

Al-Mustaqbal university



الفحوصات الشعاعية الخاصة المرحلة الثالثة

Lecture 11

Arterial punctures femoral, brachial
and axillary for catheterization

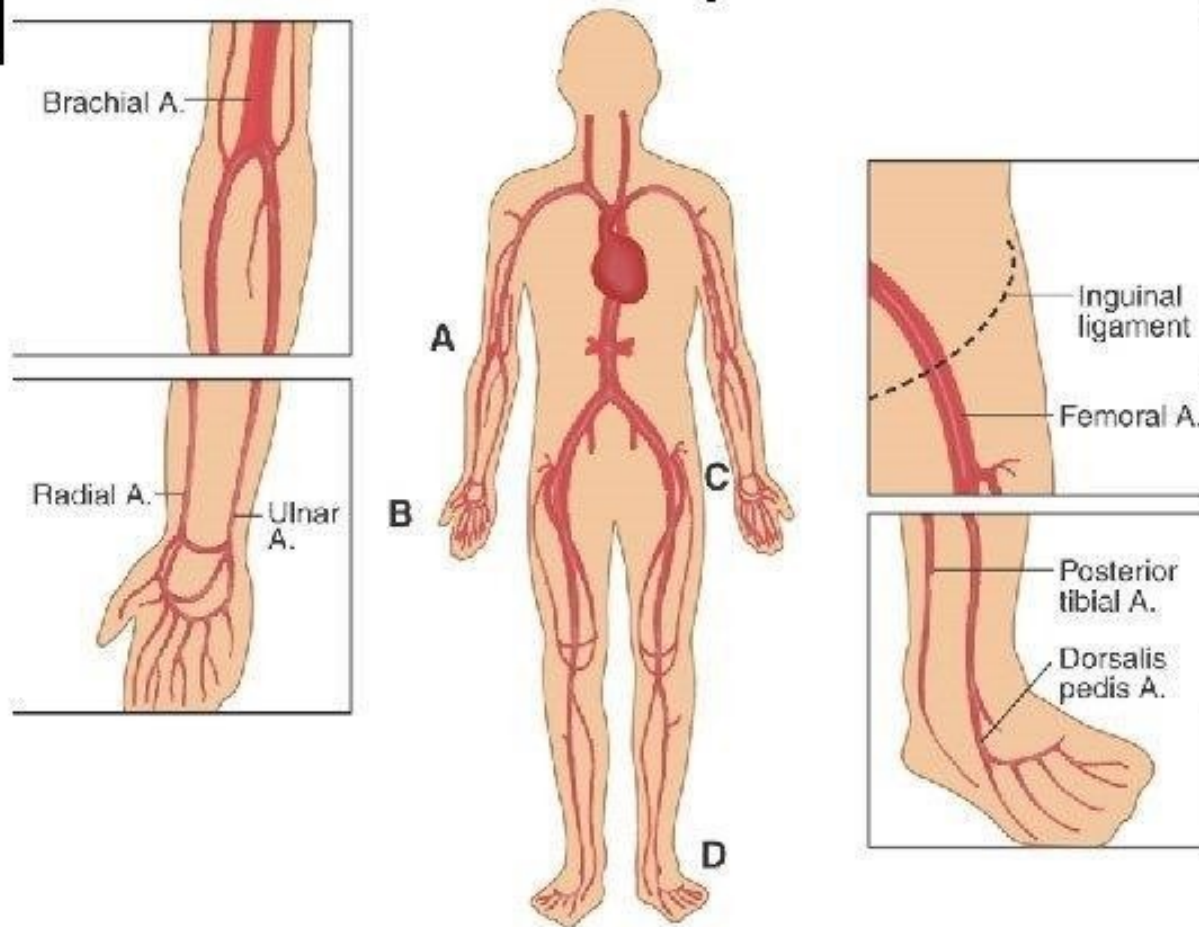
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Sites of arterial punctures

