MEDICAL EDUCATION RESOURCE

Brachial Artery

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Introduction

- The **brachial artery** is the **main arterial trunk of the arm**, the direct continuation of the **axillary artery** beyond the **lower border of teres major**.
- It supplies the **arm muscles**, gives off important **collateral branches** around the elbow, and ends by dividing into the **radial and ulnar arteries**.

Extent

- **Begins** ? at the *lower border of teres major*.
- **Ends** ? in the *cubital fossa* at the level of the neck of the radius by dividing into **radial** and **ulnar arteries**.

Course

- Runs **down the medial side of the arm**, initially lateral, then medial to the median nerve.
- In the lower half, it lies **medial to the biceps tendon** and **anterior to the brachialis muscle**.

- At the elbow, it lies **under the bicipital aponeurosis**, and **superficial to the brachialis**.

Relations

Anteriorly

- Covered by **skin, superficial fascia, and deep fascia**.
- Crossed by **median cubital vein** (important for venipuncture).
- **Bicipital aponeurosis** separates it from the median cubital vein.

Posteriorly

- Lies on **triceps (upper part)** and **brachialis (lower part)**.
- Accompanied by **median nerve (medially)** and **basilic vein (superficially)**.

Laterally

- **Median nerve (upper arm)** initially lies lateral, then crosses to medial side.
- **Biceps brachii and coracobrachialis** laterally.

Medially

- **Ulnar nerve** and **basilic vein**.

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Branches

1. Muscular Branches

- To **biceps brachii**, **coracobrachialis**, and **brachialis**.

2. Nutrient Artery

- To **humerus** (enters through nutrient foramen near middle of bone).

3. Profunda Brachii Artery (Deep Artery of Arm)

- Largest branch.
- Arises near upper part of brachial artery.
- Accompanies **radial nerve** in the **spiral groove**.
- Ends by dividing into **radial collateral** and **middle collateral arteries**, which participate in **elbow anastomosis**.

4. Superior Ulnar Collateral Artery

- Arises in middle of arm.
- Accompanies **ulnar nerve** behind medial epicondyle.
- Joins **posterior ulnar recurrent artery** in elbow anastomosis.

5. Inferior Ulnar Collateral Artery

- Arises 5 cm above elbow.

- Passes anterior to medial epicondyle.
- Joins **anterior ulnar recurrent artery**.

6. Terminal Branches

- **Radial artery** (lateral).
- **Ulnar artery** (medial).

Dissection of Brachial Artery (Page 101)

Steps

1. Expose the **anterior compartment** of the arm as before.
2. Identify the **biceps brachii** and **bicipital aponeurosis**.
3. Deep to the aponeurosis, locate the **brachial artery** and **median nerve**.
4. Observe:
    - In upper part ? median nerve is lateral to artery.
    - Mid-arm ? median nerve crosses anteriorly.
    - Lower arm ? median nerve becomes medial to artery.
5. Identify **profunda brachii artery** arising near teres major.
6. Trace **superior and inferior ulnar collateral arteries** descending toward elbow.

7. Note accompanying **brachial veins (venae comitantes)** on either side of artery.

Clinical Anatomy of Brachial Artery (Page 102)

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1. Palpation of Pulse

- **Brachial pulse** is felt in the **cubital fossa**, medial to biceps tendon.
- Used for measuring **blood pressure** (by sphygmomanometer).

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2. Compression

- Can be compressed against the **humerus** in the **mid-arm** to control bleeding in distal limb injuries.

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3. Aneurysm

- **Brachial artery aneurysm** may present as pulsatile swelling in the arm, causing **median nerve compression** (pain or paresthesia).

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4. Embolism / Thrombosis

- Blockage ? ischemia of forearm and hand ? **pain, pallor, and pulselessness**.
- Immediate **emergency revascularization** needed.

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5. Accidental Injection

- Injection into brachial artery instead of vein ? **gangrene of forearm muscles** due to spasm and ischemia.

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6. Relation to Venipuncture

- **Median cubital vein** overlies brachial artery in cubital fossa, separated by **bicipital aponeurosis** ? prevents accidental arterial puncture during blood sampling.

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7. Collateral Circulation Around Elbow

- Important in **ligation or obstruction** of brachial artery.
- Maintained via:
    - **Superior & inferior ulnar collateral arteries.**
    - **Radial & middle collateral arteries (from profunda brachii).**
    - **Ulnar recurrent and radial recurrent arteries (below elbow).**