

Disorders of the sternoclavicular joint

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Abstract

The sternoclavicular joint is, in the main, a stable joint which relatively rarely becomes diseased. However, conditions of the sternoclavicular joint, when untreated, can have major life limiting consequences. They therefore merit serious consideration because they are rare and an individual clinician's experience will inevitably be limited. This article covers the main conditions of the sternoclavicular joint: dislocations; periarticular fractures of the clavicle in children and adults; swellings, which may be arthritis, infection, or tumours, and rare conditions. The article focusses on how to diagnose and treat these disorders, what to watch out for in clinical practice and how to manage the late diagnosis.

Keywords medial clavicle fractures; sternoclavicular joint; sternoclavicular instability; sternoclavicular osteoarthritis; sternoclavicular swellings

Anatomy

The sternoclavicular joint is the only synovial joint between the upper limb and the chest wall, it otherwise being supported and controlled by the muscles around the scapula. The sternoclavicular joint is a synovial double plane joint between the medial clavicle and sternum. Less than half of the joint surface of the medial clavicle articulates with the sternum. In 25% of people the medial clavicle has a facet for articulation with the first rib. It has an intraarticular disc, which is attached posteromedially to anterolaterally. Ligaments around the joint are the anterior and posterior sternoclavicular ligaments, the interclavicular ligament and the costoclavicular ligament between the first rib and the medial clavicle (Figure 1).

The function of the sternoclavicular ligament is to allow the upper limb to move forwards and backwards (medial compartment) and up and down (lateral compartment). The important ligaments for stability are now believed to be the anterior and posterior sternoclavicular ligaments.^{1,2} The posterior is about 50% stronger than the anterior.³ Division of the articular disc also causes instability.² Behind the posterior sternoclavicular ligament are the large ascending vessels of the mediastinum and nearby, just posteromedial, are the thorax and oesophagus (Figure 2). The medial epiphysis of the clavicle only starts to ossify at 18–20 years of age and it does not close until around the age of 23–25 (Figures 3). Salter–Harris injuries may therefore occur to the epiphysis in young adults and may go unrecognized, with serious and unfortunate consequences (see below).⁴

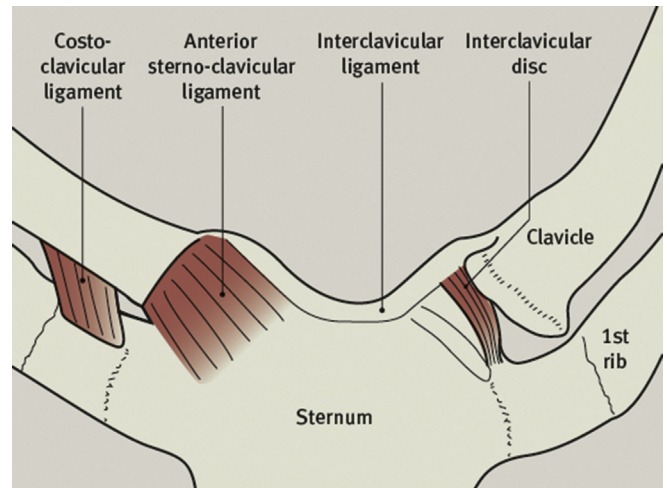


Figure 1 The anatomy of the sternoclavicular joint.

