

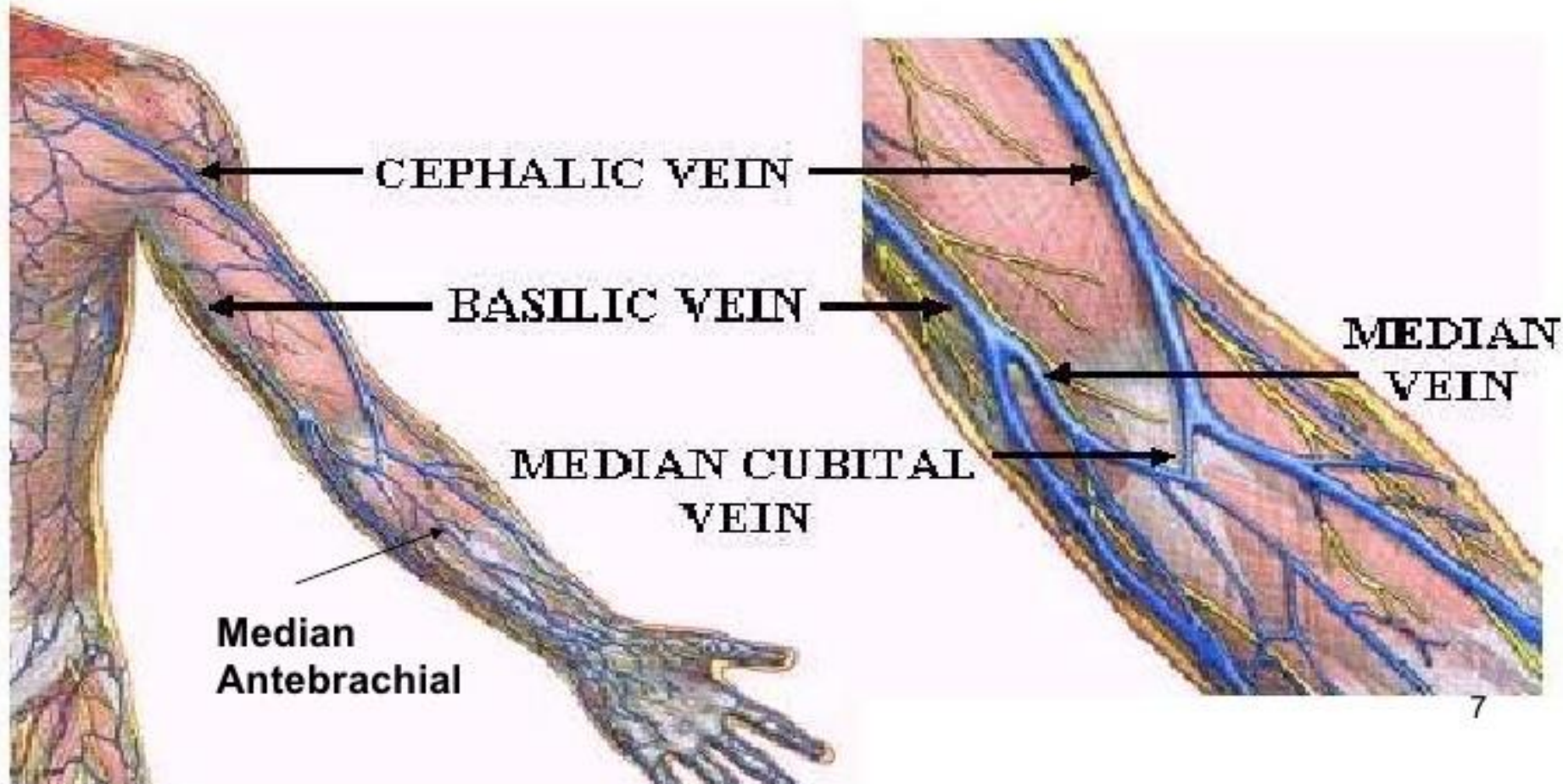
Either :

- * Peripheral veins

- * Central veins

Vein Identification

SUPERFICIAL VEINS OF THE ARM ANTERIOR VIEW



Criteria for Vein Selection

- Distal Branches of Large Veins
- Veins below Antecubital Fossa
- Palpable, Soft to Firm and Visible
- Adequate size for the type of infusion being administered

