Management of Sternoclavicular Joint Disorders

Essay

Submitted for Fulfillment of Master Degree in Orthopedic Surgery

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Fig. No.	Title	Page

Abbreviations

3D	Three Dimensional
AP	Anteroposterior
CC Ligament	Costoclavicular Ligament
CT	Computed Tomography
IV	Intra Venous
MRA	Magnetic Resonance Arthrography
MRI	Magnetic Resonance Imaging
NSAIDs	Non-steroidal anti-inflammatory drugs
OA	Osteoarthritis
PPP	pustulosis palmaris et plantaris
SAPHO	Synovitis, acne, pustulosis, hyperostosis, and Osteitis
SCCH	SternoCostoClavicular Hyperostosis
SCJ	Sternoclavicular joint
SCM	Sternocleidomastoid
Tc-99m	Technetium 99m
UK	United Kingdom

Abstract

Sternoclavicular joint disorders are uncommon injuries and are always overlooked although it can cause serious complications and can be sometimes life threatening. Diagnosis of sternoclavicular joint disorder can't be done by examination and x-ray only and CT scan is the reliable method for imaging of the sternoclavicular joint. Diferrent methods of treatment of each disorder have been discussed and advances in each technique. Arthroscopy and arthroplasty is the newest modalities of treatment for certain conditions.

Key Words : Sternoclavicular joint disorders, arthroscopy of the sternoclavicular joint, sternoclavicular joint replacement.

Introduction

There are many conditions affecting the sternoclavicular joint either traumatic or atraumatic most of them are often overlooked or misdiagnosed. Most of these conditions are covered in this essay.

The traumatic injuries are not uncommon and may be life threatening and needs early intervention.

The rich supply of the entheses explains why the sternoclavicular joint is a common target for the spondyloarthropathies.

The clavicle acts as a bridge that connects the nearly stationary axial skeleton to the extra ordinary mobile shoulder joint. The sternoclavicular joint is called into play during each respiratory movement and all movements of the scapulohumeral complex.

The anatomical and physiological considerations explain why a disorder of the sternoclavicular joint can manifest as a shoulder pain. Furthermore, mobility of the sternoclavicular joint predominantly occurs in the meniscocalvicular compartment, so that degenerative lesions often predominate on the clavicular side of the joint. [1]

The injuries of the sternoclavicular joint are classified into according to **Allman**[2] into three grades according to the degree of injury to the capsule and the sternoclavicular ligament, or both.

There are many atraumatic conditions affecting the sternoclavicular joint will be discussed in this essay like:

1- Sternoclavicular hyperostosis (SCCH). [3]
2- Condensing osteitis of the clavicle. [4]
3- Friedrich's disease (Aseptic necrosis of the medial end of the clavicle). [5]
4- Tietze's syndrome (Benign tender swelling of the sternoclavicular joint). [6]
5- Osteoarthritis of the sternoclavicular joint in adults. [7]
6- Infection of the sternoclavicular joint. [8]
7- Spontaneous subluxation of the sternoclavicular joint. [9]

Diagnosis of sternoclavicular joint disorder is done by examination or radiographically either by plain x-ray or advanced radiology techniques which will be discussed later. [10]

Management of the sternoclavicular joint goes into either one of the following:

A- Conservative management suitable for sprains and anterior dislocations. [11]
B- Surgical management includes many procedures according to the nature of the disorder. [12, 13, 14, 15]
C- Arthroscopic suture anchors for instability of the sternoclavicular joint. [16]
D- Arthroplasty of the sternoclavicular joint. (replacement by radial head prosthesis).[17]

Aim of the work

In this essay we will review and study literature aiming to clarify

- Different disorders of the sternoclavicular joint.
- How to diagnose each disorder.
- Management of each disorder.
- Prognosis of each disorder.
- Complications of each disorder.
- And to clear up the most recent approach for every disorder.

Sternoclavicular Articulation

The Sternoclavicular joint is a diarthrodial joint and is the only true articulation between the clavicle of the upper extremity and the axial skeleton (Fig. 1).

