MANAGEMENT and TREATMENT For a CHRONIC STERNOCLAVICULAR JOINT DISLOCATION

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INTRODUCTION

2-3% of the injuries of the upper limb

Traumatic or atraumatic

>Traumatic dislocation:

- anterior (the most common)
- posterior (!!!!!mediastinal structures at risk!!!!!)
- difference with medial clavicle physeal fracture

High energy ++

Atraumatic subluxation: younger with generalized ligamentous laxity; the treatment is reassurance and symptomatic

ANATOMY

Medial clavicle

Sternoclavicular joint (diarthrodial saddle joint, incongruous <50%)

Stability: ligamentous structures ++

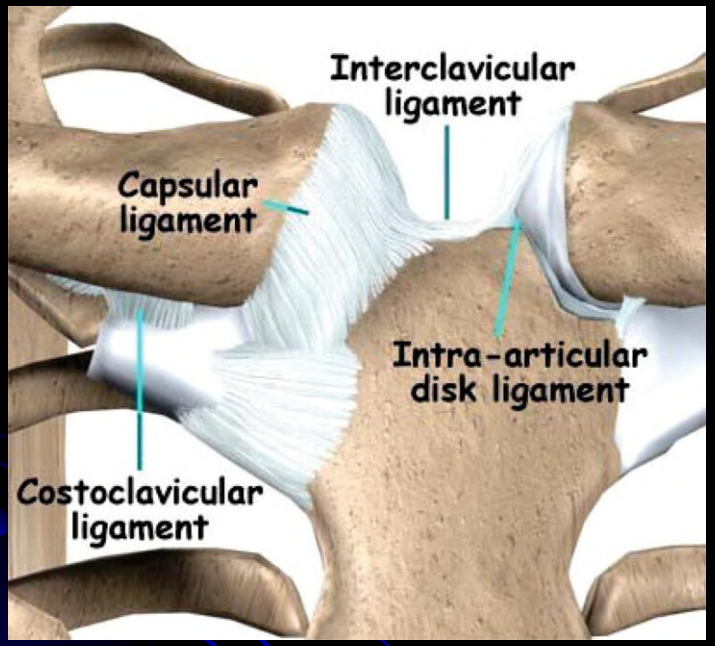
-posterior capsular ligament (most important for AP)

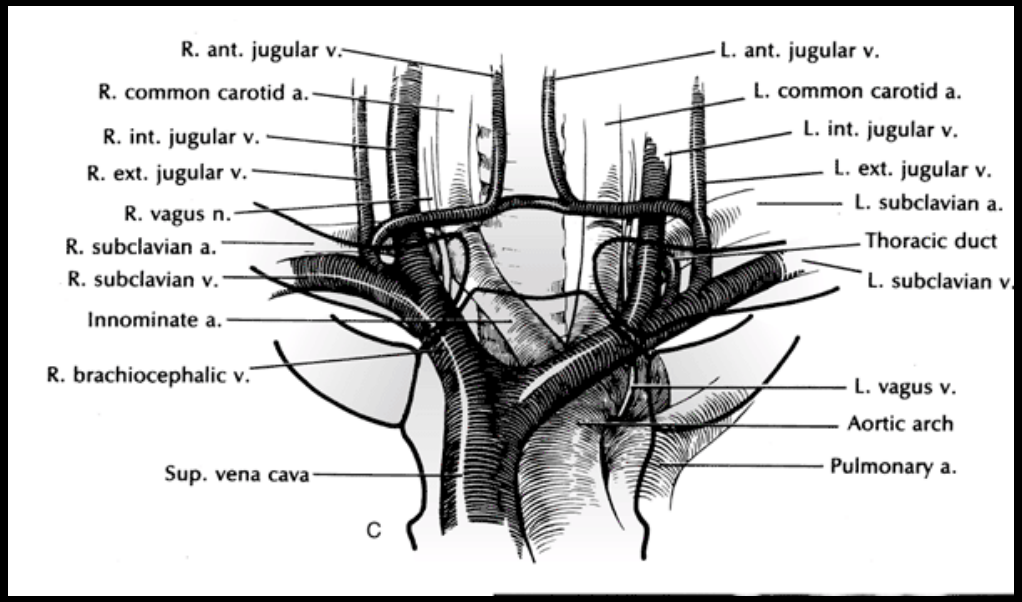
-anterior sternoclavicular ligament (superior displacement)

-costoclavicular ligament

-intrarticular disk ligament

ANATOMY


Interclavicular ligament
Capsular ligament
Intra-articular disk ligament
Costoclavicular ligament


R. ant. jugular v.
L. ant. jugular v.
R. common carotid a.
L. common carotid a.
R. int. jugular v.
L. int. jugular v.
R. ext. jugular v.
L. ext. jugular v.
R. vagus n.
L. subclavian a.
R. subclavian a.
Thoracic duct
R. subclavian v.
L. subclavian v.
Innominate a.
R. brachiocephalic v.
L. vagus v.
Aortic arch
Sup. vena cava
Pulmonary a.
C

PRESENTATION

For anterior dislocation:

-deformity with palpable bump
-increases with arm abduction and elevation
-pain: turning head to affected side relieve it

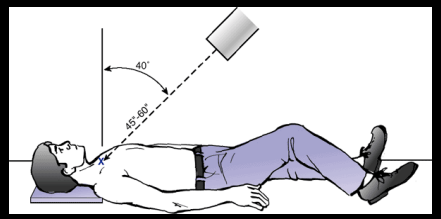
For posterior dislocation:

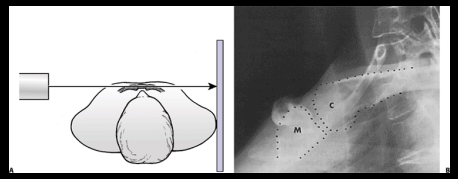
Risk of dyspnea or dysphagia
Risk of paresthesias
Risk of vascular compression

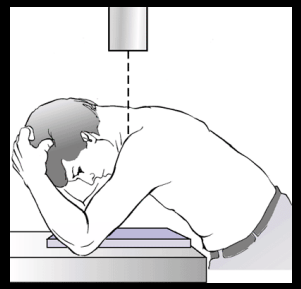
Associated injuries:

Bilateral dislocations
Dislocations of both ends of the clavicle
Combinations of sternoclavicular dislocations and fractures and dislocations of the clavicle
Combination of sternoclavicular dislocation and scapulothoracic dissociation

IMAGING







Radiographs:

AP and shoulder girdle

Heining View and Hobbs view

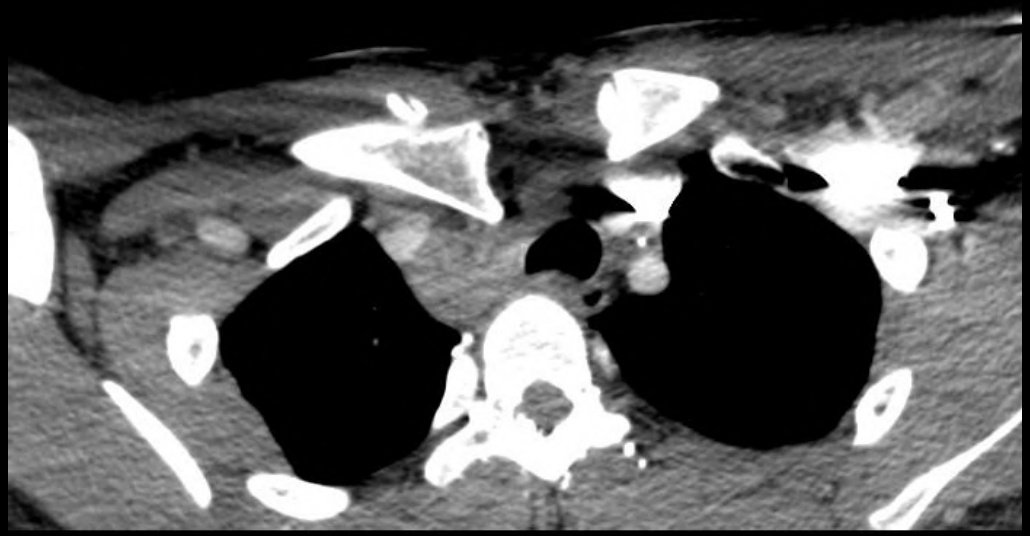
Difficult

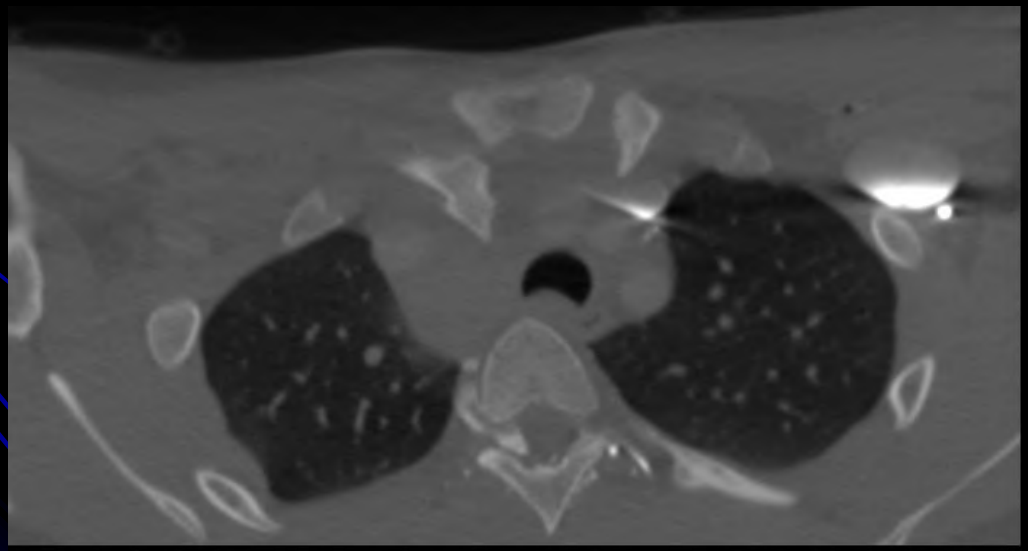
Serendipity views (beam at 40° cephalic tilt:
-anterior: affected clavicle above controlat
-posterior: affected clavicle below controlat

CT Scan: +++

Visualize mediastinal structures and injuries

Differential diagnosis with physeal fractures





TREATMENT:

Operative treatment for an anterior sternoclavicular chronic dislocation

4 techniques: in isolation or combined

(1) Suturing of SC and CC ligaments and capsule followed by temporary SC transfixation or suture anchor fixation to the sternum.