Considerations:

- Length of therapy
- Purpose and type of infusion
- Patient activity
- Predisposing medical conditions

Catheter Selection

1. Over the needle

- Insyte autoguard

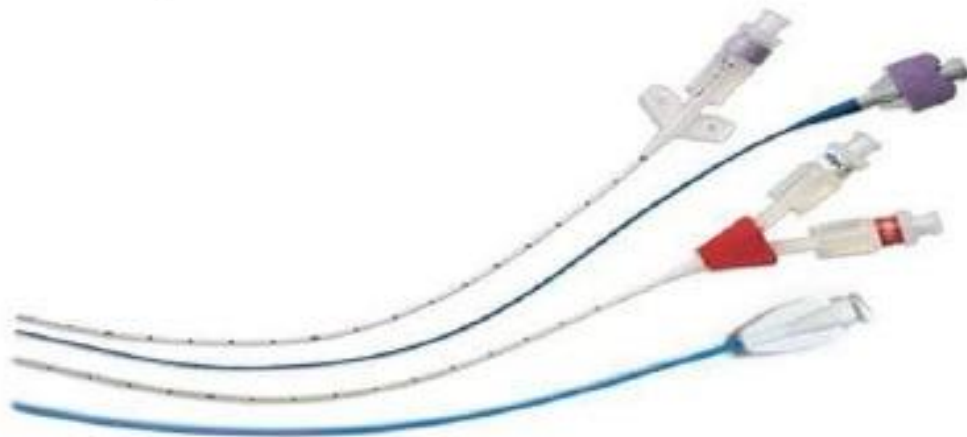


2. Winged catheter

- Butterfly



3. Midline



Vein Selection



Considerations

- What are you giving?
- Length of therapy
- Vein integrity
- Previous venipunctures
- Clinical assessment
- Patient compliance

Specifically:

- *Avoid areas of flexion*
- *Avoid boney prominences*
- *Avoid nerves*
- *Distal to proximal*
- *Avoid bruised and edematous area*
- *Alternate arms*

Vein Dilation

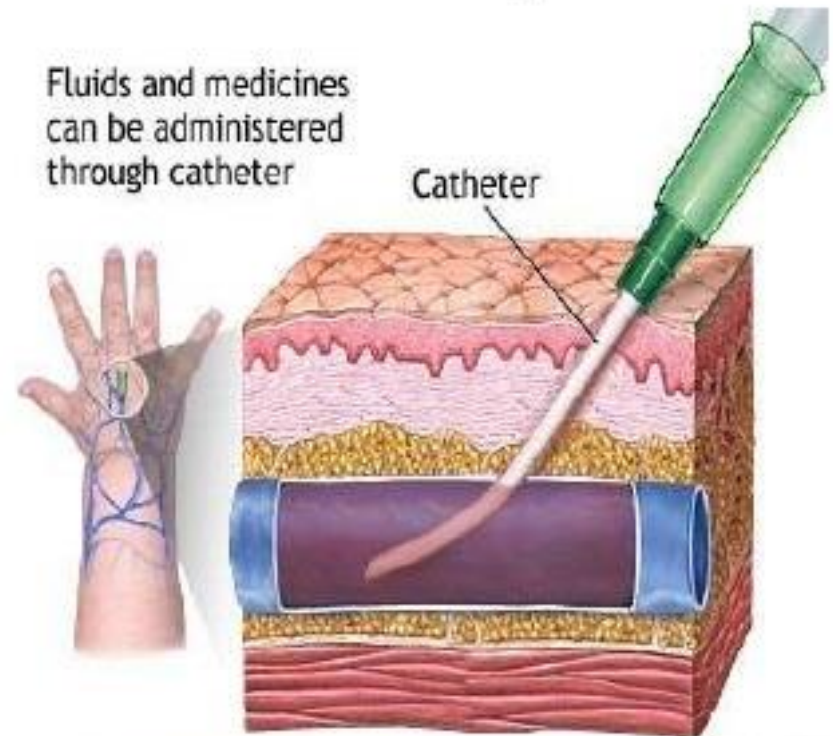
Technique

- Tourniquet
- BP cuff
- Gravity
- Fist clenching
- Tapping vein
- Warm compress
- Multiple tourniquets



