MEDICAL EDUCATION RESOURCE

Arteries of Front of Forearm,Radial Artery,Ulnar Artery

Arteries of the Front of Forearm

Overview

- The blood supply of the anterior compartment of the forearm is derived mainly from:
  - **Radial artery**
  - **Ulnar artery**
- Both are terminal branches of the **brachial artery** in the cubital fossa.
- These arteries provide major contributions to the **palmar arches** in the hand.

Radial Artery

Origin

- One of the two terminal branches of the **brachial artery** in the **cubital fossa**.

Course

1. Begins in cubital fossa opposite the neck of radius.
2. Runs **down the lateral side of forearm** under cover of *brachioradialis*.
3. Lies on *supinator*, *flexor pollicis longus*, and *pronator quadratus*.
4. In the lower third of forearm ? becomes **superficial**, lying between **tendons of brachioradialis and flexor carpi radialis**.
5. Passes across **lateral aspect of wrist**, winds dorsally around **lateral side of carpus**, through **anatomical snuffbox**.
6. Then passes between heads of **first dorsal interosseous muscle** to reach the palm ? forms **deep palmar arch**.

Branches in Forearm

1. **Radial recurrent artery** ? ascends to anastomose with **radial collateral artery** (from profunda brachii).
2. **Muscular branches** ? to adjacent muscles.
3. **Palmar carpal branch** ? participates in palmar carpal arch.
4. **Superficial palmar branch** ? joins ulnar artery to form **superficial palmar arch**.
5. **Dorsal carpal branch** ? contributes to dorsal carpal arch.

Relations

- **Lateral:** Brachioradialis (upper part), radial styloid (lower part).
- **Medial:** Tendon of flexor carpi radialis.
- **Posterior:** Supinator, pronator teres, flexor pollicis longus, pronator quadratus.
- **Anterior:** Skin, fascia, and superficial veins.

Clinical Anatomy

- **Radial pulse** ? felt just lateral to tendon of *flexor carpi radialis*.
- **Used for arterial blood sampling** and **cannulation** due to superficial location.
- **Allen's test:** used to check patency of radial and ulnar arteries before radial artery puncture.
- **Wound in snuffbox:** may injure radial artery ? risk of hemorrhage.
- **Used for coronary artery grafting** (radial artery graft).

Ulnar Artery

Origin

- Terminal branch of **brachial artery** in cubital fossa.

Course

1. Passes deep to **pronator teres** and **flexor digitorum superficialis**.
2. Runs downward on the **medial side of forearm** accompanied by the **ulnar nerve (in lower one-third)**.
3. Enters hand **anterior to flexor retinaculum**, **lateral to pisiform bone**, through the **ulnar canal (Guyon's canal)**.
4. Terminates by forming the **superficial palmar arch** (main contributor).

Branches in Forearm

1. Common Interosseous Artery

- Short trunk from upper part of ulnar artery; divides into:
  - **Anterior interosseous artery** ? runs on interosseous membrane with anterior interosseous nerve; supplies deep flexors.
  - **Posterior interosseous artery** ? passes above interosseous membrane to posterior compartment; anastomoses with recurrent branches around elbow.

2. Ulnar Recurrent Arteries

- **Anterior ulnar recurrent** ? joins **inferior ulnar collateral**.
- **Posterior ulnar recurrent** ? joins **superior ulnar collateral** (behind medial epicondyle).

3. Muscular Branches

- Supply superficial and deep flexors.

4. Palmar and Dorsal Carpal Branches

- Form small arterial networks at wrist.

5. Terminal Branch

- Forms the **superficial palmar arch**, which mainly supplies fingers.

Relations

- **Upper part:** Deep to both heads of pronator teres and flexor digitorum superficialis.
- **Lower part:** Lies between *flexor carpi ulnaris* (medial) and *flexor digitorum superficialis* (lateral).
- **Accompanied by:** Ulnar nerve (in distal one-third).
- **At wrist:** Lies lateral to pisiform and ulnar nerve.

Clinical Anatomy

- **Ulnar pulse** ? felt lateral to *pisiform bone* (difficult to palpate due to depth).
- **Allen’s test** used to evaluate adequacy of collateral circulation.

- **Injury to ulnar artery** in Guyon's canal ? may be associated with ulnar nerve damage.
- **Ulnar artery thrombosis (Hypothenar hammer syndrome)** in manual workers due to repetitive trauma.

Dissection of Arteries of Front of Forearm

Steps

1. Expose the **cubital fossa** and identify the **brachial artery bifurcation** into radial and ulnar arteries.
2. Trace the **radial artery** beneath *brachioradialis* along the lateral forearm.
3. Note the **radial recurrent artery** ascending toward lateral epicondyle.
4. Identify the **ulnar artery** deep to *pronator teres* and *FDS*.
5. Follow the **common interosseous artery** and its **anterior and posterior branches** on either side of the interosseous membrane.
6. In lower third of forearm, observe **ulnar artery** with **ulnar nerve** emerging from under flexor carpi ulnaris.
7. At wrist, identify:
    - **Radial artery** lateral to *flexor carpi radialis tendon.*
    - **Ulnar artery** lateral to *pisiform bone.*