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Cannulation

Intravenous Access

By

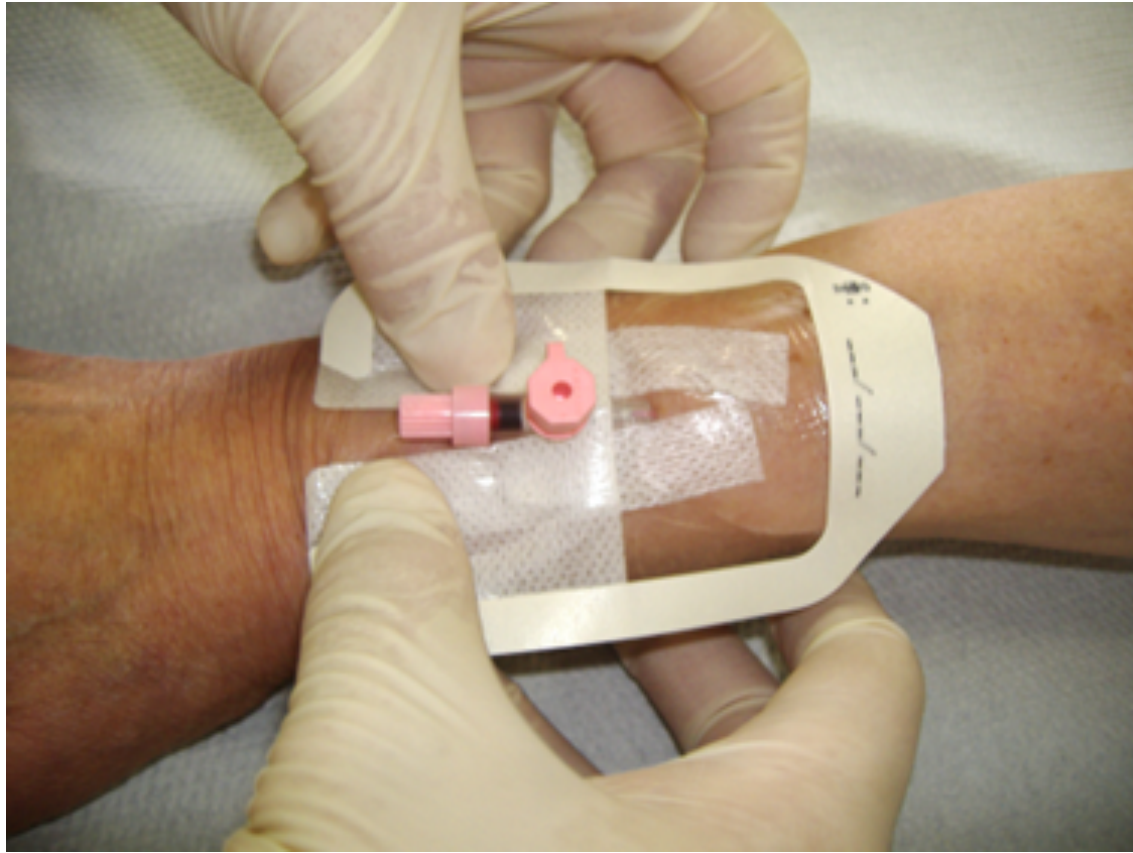
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Objectives:

1. Definition
2. Indications & Contraindications
3. Clinical tips
4. Equipment
5. Preparation
6. Technique
7. Complications

Intravenous (IV) cannulation is a technique in which a cannula is placed inside a vein to provide venous access.



Indications:

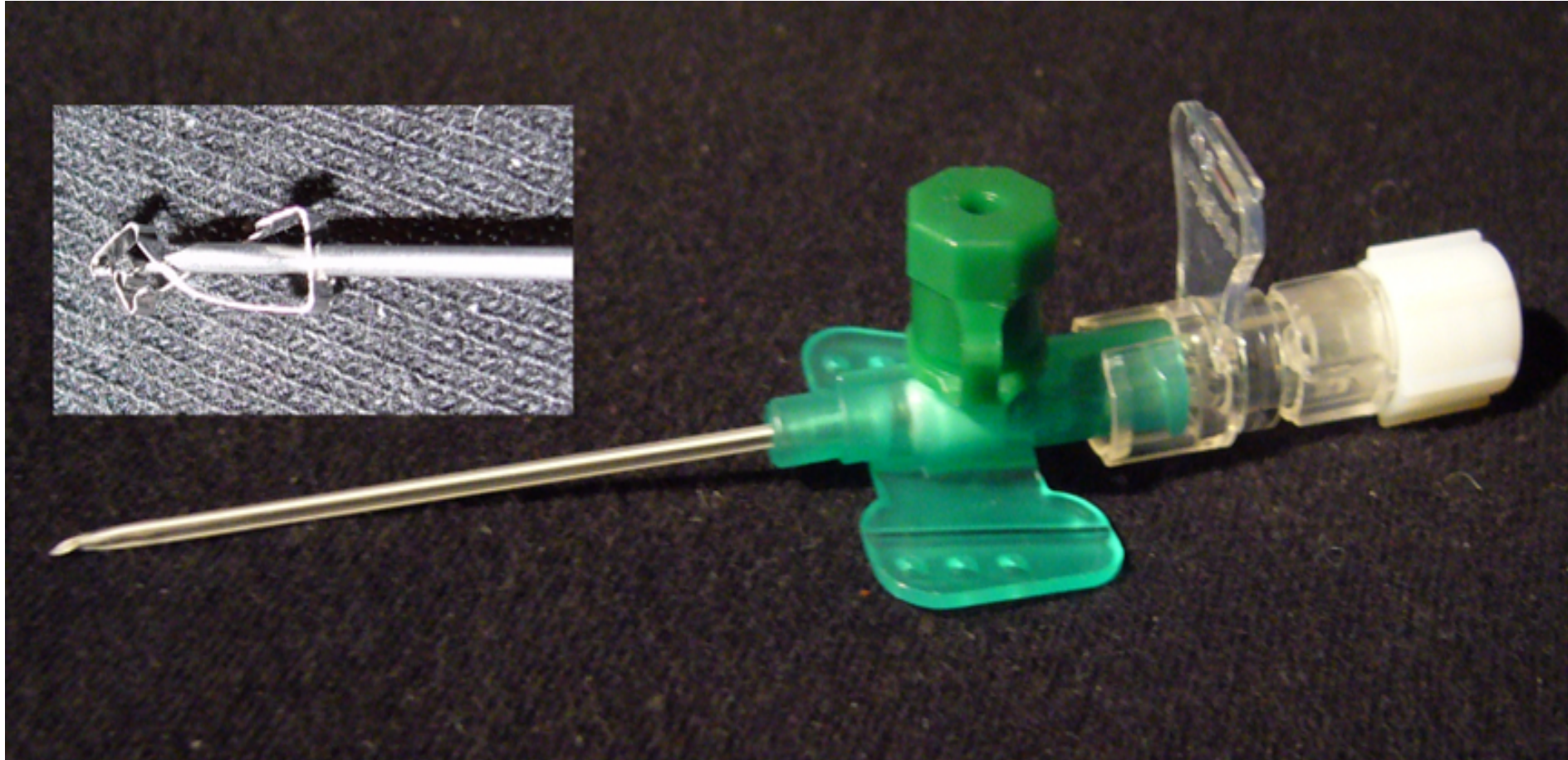
1. Administration of medications
 2. Administration of fluids
 3. Transfusion of blood products
 4. Parenteral nutrition
 5. Chemotherapy
 6. Blood sampling
- It is a must before administration of any type of Anesthesia
 - There is no absolute contraindication

Cannula: commonly are made of biocompatible polyurethane, coated with heparin or nonheparin polymers

- This device is available in various gauges (16-24 G), lengths (25-44 mm), compositions, and designs.