Venipuncture Technique

- Gather Supplies
- Wash Hands
- Explain Procedure to your patient
- Set up clean area
- Prepare for venipuncture in a position that will be stable for both you and your patient

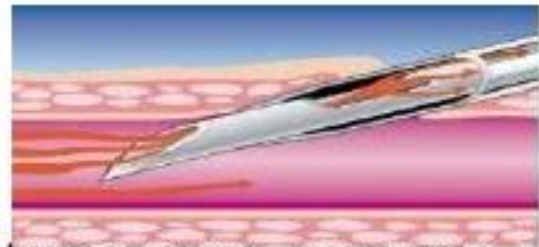


ADAM.



Venipuncture Technique

Apply Tourniquet and proceed:



- Apply gloves
- Antimicrobial scrub and place tourniquet 4-6" above puncture site
- Pull skin below puncture site to stabilize and prevent vein from rolling
- Insert needle, bevel up, at a **15- 30°**- angle (low and slow)
- When blood in flashback chamber occurs, lower angle of catheter and advance catheter with stylet as a unit into the vein, approximately 1/8" just enough to ensure catheter is in the vessel

STOP!

Venipuncture Technique

- Advance catheter off the stylet until ENTIRE catheter is in the vessel
- Release tourniquet
- Apply manual pressure just above the site that you imagine where the catheter tip is
- Remove stylet (hit safety button)
- Connect the extension tubing with the valve cap
- Tape hub/wings of catheter
- Flush with .9NSS and check for blood return
- Apply transparent dressing

Peripheral IV Removal

Technique

- Use dry sterile gauze to apply pressure until bleeding stops
- Apply band-aid or gauze and tape
- Examine catheter integrity and dispose
- Document site assessment and catheter integrity
- Keep dressing clean and dry until scab forms

CENTRAL VENOUS ACCESS

Indications

- Peripheral access unobtainable
- Medication/fluid administration
- Emergency resuscitation
- Monitoring of CVP and ScvO₂
- Parenteral nutrition
- Frequent blood sampling
- Hemodialysis/hemofiltration/Apheresis

Contraindications

- Coagulopathy
- Thrombosis
- Skin infection at site of needle puncture
- Trauma
- Distorted anatomy
- *Clavicular/proximal rib fractures*

Complications

- *Infection (F)
- Thrombosis (F)
- Arterial puncture
- *Bladder puncture (F)
- Hemorrhage
- Phlebitis
- Hemo/Pneumothorax (I/S)
- Tracheal puncture (I/S)
- Catheter fragment/ guidewire embolism
- Cardiac dysrhythmias
- Air embolism
- Erosion/perforation
- Pericardial tamponade
- **Uncooperative patient**
- **Lack of experience/supervision**

