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1 Shoulder Anatomy

Nickolas G. Garbis

Summary

The chapter is intended to be a high-level overview of shoulder anatomy and a quick reference for trainees and surgeons.

Keywords: Shoulder, anatomy, muscles, nerves, tendons

I. General introduction

- A. Complex joint
- B. Helps position the arm in space
- C. Essential in allowing us to interact with the environment
- D. Connects the axial skeleton to the upper extremity.

II. Bones and joints

- A. Shoulder girdle is composed of four bones:
 - 1. Sternum
 - 2. Clavicle
 - 3. Scapula
 - 4. Humerus.
- B. Three major articulations:
 - 1. Sternoclavicular (SC) joint
 - 2. Acromioclavicular (AC) joint
 - 3. Glenohumeral (GH) joint.
- C. Other articulations and spaces:
 - 1. Subacromial space
 - 2. Scapulothoracic bursa.

III. Sternum

- A. Connection point of the appendicular skeleton to the axial skeleton
- B. Bone is composed of three parts:
 - 1. Manubrium
 - 2. Body
 - 3. Xiphoid process.
- C. Sternal notch is a depression between the two SC joints
- D. SC joints are shallow notches at the superolateral corners of the manubrium (► Fig. 1.1)

Shoulder Anatomy

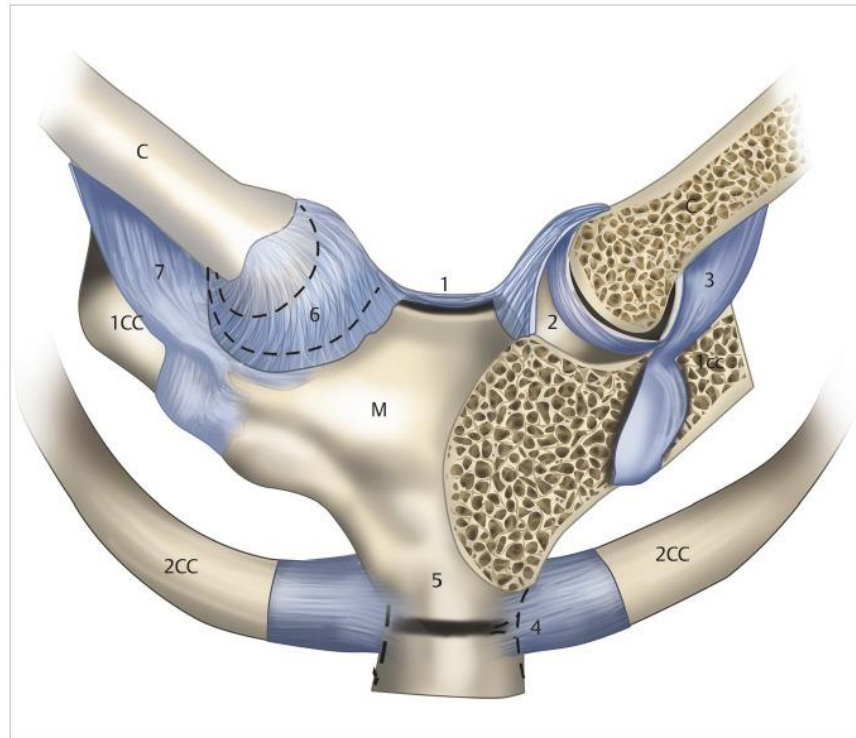


Fig. 1.1 Diagram of the sternoclavicular (SC) joint. 1CC, first costal cartilage (ossified); 2CC, second costal cartilage; M, manubrium; 1, interclavicular ligament; 2, articular disc; 3, costoclavicular ligament (posterior lamina); 4, sternocostal joint; 5, manubriosternal joint; 6, anterior sternoclavicular ligament; 7, costoclavicular ligament (anterior lamina).

- E. The body and manubrium serve as insertion points for the costal cartilages of ribs 1–7
- F. Important to understand role of SC articulation in shoulder biomechanics.

IV. Clavicle

- A. Bone that spans from the sternum to the acromion
- B. Flat near the lateral third but becomes more convex medially
- C. Begins ossifying at 5 weeks in utero
- D. The medial epiphysis of the clavicle is the last to fuse at approximately 23–25 years of life
- E. The size of the bone changes in cross section at different points:
 1. 23 mm × 22 mm at the sternal end
 2. 12 mm × 12 mm at the diaphysis
 3. 21 mm × 11 mm at the lateral end.