Cannula with automatic passive safety device

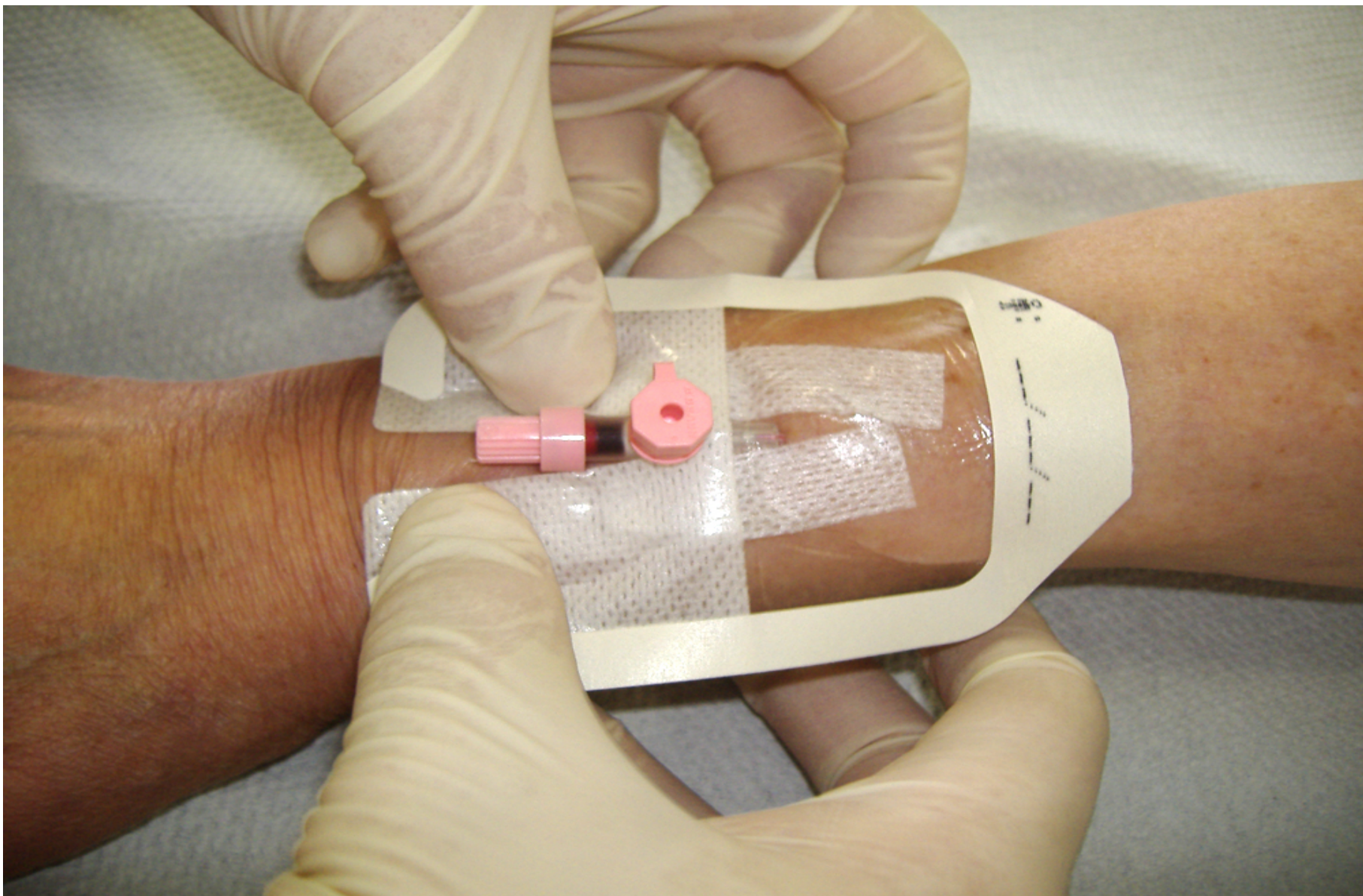


Tips:

- ❖ **Dorsum of the non dominant** hand is the preferred site for cannulation. Why?
- ❖ Routinely, use the smallest gauge of catheter if possible to prevent damage to the vessel intima.
- ❖ In an emergency situation use a large gauge catheter to allow administration of large volumes of fluid.
- ❖ The superficial veins of the upper extremities are preferred to those of the lower extremities for peripheral venous access as they interfere less with patient mobility and pose a lower risk for phlebitis.
- ❖ It is recommended to choose a straight portion of a vein to minimize the chance of hitting valves

Equipments:

1. Non-sterile gloves
2. Tourniquet
3. Antiseptic solution(Alcohol swap)
4. Cannula (proper size)
5. 5-ml syringe with normal saline
6. Sterile gauze
7. Plaster (Transparent Tegaderm dressing is preferred)