Three common sites

- Internal jugular
- Femoral
- Subclavian

Femoral Anatomy

N

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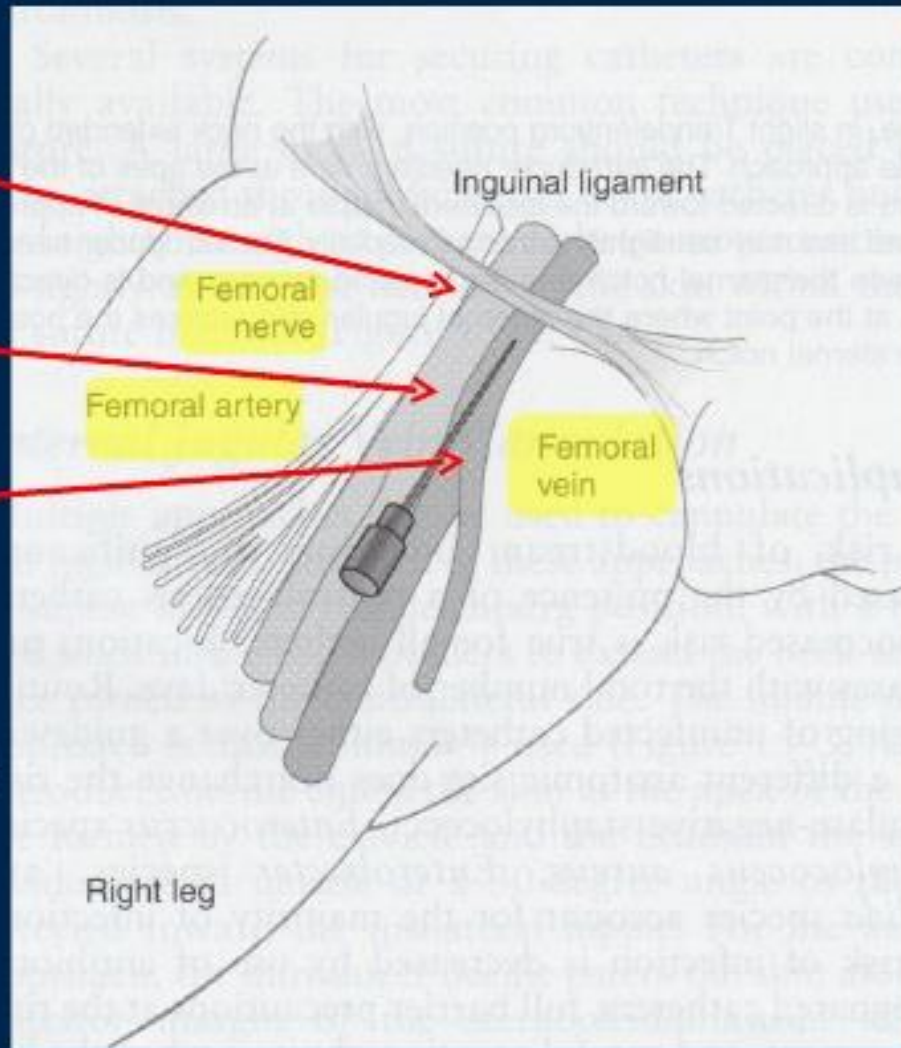
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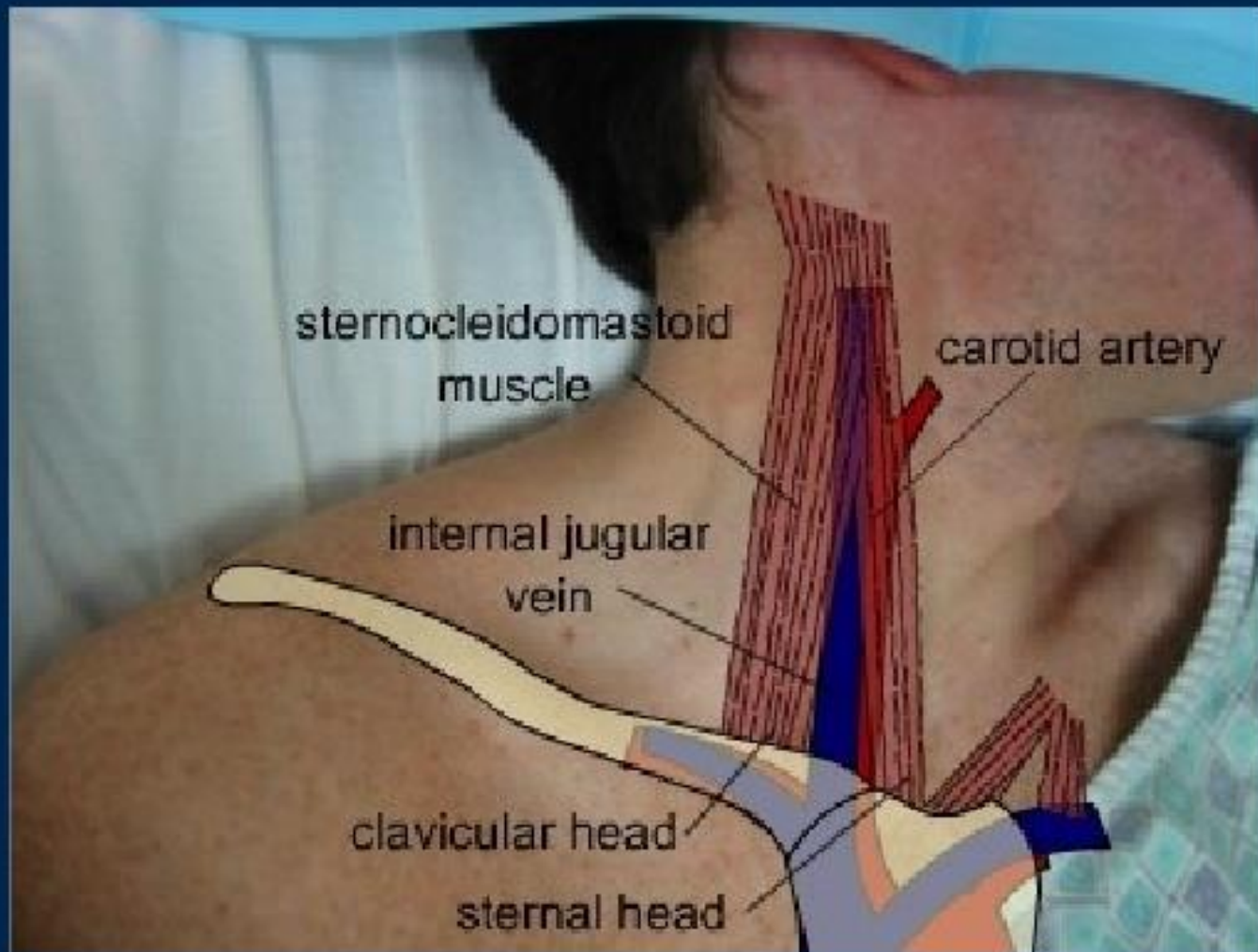
Empty space

