

Axilla : Anatomy and Dissection

Axilla

Introduction

- **Pyramidal space** between the upper limb and thoracic wall.
- Provides passage for **nerves, vessels, and lymphatics** from neck to upper limb.
- Clinically important for **brachial plexus blocks, lymph node dissections, and abscess drainage**.

Boundaries

- **Apex (cervicoaxillary canal)** ? bounded by clavicle (anterior), scapula (posterior), and 1st rib (medial).
- **Base (floor)** ? skin, subcutaneous tissue, axillary fascia.
- **Anterior wall** ? pectoralis major, pectoralis minor, clavipectoral fascia.
- **Posterior wall** ? subscapularis, teres major, latissimus dorsi.
- **Medial wall** ? upper 4 ribs with intercostal muscles, covered by serratus anterior.
- **Lateral wall** ? intertubercular sulcus of humerus.

Contents

- Axillary artery and branches.
- Axillary vein and tributaries.
- Brachial plexus cords and branches.
- Axillary lymph nodes.
- Axillary fat and areolar tissue.

Dissection of Axilla

Step 1: Skin Incisions

- Extend previous pectoral dissection into axilla.
- Remove skin and superficial fascia ? expose axillary fat and lymph nodes.

Step 2: Boundaries

- Identify anterior wall (pectoralis muscles), posterior wall (subscapularis, teres major, latissimus dorsi), medial wall (serratus anterior), and lateral wall (humerus).

Step 3: Expose Axillary Vein

- Lies **anteromedial to axillary artery**.
- Formed by union of brachial veins and basilic vein.
- Tributaries: cephalic vein, thoracoacromial vein, lateral thoracic vein.

Step 4: Expose Axillary Artery

- Continuation of subclavian artery, begins at lateral border of 1st rib, ends at lower border of teres major.
- Divided into **3 parts by pectoralis minor**:
 - 1st part ? superior thoracic artery.
 - 2nd part ? thoracoacromial and lateral thoracic arteries.
 - 3rd part ? subscapular, anterior circumflex humeral, posterior circumflex humeral arteries.

Step 5: Expose Brachial Plexus

- Identify cords of brachial plexus around artery:
 - Lateral cord ? musculocutaneous nerve, part of median nerve.
 - Medial cord ? ulnar nerve, part of median nerve.
 - Posterior cord ? axillary and radial nerves.
- Smaller branches: medial pectoral nerve, lateral pectoral nerve, long thoracic nerve, thoracodorsal nerve.

Step 6: Axillary Lymph Nodes

- Identify **five groups**:

- Pectoral (anterior).
- Subscapular (posterior).
- Humeral (lateral).
- Central.
- Apical.

- Important in **breast carcinoma spread**.

Step 7: Clinical Demonstrations

- **Axillary abscess** ? may spread widely due to loose fat.
- **Axillary artery compression** ? useful in controlling hemorrhage.
- **Brachial plexus block** ? done at axilla for anesthesia of upper limb.
- **Axillary node dissection** ? performed in carcinoma breast; must preserve long thoracic and thoracodorsal nerves.

Clinical Anatomy of Axilla

1. Axillary Abscess

- Infections (boils, hidradenitis, tuberculosis) can spread into axilla due to **loose areolar tissue**.

- Abscesses may spread widely along fascial planes.
- Surgical drainage must avoid injury to **axillary vessels and nerves**.

2. Axillary Lymph Nodes

- Commonly enlarged in:
 - **Breast carcinoma** (major pathway of spread).
 - **Tuberculosis**.
 - Infections of upper limb and chest wall.
- **Axillary lymph node dissection** is done in breast cancer surgery ? long thoracic nerve and thoracodorsal nerve must be preserved.

3. Brachial Plexus Involvement

- **Compression or injury** in axilla (e.g., from tumors, aneurysm, trauma) causes motor and sensory deficits of upper limb.
- **Axillary block** ? local anesthetic injected around cords of plexus to anesthetize upper limb for surgery.

4. Axillary Artery

- **Compression**: artery can be compressed against 1st rib in axilla to control hemorrhage of limb.

- **Aneurysm:** pulsatile swelling in axilla ? may compress brachial plexus ? pain and paresthesia.
- **Trauma:** injured in penetrating wounds, shoulder dislocation, or fracture of proximal humerus.

5. Axillary Vein

- **Central venous access** ? axillary vein sometimes used for catheterization.
- **Injury** during trauma or surgery can cause severe hemorrhage and air embolism (due to negative intrathoracic pressure).

6. Nerve Injuries in Axilla

- **Long thoracic nerve** ? winged scapula.
- **Thoracodorsal nerve** ? paralysis of latissimus dorsi (weak adduction/extension).
- **Axillary nerve** ? deltoid paralysis, loss of abduction above 15°, regimental badge anesthesia.

7. Axillary Swellings

- Causes: enlarged lymph nodes, abscess, lipoma, aneurysm of axillary artery, cysts.
- Clinical examination involves palpation of anterior, posterior, lateral, central, and apical groups of nodes.