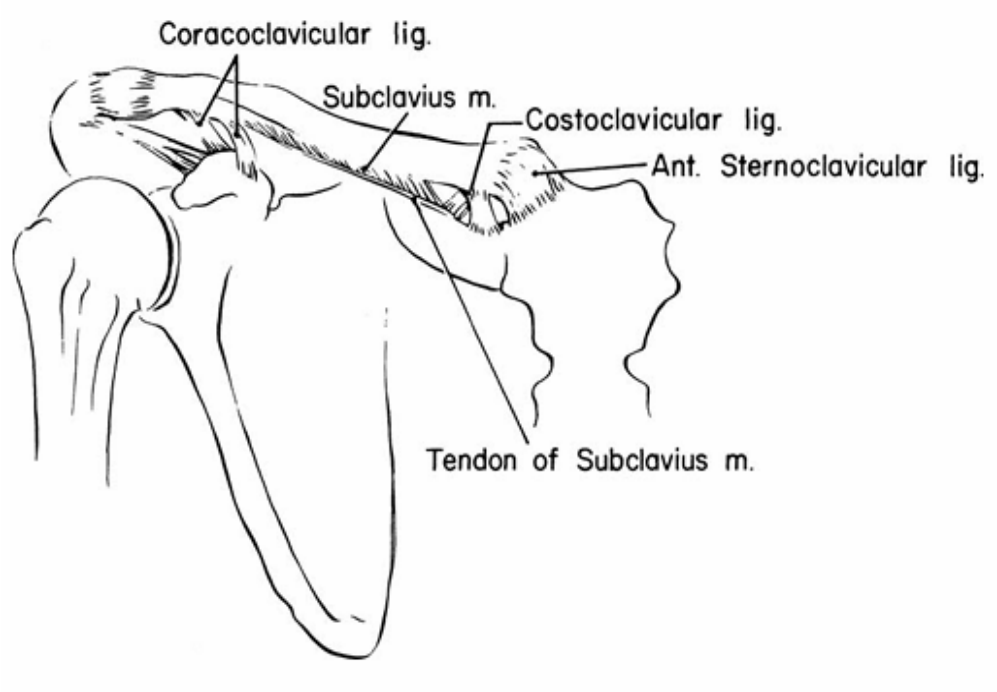

Figure 1: Normal anatomy around the sternoclavicular and acromioclavicular joints. [18]

The articular surface of the clavicle is much larger than that of the sternum, and both are covered with fibrocartilage. The enlarged medial end of the clavicle is concave front to back and convex vertically and therefore creates a saddle-type joint with the clavicular notch of the sternum. [18, 19] The clavicular notch of the sternum is curved, and the joint surfaces are not congruent. **Cave** [20] has demonstrated that in 2.5% of patients, there is a small facet

on the inferior aspect of the first rip at its synchondral junction with the sternum.

Because less than half of the medial end of the clavicle articulates with the upper angle of the sternum, the sternoclavicular joint has the distinction of having the least amount of bony stability of the major joints of the body (Fig. 2).

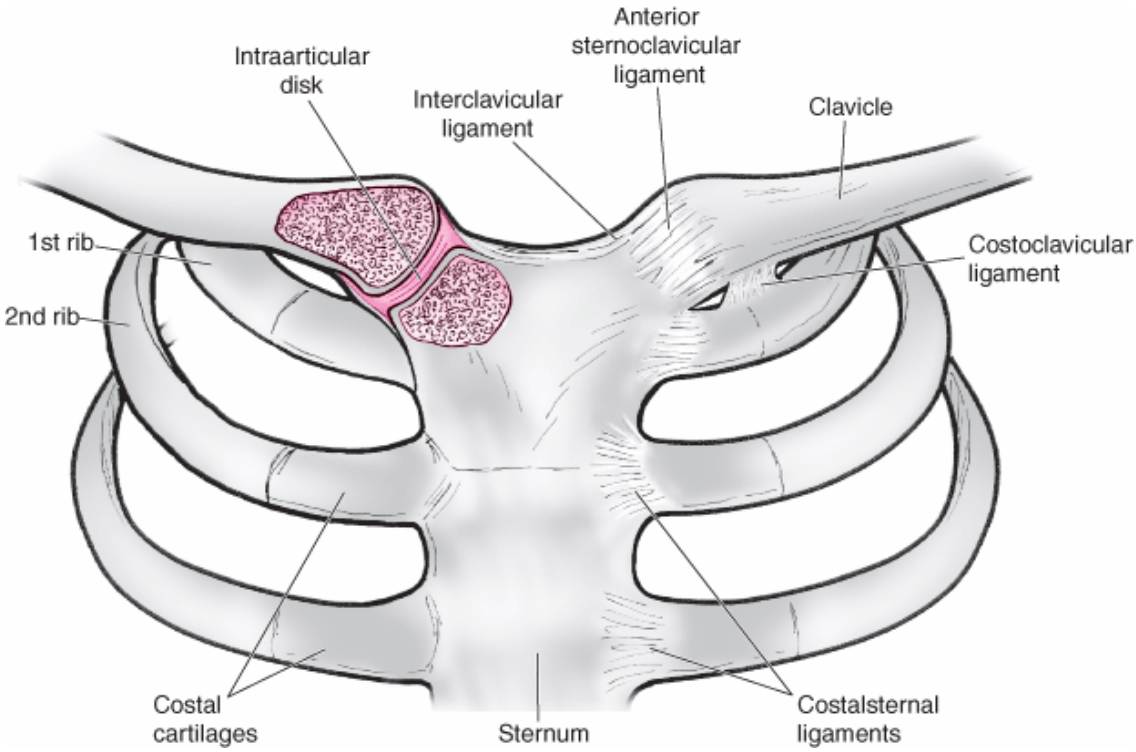

Figure 2: Bony anatomy of the sternoclavicular joint. (21)

As **Grant** (21) noted that the two articular surfaces make an ill fit. If a finger is placed in the superior sterna notch, with motion of the upper extremity one can feel that a large part of the medial clavicle is completely above the articulation of the sternum.