MEDICAL EDUCATION RESOURCE

Acromioclavicular Joint,Movements of the Shoulder Girdle

? Acromioclavicular Joint

Type

- **Plane synovial joint** between the **acromial end of clavicle** and the **medial margin of acromion process of scapula**.

Articular Surfaces

- **Clavicular facet:** Small, oval, and convex.
- **Acromial facet:** Small and concave.
- Both are covered by **fibrocartilage**.

Articular Disc

- Usually **incomplete**, wedge-shaped fibrocartilage dividing the joint cavity partially.
- Improves congruence and absorbs shock.

Ligaments

LIGAMENT	ATTACHMENT	FUNCTION
Capsular ligament	Surrounds joint, thin above, thick below	Allows limited gliding
Superior & Inferior acromioclavicular ligaments	Between acromion and clavicle margins	Strengthen capsule
Coracoclavicular ligament (chief stabilizer)	From coracoid process to clavicle	Suspends scapula from clavicle

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Coracoclavicular Ligament

Divided into two parts:

1. **Conoid ligament** – cone-shaped; from base of coracoid to conoid tubercle of clavicle.
2. **Trapezoid ligament** – broad; from upper surface of coracoid to trapezoid line of clavicle.

? **Function:** Prevents separation of clavicle from scapula during shoulder depression or heavy weight carrying.

Relations

- **Superiorly:** Trapezius muscle.
- **Inferiorly:** Supraspinatus and subacromial bursa.
- **Anteriorly:** Deltoid.

Nerve Supply

- **Lateral supraclavicular nerve** and **nerve to subclavius** (C5, C6).

Blood Supply

- From **suprascapular** and **thoracoacromial arteries**.

Movements

- Small **gliding and rotatory** movements between acromion and clavicle.
- Occur during:
    - **Elevation & depression** of scapula.
    - **Protraction & retraction** of shoulder.
- Movement limited by **coracoclavicular ligament**; main movement transmitted to SC joint.

Stability Factors

- Strength of **coracoclavicular ligament**.

- Partial **articular disc** acting as buffer.
- **Deltoid and trapezius** forming a muscular roof.

Clinical Anatomy

- **Shoulder separation (AC dislocation):**
  - Results from fall on shoulder.
  - **Partial tear:** AC ligaments only.
  - **Complete tear:** Both AC and coracoclavicular ligaments ? prominent “step deformity” with clavicle displaced upward.
- **Degenerative arthritis:**
  - Common in athletes and manual laborers due to repetitive load.

? Movements of the Shoulder Girdle

Bones Involved

- **Clavicle** (at SC and AC joints).
- **Scapula** (gliding over thoracic wall — *scapulothoracic movement*).

Main Movements

MOVEMENT	PLANE / AXIS	MUSCLES INVOLVED
Elevation	Vertical (coronal)	Trapezius (upper fibers), Levator scapulae, Rhomboids
Depression	Vertical (coronal)	Pectoralis minor, Subclavius, Lower trapezius
Protraction (abduction of scapula)	Around vertical axis	Serratus anterior, Pectoralis minor
Retraction (adduction of scapula)	Around vertical axis	Middle trapezius, Rhomboids, Latissimus dorsi
Upward rotation of scapula	Around sagittal axis	Upper & lower trapezius, Serratus anterior
Downward rotation of scapula	Around sagittal axis	Levator scapulae, Rhomboids, Pectoralis minor

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Functional Significance

- Full **abduction of upper limb (180°)** requires combined movement at:
    - **Glenohumeral joint (~120°)**
    - **Scapulothoracic movement (~60°)**
    - ? Known as the **scapulohumeral rhythm**.

Scapular Movements & Clavicle

- During **elevation of limb**, clavicle:
    - **Elevates**, **rotates backward**, and **retracts slightly** at SC joint.
- These coordinated motions give shoulder its wide range of movement and stability.

Clinical Anatomy

- **Winged scapula:** Paralysis of *serratus anterior* (long thoracic nerve lesion) ? scapula projects posteriorly when pushing against wall.
- **Dropped shoulder:** Injury to *spinal accessory nerve* ? trapezius paralysis.
- **Painful arc syndrome:** Limited elevation due to supraspinatus tendon impingement under acromion.

? Dissection – Acromioclavicular Joint

Steps

1. Place the cadaver prone; expose the **posterior shoulder region**.
2. Identify **acromion process** and **lateral end of clavicle**.
3. Reflect overlying **trapezius and deltoid** to expose the joint capsule.
4. Clean the **superior and inferior acromioclavicular ligaments.**
5. Identify and trace the **coracoclavicular ligament**:

- Medial **conoid part** to conoid tubercle.
- Lateral **trapezoid part** to trapezoid line.

6. Open the joint capsule; observe the **fibrocartilaginous articular disc**.
7. Move scapula to demonstrate **gliding and rotation** of acromion on clavicle.
8. Note relationship of **supraspinatus tendon** and **subacromial bursa** beneath the joint.