Lymphatics

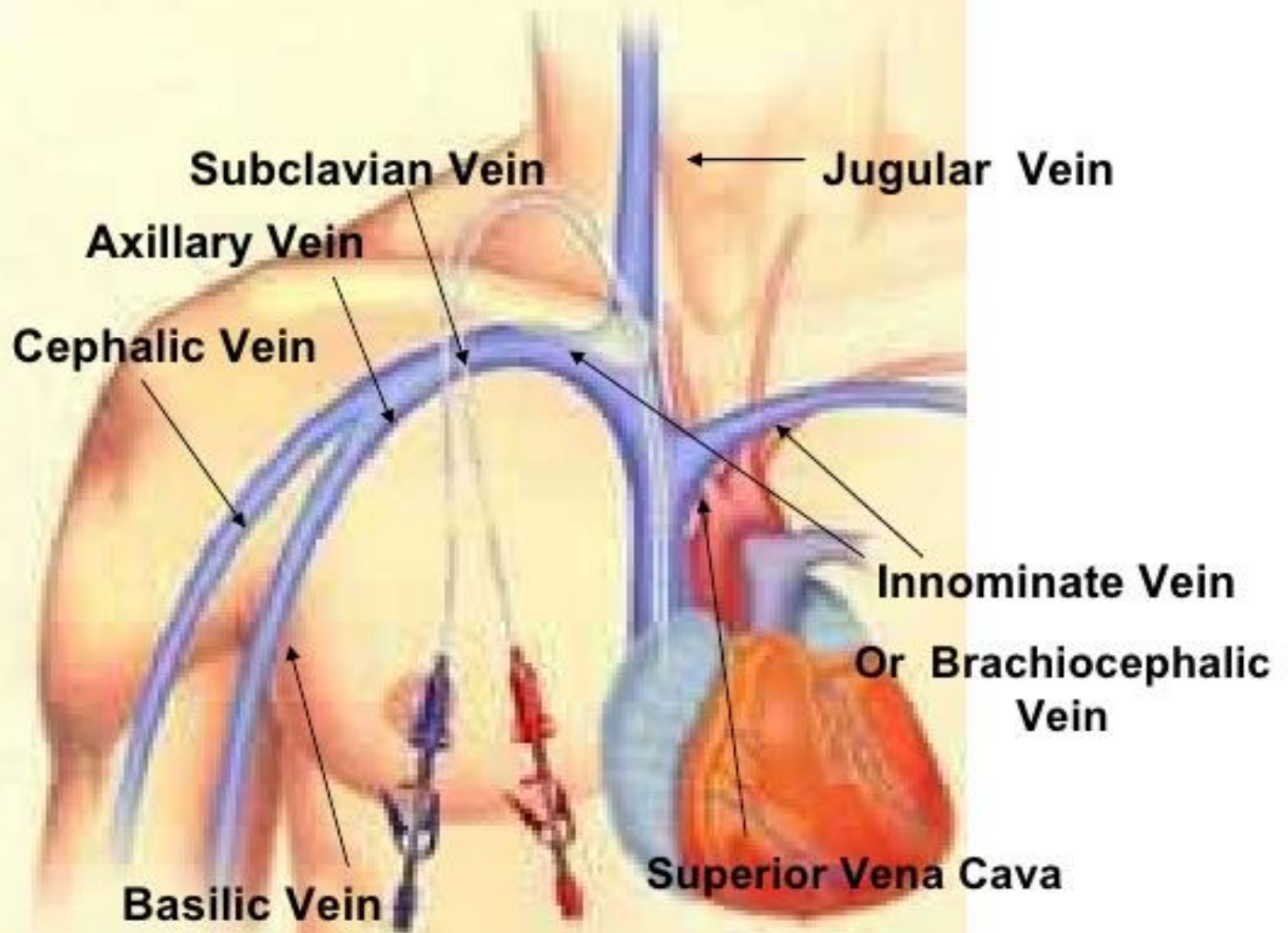


Roger's Textbook of Pediatric Intensive Care, 4th ed.

IJ Anatomy



Central Venous Anatomy



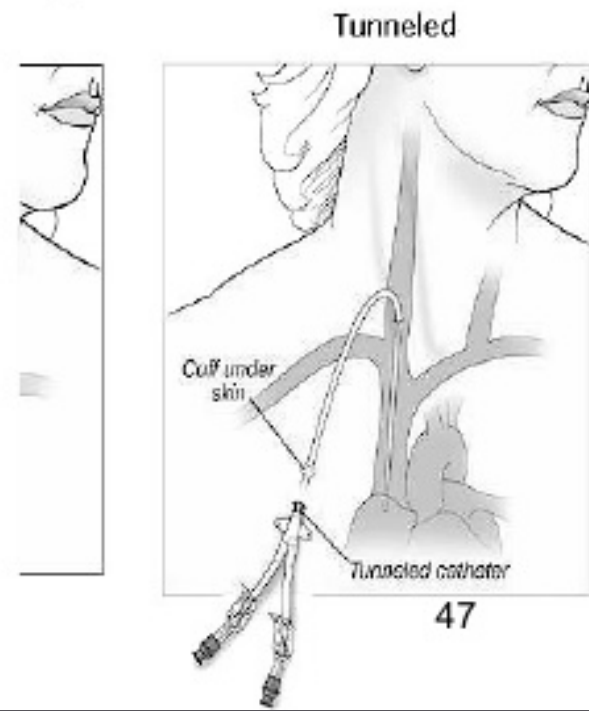
Non-Tunneled Catheters - Triple lumen, Subclavian, CVC

- Short-term emergent central catheter
 - 1-3 Lumens
 - Open ended only
- Insertion and removal
- Advantages
- Disadvantages
- Care and maintenance
- Complications and interventions



Tunneled Catheters - Hickman, Groshong

- Central line catheter tunneled under SubQ tissue with tip placement in SVC
 - 1-3 Lumens
 - Open or closed ended
 - Dwell time: long-term IV therapy (> 1 year)
- Insertion and removal
- Advantages
 - Dacron cuff
- Disadvantages
- Care and maintenance
- Complications and interventions



Complications

Infiltration:

- Inadvertent administration of an IV fluid in surrounding SQ tissue around area of vein (non-vesicant)

Interventions:

- DC IV; Restart
- Compress?

Phlebitis:

- Injury to the endothelial lining of the vein
- ✓ Bacterial
- ✓ Mechanical
- ✓ Chemical

Interventions:

- DC IV; Restart
- Compress?

Phlebitis



Infusion Phlebitis - inflammation of the vein associated with infusion phlebitis as seen in this photograph.

