaroo	6	3
	1901/33 Agriculturist	59	Dislocated	Metal wire	6	1
	2600/34 Farmer	56	Dislocated	Metal wire	6	1
	2373/34 Manual lab.	31	Dislocated	Catgut	7	1½
	2651/35 Agent	37	Dislocated	Metal wire	6	½
NOT OPERATED	4370/pol./29 Farm hand.	19	Not dislocated	—	6	5
	712/N./34 Farm hand.	42	Not dislocated	—	—	1
	H. A. pol/N. Iron worker	35	Not dislocated	—	3	½
	21/34 Student	19	Not dislocated	—	—	1

have been used. 4 cases were conservatively treated. The operation took place not later than three weeks after the injury. Incapacity did not exceed a period of seven weeks in the uncomplicated cases. The patients were reexamined after a time varying between six months and six and a half years.

Naturally, this material is too small to allow of any definite conclusions. It appears, however, to judge from this material and from the literature concerning this injury, that a

STATUS		Remarks
Subjectively	Objectively	
Cannot carry burdens on his right shoulder, which sometimes swells after efforts	No atrophy of shoulder or arm. The shoulder somewhat dislocated inwards. Lateral part of clavicle dislocated upwards.	
No complaints	No atrophy. The shoulder dislocated inwards. Lateral part of clavicle dislocated upwards.	
No complaints	No atrophy. Shoulder in correct position.	
No complaints	No atrophy. Shoulder and lateral part of clavicle in correct position.	
Slight trouble	No atrophy. Shoulder and laterat part of clavicle in correct position.	
No complaints	No atrophy. Shoulder and lateral part of clavicle in correct position.	Rupt. of the metal wire.
No complaints	No atrophy. Shoulder and lateral part of clavicle in correct position.	
No complaints	Slight atrophy of shoulder and arm. Shoulder and lateral part of clavicle in correct position.	
No complaints	Some atrophy of the shoulder. The lateral part of the clavicle dislocated upwards. Shoulder not dislocated.	
Cannot carry burdens on this shoulder	No atrophy. Shoulder in correct position. Lateral part of clavicle dislocated upwards.	Fract. tibiae et fibul.
No complaints	No atrophy. Shoulder in correct position. Lateral part of the clavicle dislocated upwards.	
No complaints	No atrophy. Shoulder in correct position. Lateral part of the clavicle slightly dislocated upwards.	

persistent lateral luxation of the clavicle is a comparatively benign affection which hardly disables the patient. In no case has an impaired mobility in the humeroscapular joint been observed. Several of these cases have regained complete or almost complete capacity, in spite of a marked dislocation of the shoulder. This changed outline of the shoulder is, however, quite conspicuous in several of the patients.

As the operative of treatment is the only way of relieving

the deformity in a complete luxation of the acromioclavicular joint, preference must be accorded to this form of treatment. The operation is a small one and the risk involved is slight, with either of the methods employed. After incomplete dislocation of the acromioclavicular joint, where no change in the outline of the shoulder has taken place, good functional and anatomical results may be obtained with conservative treatment.

It is also worth noting that the fixation of the shoulder has more often been successful in cases where a stronger suture has been used (metal wire, tendon of kangaroo).

REFERENCES

The works mentioned and not included in this list are quoted from the Neue Deutsche Chirurgie, Vol. 41.

Büdinger: Wien. klin. Wochenschrift. Vol. 595. 1900.

Böhler: Die Tekn. d. Knochenbruchbeh. Wien 1930.

Cotton and *Morrison:* N. Engl. Journ. of Med. Vol. 210. 1934.

Krieger-Lassen: Hospitalstidende. Vol. 76. 1933.

Mannheim: D. Zeitschr. f. Chir. Vol. 234. 1931.

Shaar and *Trynin:* Journal of Bone and Joint Surgery. Vol. 14. 1932.

Watkins: Journal of Bone and Joint Surgery. Vol. 7. 1925.

ZUSAMMENFASSUNG

12 Fällen von Luxation des lateralen Teiles des Schlüsselbeines sind nachgeprüft worden. 8 Fälle sind mittels Osteosynthesis zwischen Schlüsselbein und Acromion behandelt worden. Diese Verletzung verursacht nur eine verhältnismässig leichte Invalidität, selbst wenn die Luxation nicht beseitigt ist. Das Ergebnis der Nachprüfung zeigt, dass eine grössere Chance für dauernde Fixation der behobenen Luxation besteht, wenn haltbareres Material für die Naht verwendet wurde.

RÉSUMÉ

12 cas de luxation de la partie latérale de la clavicule ont été revus. 8 cas ont été traités par ostéosynthèse entre la clavi-

cule et l'acromion. 4 cas ont été soumis au traitement conservateur. Cette affection ne cause qu'une légère invalidité, même lorsque la luxation n'est pas corrigée. Le résultat du nouvel examen indique qu'il y a plus grande chance de fixation durable de la luxation remise lorsqu'un matériel plus durable est employé à la suture.

SUMMARY

12 cases of luxation of the lateral part of the clavicle have been after-examined. 8 cases have been treated with osteosynthesis between the clavicle and the acromion. 4 cases have been conservatively treated. This injury causes only a comparatively slight invalidity, even when the luxation is not corrected. The result of the after-examination indicated that there is a greater chance of durable fixation of the reposited luxation when more lasting material is employed for the suture.