(2) Resection of the medial clavicle + stabilisation by ligament + capsule suture. The most important is the preservation of the costoclavicular ligament (resection < 10mm M, 0.9mm F ; Bisson et al. Rockwood et al.)

(2 bis) Another alternative for the painful SC joint: a technique using interpositional arthroplasty resection of medial clavicle in conjonction of interposition arthroplasty of the sternal head of the scternocleïdomastoïd muscle. (Reis et al. JSES 2006)

TREATMENT:

Operative treatment for an anterior sternoclavicular chronic dislocation

(3) Reconstruction of the anterior SC ligament (++):

The most performed

The most closely examined in the litterature

Various autografts to reconstruct: fascia lata, semitendinous, medial portion of the sternal part of the SCM muscle

Spencer et al. 2004: *semitendinous in a figure of a eight configuration has initial biomechanical properties that are superior to the other.*

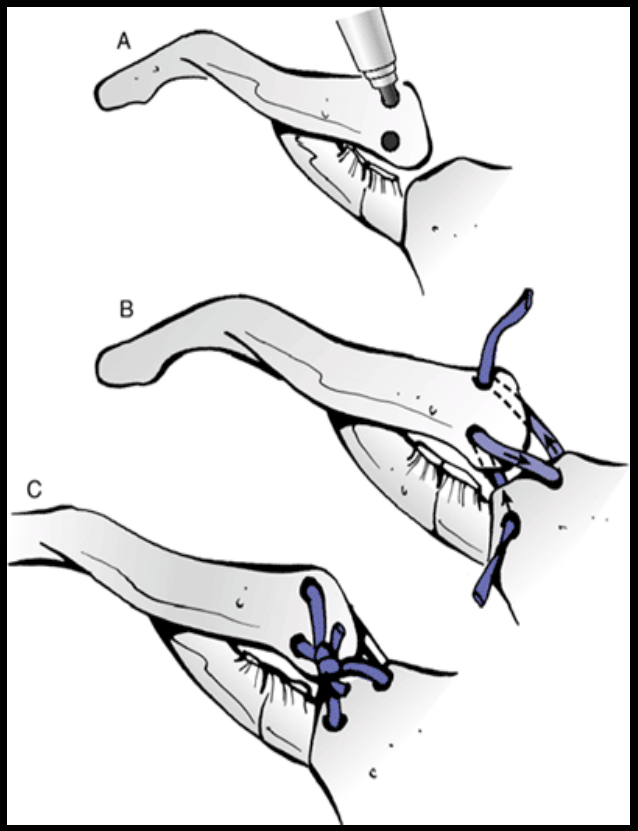
Semitendinosus figure-of-eight reconstruction.

A. Drill holes are passed from anterior to posterior through the medial part of the clavicle and the manubrium.

B. A free semitendinosus tendon graft is woven through drill holes such that the tendon strands are parallel to each other posterior to the joint and cross each other anterior to the joint.

C. The tendon is tied in a square knot and is secured with suture.

(Redrawn after Spencer EE, Kuhn JE. Biomechanical analysis of reconstructions for sternoclavicular joint instability. J Bone Joint Surg Am 2004;86:98–105.)



TREATMENT:

Operative treatment for an anterior sternoclavicular chronic dislocation

(4) Reconstruction of the CC ligament:

Several different autografts

++ transposition of the subclavus muscle

Temporary fixation with a sternum pin: NOT recommended because of the high risk of migration and possible injuries of the mediosternal structures.

(5) NOT TO DO: arthrodesis or pin fixation or plate…

TREATMENT:

Operative treatment for an anterior sternoclavicular chronic dislocation

Van Tongel et al. 2012:

interrogate 745 orthopedic surgeon: which technique the would use if they had to fix the dislocation during an open reduction for chronic or acute anterior SC dislocation

(1) Open reduction and suturing SC capsule and costoclavicular ligament: 34% chronic and 87% acute
(2) Medial claviculectomy: 28% chronic and 3% acute
(3) Reconstruction of anterior SC ligament: 40% chronic and 26% acute
(4) Reconstruction of CC ligament: 22% chronic and 19% acute
(5) Other: 10%

CONCLUSION

For an anterior chronic SC dislocation:

Rare so no clear clinical agreement concerning the treatment

The reconstruction of the anterior SC ligament is the most common procedure

If there is some chondropathy the alternative is the resection of 10mm of medial clavicle with preservation of the CC ligament