

Chapter 6

CENTRAL VENOUS ACCESS

Indications

- Inability to access peripheral veins
- Infusion of
 - vasopressor(s)
 - concentrated solutions (e.g., calcium chloride)
 - multiple medications
- Rapid fluid / blood administration
- Transvenous pacemaker placement

Contraindications

- Infection at placement site
- Coagulopathy
- Thrombocytopenia
- Other devices at site of placement (e.g., pacemaker)
- Thrombosis of target vein
- Abnormality of overlying skin (e.g., cellulitis)
- Non-cooperative patient
- Less invasive alternative access available

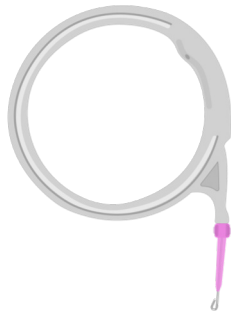
Tools



Lidocaine



18 gauge needle and syringe



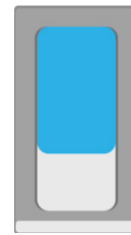
Wire



Dilator



Scalpel

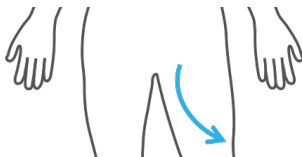


Suture



Catheter

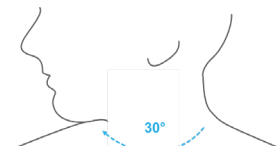
Patient positioning



Femoral vein
• Externally rotate hip



Internal jugular vein
• Keep head in neutral position



Subclavian vein
• Head turned 30 degrees toward the side of insertion

Procedure

1. Anesthetize skin over placement site
2. Insert needle and syringe
3. Apply negative pressure
4. When blood flows freely, secure needle and remove syringe
5. Feed wire to 20 cm
6. Remove needle and make incision along wire
7. Thread dilator over wire until fully in vein
8. Remove dilator
9. Place catheter over wire
10. Remove wire and clamp ports



Always use sterile technique

Post-procedure

1. Flush all ports
2. Suture central line in place and apply bio-occlusive dressing
3. Obtain chest x-ray
 - check catheter position
 - rule out pneumothorax



Pearls

- Consider using ultrasound guidance
- If possible, use wire through catheter technique
- Avoid femoral approach in patients with inferior vena cava filter
- Wire misplacement
 - sensation of water running—misplacement into internal jugular vein
 - shoulder and arm pain—misplacement in opposite subclavian vein