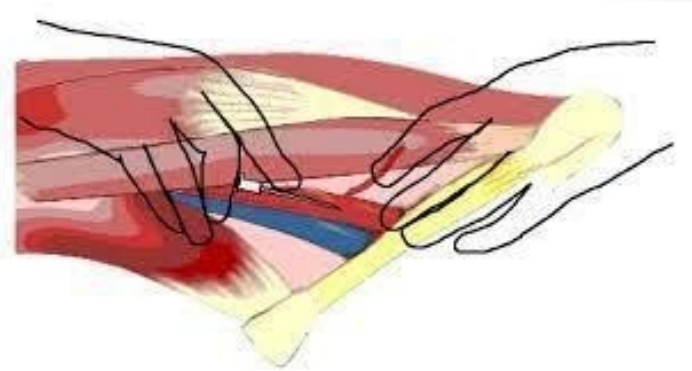
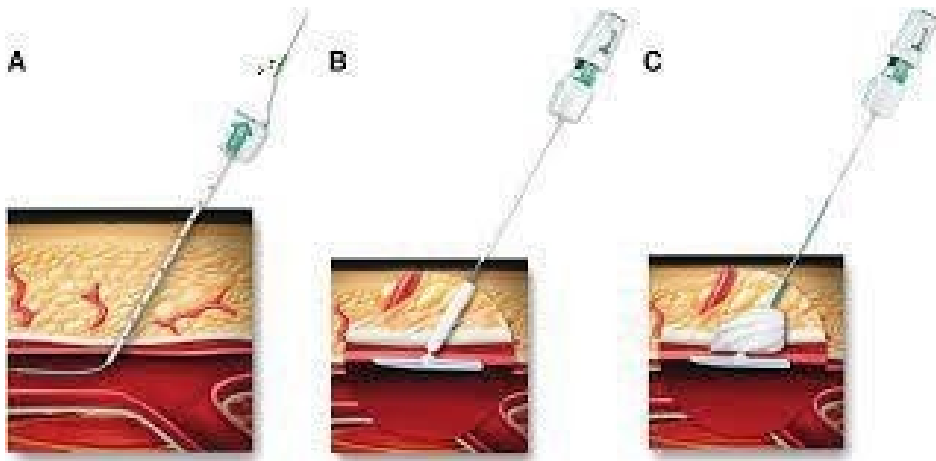


Femoral artery puncture

This is the most frequently used puncture site providing access to the left ventricle, aorta and all its branches. It also has the lowest complication rate of the peripheral sites.

Relative contraindications:

1. Blood disorder (hematological diseases).
2. Femoral artery aneurysm
3. Marked tortuosity of the iliac vessels may prevent further advancement of the guide-wire or catheter. In such case, high brachial artery puncture is indicated.



FEMORAL ARTERY PUNCTURE

Technique:

1. The patient lies supine on the X-ray table. Femoral arteries are palpated to localize the site of the femoral artery.
2. Using aseptic technique, local anesthetic is infiltrated either side of the artery down to the inguinal ligament.
3. A 5 mm transverse incision is made over the artery to avoid binding of soft tissues on the catheter. In thin patients the artery may be very superficial and, to avoid injury to it, a position is chosen and the skin reflected laterally before making the incision.

4. The exact point of puncture of the femoral artery must be considered.

- The femoral artery located medially and posteriorly as it becomes the external iliac artery. Attempts to puncture the artery is achieved retrogradly.

5. The artery is immobilized by placing the index and middle fingers of the left hand on either side of the artery, and the needle is held in the right hand.

- The needle is advanced through the soft tissues until transmitted pulsations are felt, until pulsatile blood flow which means successive puncture. Poor flow is due to:
 - a. femoral vein puncture
 - b. the end of the needle lying sub-intimally
 - c. hypotension - due to vasovagal reaction during the puncture
 - d. atherosclerosis.

6. When good flow is obtained the guide-wire is inserted through the needle and advanced gently up the artery whilst screening. When it is in the descending aorta the needle is withdrawn over the guide-wire.

7. At the end of the procedure the catheter is withdrawn and compression of the puncture site should be maintained for 5 min.

High brachial artery puncture

Indications

As for femoral artery puncture, but as this approach is associated with a higher incidence of complications, it should only be used if femoral artery puncture is not possible.

Contraindications:

1. Atherosclerosis of the axillary or subclavian arteries
2. Subclavian artery aneurysm.

Technique:

1. The patient lies on the X-ray table supine. The peripheral pulses are palpated and the brachial artery localized approx. 10 cm above the elbow.
2. A small incision is made in the skin, 1-2 cm distal to the selected point of arterial puncture.
3. single-wall puncture needle is used, with an acute angle of entry into the artery.
4. Straight, soft-tipped guide-wire is introduced when good pulsatile flow is obtained.
5. 5-F pigtail catheter is introduced over the guide-wire and its pigtail formed in the aorta.
6. At the end of the procedure the catheter tip is straightened using the guide-wire and then removed. This reduces the risk of intimal damage and flap formation during withdrawal of the catheter.