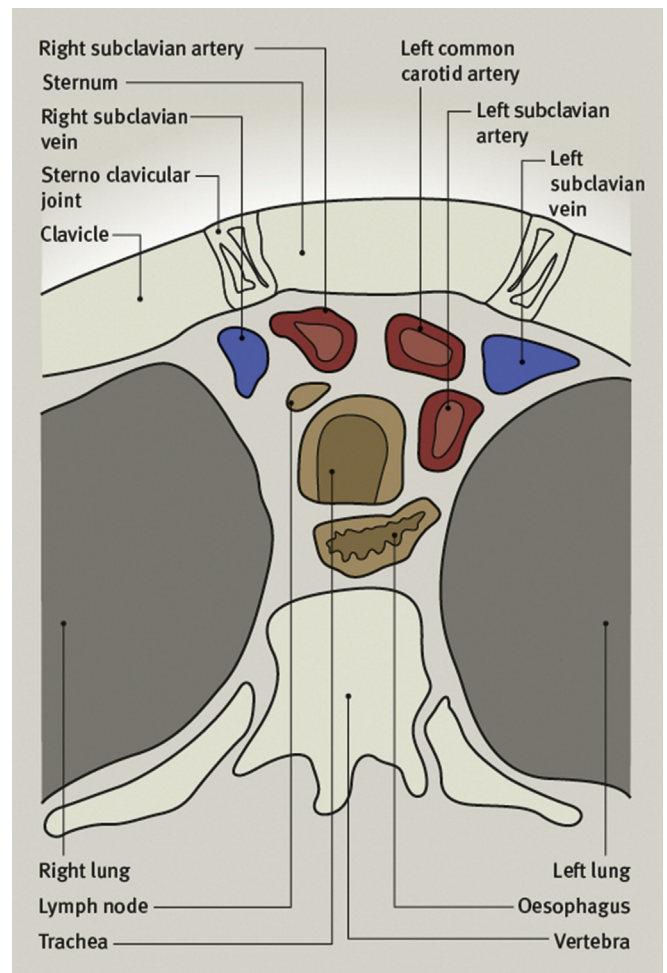


Figure 2 Cross section of the thorax at the level of the sternoclavicular joint showing the structures immediately posterior to the joint.

Disorders of the sternoclavicular joint

These fall into three main categories:

- Dislocations (acute or chronic, with or without joint laxity)
- Fractures near the joint (Salter–Harris injuries or medial clavicle fractures) +/- displacement

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Figure 3 Unfused epiphysis in a young adult.

- c) Swellings, which may be arthritis, infection, tumours or other, rare conditions

When discussing dislocations it is also important to consider whether the patient has joint laxity. However, in practical terms the simplest way to discuss these injuries is to consider them as they are encountered – as acute or chronic swellings of the joint – and consider the effect of joint laxity upon this presentation.

Acute joint injury (dislocation or Salter–Harris fracture)

Injuries to the joint are usually displaced anterior (the posterior ligament is stronger), but injuries moving the clavicle posteriorly can potentially be more serious, as they may press on the vital structures behind the joint.

In patients with generally stable joints (no joint laxity) injury to the sternoclavicular joint is usually associated with a defined injury (e.g. rugby tackle, road accident, fall from bicycle etc). It is thought that it occurs as an anterolateral or posterolateral compression applied to the shoulder pushes the humeral head against the glenoid and the force is thus transmitted to the scapula⁴ and thereby to the clavicle via the acromioclavicular joint. The force required is considerable and there may be severe associated injuries; in these cases it is more likely that the injury is initially missed, only to be diagnosed late.

Presentation

Anterior

Such injuries may present with a swelling developing at the time of injury (this could be a dislocation, a Salter–Harris II fracture or a medial clavicle fracture) or as initial soreness at the time of injury and then, typically that evening or the next day, the joint starts to click in and out (becomes dislocatable) (Figure 4). If under 25 years of age, always consider a potential Salter–Harris II fracture until proven otherwise. In a seriously injured patient it is the sort of injury that is missed on the primary and secondary



Figure 4 Posteriorly dislocated sternoclavicular joint on right side of patient.

survey and so it is worth considering a specific re-examination in the next few days, when other distracting injuries are settling after treatment (see later) (Summary in Table 1).

Posterior

Unfortunately, posterior injuries, whilst rarer, are more likely to cause long term problems and are also more difficult to diagnose clinically. Although posterior dislocatable joints may occur, the majority of posterior dislocations will be fixed or will be posteriorly displaced Salter–Harris II fractures. Clinically, apart from some soreness, the joint is unlikely to look abnormal so the injury can be missed (see Figure 4). The key clinical sign is the position of the shoulders. The posteriorly dislocated sternoclavicular joint (or Salter–Harris II fracture) will result in the ipsilateral shoulder being pulled forwards compared to the other side and it will not be possible to push it back to create symmetry.

The other presentation is that associated with compression of the central posterior structures – trachea, oesophagus and vessels, so there may be feeling of “something stuck in the neck” – or difficulty swallowing, or prominent veins on the ipsilateral side, which may affect up to 25% (See Summary Table 2).⁴

Key points of acute anterior swellings

| | |
|--------------------------------------|---|
| Acute anterior swellings | Best diagnosis is by CT scan |
| Anterior dislocation | Although can be managed non-operatively especially if dislocation has reduced. If dislocated it is easier to reduce and fix than wait and do it later |
| Medial clavicle fracture | Non-operative if reasonably non-mobile and in reasonable position otherwise ORIF with plate |
| Salter–Harris II fracture (under 25) | Rare to be anterior but if they are and are displaced easier to reduce and fix |

Table 1

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