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SNAPPING SCAPULA AND SPRENGEL'S DEFORMITY

By

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Sprengel's deformity or *elevatio scapulae congenita* is a congenital anomaly in which the scapula on the affected side is in a high position with its upper edge far above the 1. costa. The affected scapula is as a rule considerably less than normal, and there are both congenital and secondary changes in the musculature and the soft tissues around the scapula. Very often malformations are simultaneously found in the cervical column and ribs. In the cervical column the congenital changes consist of the *Klippel-Feil* syndrome and/or other anomalies in the corpora or arches. In the ribs the changes are rarer and consist of accretions, aplasias or dysplasias. The changes in the column and ribs often give static scoliosis in the cervical column.

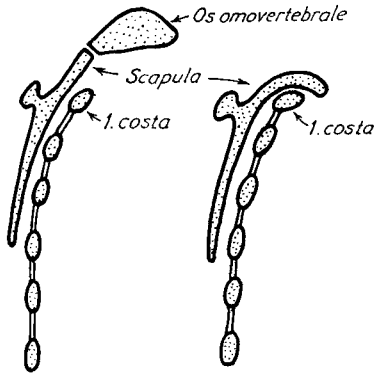
The abnormality which to a special degree is responsible for Sprengel's derformity is found at and about the upper medial corner of the scapula. According to the pathological findings here the condition can be divided into two types:

Sprengel's deformity, type I. (See Fig. 1).

It is characteristic of this type that the upper medial corner of the scapula is connected with the cervical column with the aid of an extra bone, the *Os omovertebrale.* The distal part of the os omovertebrale is connected with the angulus sup. scapula by means of syndesmosis. The proximal part of os omovertebrale is connected to the cervical column, either to a transverse process or to a spinous process or to both with the aid of connective tissue as a kind of syndesmosis. It may be relatively large. In one case I found it to be 5 cms long, 3 cms wide at its widest part, a good 1 cm. thick. In these cases the scapula is firmly fixed to the cervical column and almost immovable.

Sprengel's deformity, type II. (See Fig. 1).

It is characteristic of this type that the upper medial part and corner of the scapula are bent forward like a hook. The hook-shaped bend lies across costa 1. so that the scapula, as it were, is hanging up on costa 1. Moreover the upper medial corner of the scapula is fixed to its surroundings, and also to the cervical column by fibrous strips. No os omovertebrale is found in this type. The malformations of the cervical column are as a rule less pronounced than in type I, and type II is not so completely disfiguring either, from a cosmetic standpoint. It may be regarded as a somewhat lesser form of Sprengel's deformity.



Type I Type II

Fig. 1.
Sprengel's deformity.

Snapping Scapula is also attributed to a congenital deformity of the upper medial scapula corner, but is much less pronounced than with Sprengel's deformity.

I have called the condition *Snapping Scapula* because it has certain resemblances with so-called Snapping Hip. On moving the shoulder blade the patient feels a snapping or a scraping to crepitant sound and movement corresponding with the upper medial corner of the scapula. Just as with Snapping Hip the condition is present relatively often, but the majority have no discomfort from it. Some, however, feel pain either occurring simultaneously with the scraping or more constantly. In single cases the condition may be so tormenting that the individual has difficulty in moving the arm.

The cause of Snapping Scapula is a deformity of the upper medial

corner of the scapula similar to Sprengel's deformity, but much less pronounced, and in Snapping Scapula there is no elevation of the shoulder blade either.

As with Sprengel's deformity there are also two types of Snapping Scapula:

Type I. (see Fig. 2). Here the upper medial corner of the scapula is bulbously thickened and therefore can be also named "the bulb type". During movement of the scapula up and down the bulbous thickening slips down over one or more ribs. This produces an easily audible and perceptible snapping and can also cause irritation and reactive changes.

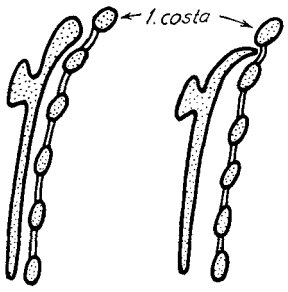


Fig. 2.
Snapping Scapula.

Type II. (see Fig. 2). The upper medial corner of the scapula is bent in the shape of a hook so that the point turns in towards the chest wall, "the hook type". In movement of the scapula up and down the point slips over one or more ribs and provokes the snapping and orritation in the same way as in type I.

During the last few years only two cases of type I have been operated on and 5 of type II, 2 of which were in between type I and type II. In the same period 6 cases of Sprengel's deformity were operated on.

X-ray examination of the upper medial scapula corner is difficult, but departures from the normal seem frequent. Only in a very few cases however are these abnormalities so great that they produce Snapping Scapula and in still fewer cases do reactive changes arise with pain necessitating operation.