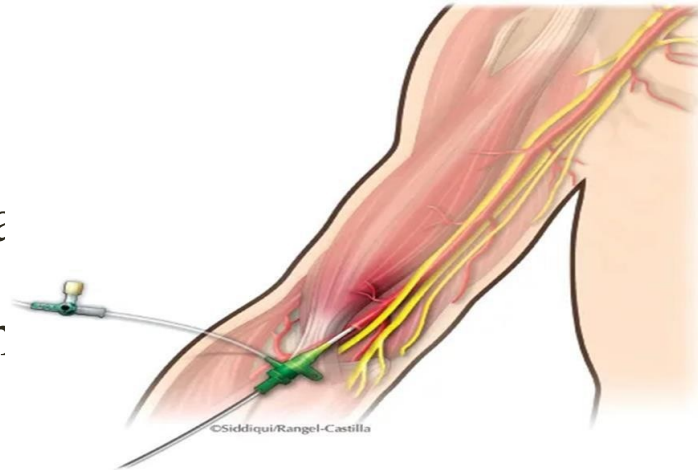
Axillary artery puncture

Indications

As for femoral artery puncture, but this approach is associated with a higher incidence of complications and should only be used if femoral or high brachial artery puncture is not possible.

Contraindications

1. Atherosclerosis of the axilla
2. Subclavian artery aneurysm



Technique

1. The patient lies supine on the X-ray table. The puncture point is just distal to the axillary fold, which is infiltrated with local anesthetic.
2. A small incision is made in the skin, 1-2 cm distal to the point of the arterial puncture.
3. The needle is directed more horizontally than the femoral approach and along the line of the humerus.
4. Following satisfactory puncture the remainder of the technique is as for femoral artery catheterization.

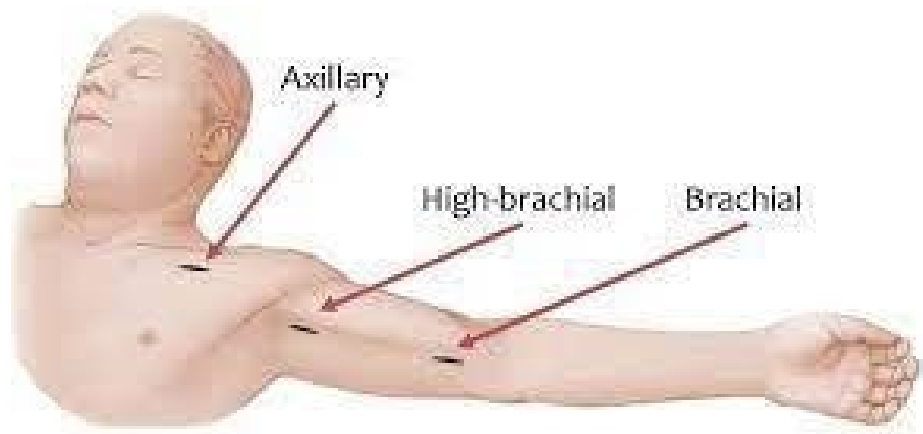
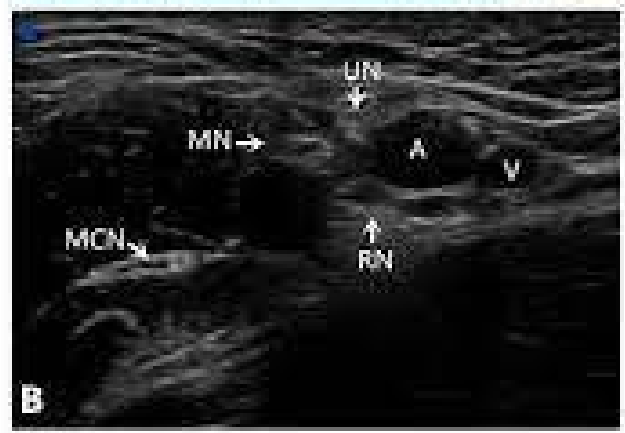


Illustration by David Taylor (OpenStax) in Anatomy & Physiology, 3rd Edition, © 2016, Springer, Inc.



THANK YOU

For your attention

