

Bone structure¹

IV. Fractures (general notions)

by Dr. Andrés Cano Torres

Consulting physician to the Spanish Judo Federation

Fractures of the clavicle (collar-bone)

These are extremely frequent, owing to the poor protection of the clavicle, its italic S shape, and also because falls on the shoulder are quite common.

The fracture is generally located in the middle third of the length of the clavicle. It is caused by a fall on an outstretched hand or on a shoulder. Depending on their position, we distinguish between the following types of fracture:

1. Fractures of the internal extremity of the clavicle.
2. Fractures of the external extremity.
3. Fractures of the "body" or middle third.

As we have said, the latter are the most common.

Clinical signs

In cases of fractures of the middle third of the clavicle, the patient adopts a typical posture: with his sound hand, he holds his wounded arm, which he keeps bent, and leans his head over on this side in order to relax the external cleido-mastoidean muscle. The traction exerted by the sterno-cleido-mastoidean makes the internal fragment move upwards, while the weight of the limb moves the external fragment downwards and inwards. The fragments almost always overlap and the acromio-sternal is shortened.

In cases of fractures of the external extremity of the clavicle, there is, as a general rule, no displacement; owing to the integrity of the coraco-clavicular ligaments and the muscles, the small external fragment remains attached to the acromion and the shoulder blade. The lesion resembles the acromio-clavicular dislocation that we have already studied. If the coraco-clavicular ligaments are broken, the external fragment is displaced downwards and outwards, which calls for a bandage round the elbow and the clavicle.

Pressure causes intense pain, and an oedema, and sometimes it is possible to palpate the fractured bone. Incapacity is moderate, although the movements of raising and opening the arms are painful.

Fractures of the internal extremity are rare and, as a general rule, no displacement occurs. They cause localized pain, bruising and functional incapacity.

Complications

They are rare, but can lead to pleuro-pulmonary lesions, vascular lesions (contusions or tearing of the sub-clavian artery with corresponding haemorrhage), nervous lesions (disorder of the brachial plexus or its nerve ramifications).

Treatment

In cases of fractures of the middle third of the clavicle, the displacement of the fragments must be reduced and the fragments immobilized.

Reduction is carried out as follows: with the patient seated, the doctor presses his knee between the patient's shoulders and pulls them firmly backwards. Once the fragments have been reduced, he immobilizes the fracture.



Deviation of the fragments
Figure 8

¹ See "Olympic Review" since No. 95-96. Published with kind permission of the Spanish Judo Federation's review.

There are many immobilization techniques, but the simplest, most practical and most effective is the “figure-of-eight bandage”, which is applied as follows:

The patient is seated on the edge of a stool. The doctor, standing behind, places his knee between the patient’s shoulders and pulls them upwards and backwards. Once the fracture has been reduced, he places cotton wadding in front of each shoulder and pulls it inwards under the armpit. He then makes figures-of-eight with a wide bandage which he passes in front of the shoulders, under the armpits, and crosses over between the shoulder blades. After each turn of the bandage, he must pull the shoulders upwards and backwards. Afterwards, the limb has to be supported with a triangular scarf passed round the neck. The figure-of-eight bandage makes it possible to unite the fracture and can be taken off after three weeks.

Figure 8 shows the different types of fracture of the clavicle (internal, middle, and external third), as well as the deviations undergone by the fragments in the case of a fracture of the middle third, owing to the action exerted by the muscles of the bone involved.

In Figure 9 we see how fractures of the clavicle are reduced (as explained above).

Figure 10 shows the figure-of-eight bandage, once the deviation of the fragments of the clavicle has been reduced.

Another type of bandage very frequently used is a sort of bicycle inner tube consisting of bands crossed in a figure-of-eight over both shoulders.

In cases where the treatment indicated above proves ineffective, it is necessary to resort to surgic



Method of reduction
Figure 9

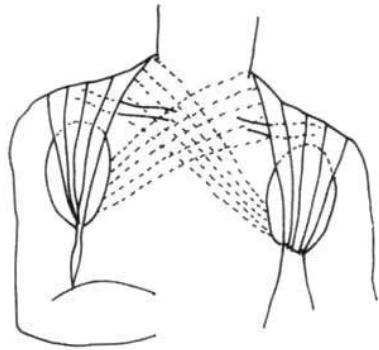


Figure-of-eight bandage
Figure 10

Fractures of the ribs

These are rare in young people, but their frequency increases with age and with the greater rigidity of the rib cage.

They are most commonly caused by direct action: a blow on the thorax, a fall on a sharp edge or a hard projection, etc. The ribs that fracture the least often are the first two, because they are protected by the clavicle, and the last two, known as “floating ribs”, whose mobility generally enables them to avoid the traumatism.

Clinically, there will be spontaneous pain localized at the place of the lesion; pain caused by the pressure exerted at this place and by the compression of the thorax. The pain is very localized and the point of fracture is easily located by exploring the whole length of the rib. Breathing becomes shallow in order to avoid aggravating the pain by respiratory movements.

Treatment consists in applying wide bands of sticking plaster crossed over the median line of the trunk both in front and at the back. The sticking plaster is applied when the lungs are full.

Functional recuperation is as a general rule complete after about a month or a month and a half. Simple costal fractures are usually without serious consequences. However, in the case of big, serious traumatisms, pleuro-pulmonary lesions may occur and considerably aggravate the prognosis.

A. C. T.