In the secondary reactive changes a bursa is formed with bursitis symptoms. In and around the bursa there is fibrosis and in particularly painful cases there is also granulation tissue. In one of our cases a

bursa was found larger than an orange, but the others were much smaller.

Occasionally Snapping Scapula may occur simultaneously with traction periostosis at the attachment of the levator scapula on the upper medial corner of the scapula, but must not be confused with it. Traction periostosis is due to increased longlasting static contraction of the levator scapula with reactive changes at the muscle attachment to the scapula. It is in the same class as epicondylitis, coracoiditis, spinositis and may be called *angulitis.*

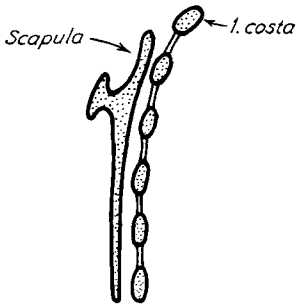


Fig. 3.
Normal.

THE TREATMENT OF SNAPPING SCAPULA

The treatment is surgical and consists of resection of the part of the scapula which causes the snapping, that is, the bulbous-shaped or hook-shaped bent upper medial corner of the scapula. In addition to this the bursa with possible granulation tissue and adjacent fibrosis must be removed. The resection of the upper medial scapula corner must be performed subperiosteally. The muscle attachment to the levator scapula then hangs firmly to the periosteum and is easy to suture down to the resection site on the scapula after the resection.

SUMMARY

The most pronounced cases of malformation in the upper medial corner of the seapula are described as *Scapula elevatio congenita* or *Sprengel's deformity.* There are two types: Type I with the os omovertebrale, and type II without such an extra bone. Lesser cases of anomalies in the upper medial corner of the scapula emerge with a snapping or scraping sound when the shoulder blade is moved up and

down, but the scapula remains in its normal place. Since the condition has a certain similarity with Snapping Hip, I have called it *Snapping Scapula.* The thickened bulbous corner (Type I) or hook-shaped corner (Type II) slips down over one or more costae and provokes the sound. As a rule the snapping is the only symptom, but in individual cases reactive changes arise in the form of bursa, bursitis and secondary fibrosis. The treatment is then resection of the abnormal upper medial scapula corner and the removal of the bursa and fibrosis.

RESUME

Les cas les plus prononcés de malformations de l'angle sipérieur médial de l'omoplate sont décrits comme des *élévations congénitales de l'omoplate* ou *maladie de Sprengel.* Il en existe deux types: Type I – avec os omovertébral et type II – sans cet os supplémentaire. Un petit nombre seulement des anomalies de l'angle supérieur médial de l'omoplate se manifestent par un craquement ou un grincement dans le mouvement de l'omoplate en haut et en bas, alors que l'épaule reste à sa place normale. Etant donné que cet état présente une certaine similarité avec la « hanche à craquement », je l'ai appelé « épaule à craquement ». L'angle osseux épaissi (type I) ou l'angle à saillie recourbée (type II) glisse sur une ou plusieurs côtes et provoque le son. En règle générale, le craquement est le seul symptôme, mais dans certains cas, il y peut y avoir des modifications réactives sous forme de bourse séreuse, de bursite ou de fibrose secondaire. Le traitement consiste alors en une résection de l'angle supérieur médial anormal de l'omoplate et de l'extirpation de la bourse séreuse ou de la fibrose.

ZUSAMMENFASSUNG

Die ausgesprochensten Fälle von Missbildung am oberen medialen Winkel des Schulterblattes werden als *scapula elevata congenita* oder *Sprengels Deformitet* beschrieben. Man findet zwei Typen: Type I mit dem Os omovertebrale, und Type II ohne Extraknochen. Geringere Fälle von Anomalien am oberen medialen Winkel der Scapula zeigen sich in einem schnappendem oder kratzendem Laut, wenn das Schulterblatt auf- und abwärts bewegt wird, aber die Scapula behält ihren normalen Platz. Da der Zustand eine gewisse Ähnlichkeit mit der schnappenden Hüfte hat, habe ich ihn *Schnappende Scapula* benannt. Der verdickte und aufgetriebene Winkel (Type I) oder der hakenför-

mige Winkel (Type II) gleitet über eine oder mehrere Rippen und ruft das Geräüsch hervor. Gewöhnlich ist das Schnappen das einzige Symptom, aber in einzelnen Fällen treten reaktive Veränderungen in Form von Bursæ, Bursitis und sekundärer Fibrose auf. Die Behandlung besteht dann in der Resektion des abnormalen oberen medialen Schulterblattwinkels und der Entfernung der Bursa und der Fibrose.

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