Complications

Cellulitis:

- Infection of SQ tissue
- Characteristic of a circular pattern, with redness, induration and exudate

Interventions:

- DC IV
- Topical antibiotics (apply with sterile dressing)
- Monitor for septicemia

Sepsis:

- The presence of infectious microorganisms or other toxins in the blood stream

Interventions:

- Restart IV
- Obtain cultures
- Notify physician
- Monitor patient daily
- Antimicrobial therapy as ordered

Complications



Cellulitis

adhering to aseptic technique is vital in the prevention of intravenous related infections. Asepsis should be maintained at insertion, during clinical use and at removal of the device.



Complications

Thrombosis:

- Formation of blood clot in the catheter lumen
- Formation of a blood clot within a blood vessel

Interventions:

- Thrombolytics

PREVENTION:

- Flush immediately after infusion
- Appropriate tip locations
- Appropriate size catheter in relation to vein size

Catheter Related

Embolism:

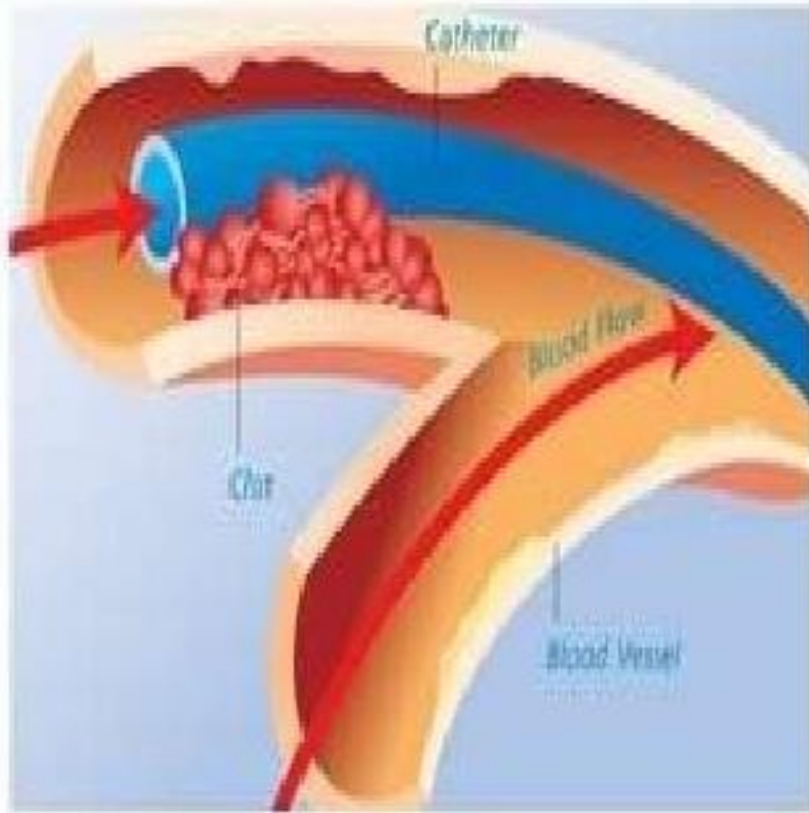
- Air embolisms
- Catheter embolism

Interventions:

• **PREVENTION**

- This is an **EMERGENCY**
- Turn patient on left side and place in Trendelenberg position
- Nasal oxygen
- Prepare for resuscitation
- **911**

Thrombosis



Complications

Catheter Occlusions:

- Occlusions may be due to blood, fibrin, drug, precipitate or lipids/sludge build up

Interventions:

- **PREVENTION**
- Flush catheter immediately after infusion
- Flush between incompatible drugs
- Thrombolytics

Catheter Malposition or Migration:

- Can occur during insertion or spontaneously sometime after insertion

Interventions:

- LISTEN to your patient
- Follow up x-rays when indicated

Complications

Extravasation:

- Inadvertent administration of a vesicant solution or medication into the surrounding tissues resulting in potential blistering, necrosis and tissue sloughing

Interventions:

• **PREVENTION**

- Stop infusion
- Don't remove cannula – aspirate
- Notify physician
- Pharmacological intervention, if appropriate (controversial)
- Compress (controversial)
- Immobilization and elevation
- Follow up

Thank You