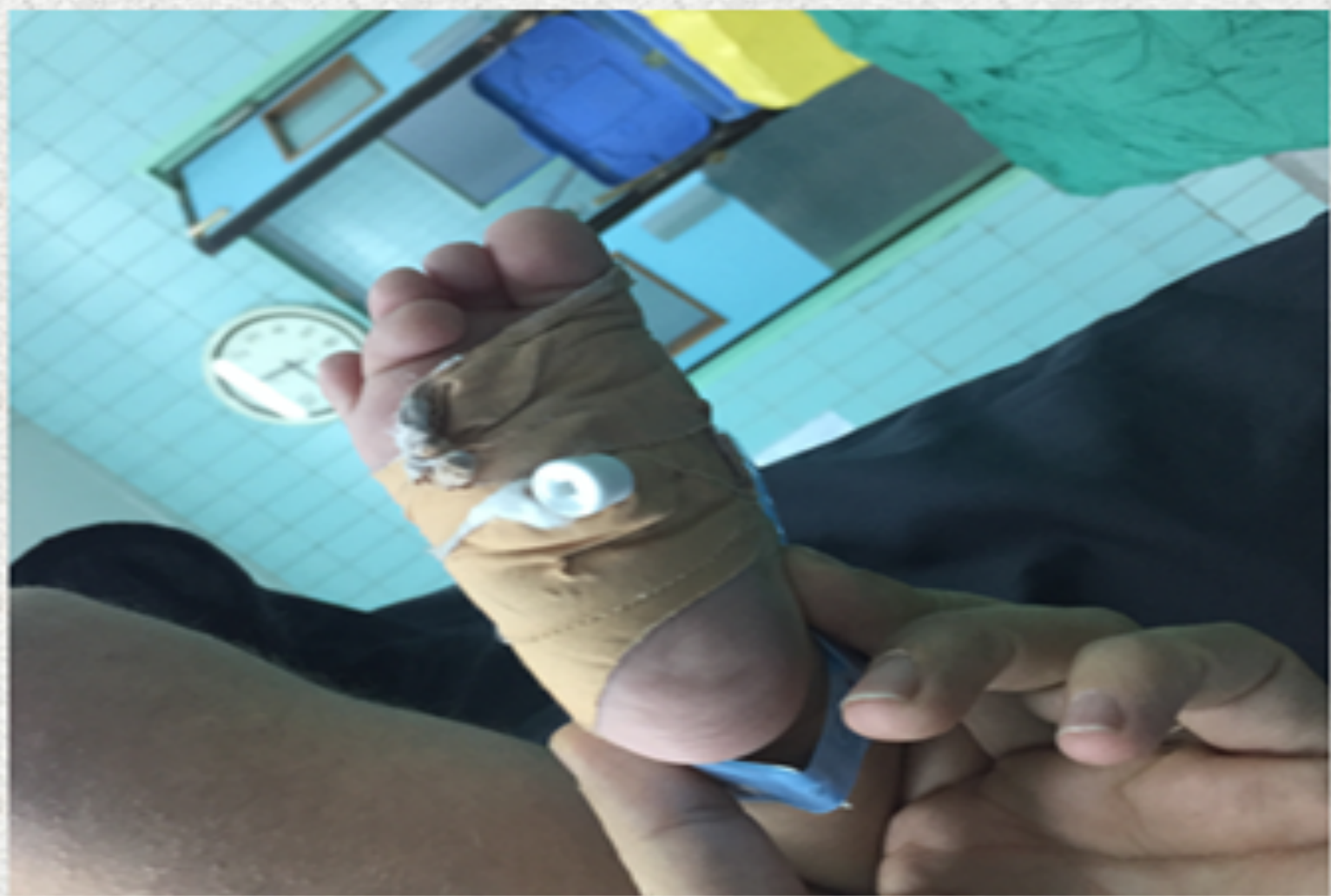
Preparation

1. Introduce yourself to the patient. Explain the procedure to the patient and gain informed consent to continue.
2. Make sure there is adequate light and that the room is warm enough to encourage vasodilation.
3. Make sure the patient is in a comfortable position and place a pillow or a rolled towel under the patient's extended arm.
4. The patient's skin should be washed with soap and water if visibly dirty.

5. If difficulty is encountered in finding an appropriate vein, one of the following techniques may be used:

- Inspection of the opposite extremity
- Opening and closing the fist
- Using gravity (holding the arm down)
- Gentle tapping or stroking of the site
- Applying heat (warm towel/pack)
- Use vein viewer device





Technique:

- Apply tourniquet .Why?
- Select the appropriate vein (large in diameter and straight course)
- Apply an antiseptic solution with friction for seconds, allow to air dry for up.
- Remove the cannula from its packaging and remove the needle cover ensuring not to touch the needle.
- Stretch the skin distally and tell the patient to expect a sharp scratch. why?
- Insert the needle, bevel upwards at about 30 degrees



...Technique:

- Advance the needle until a flashback of blood is seen in the hub at the back of the cannula
- Once this is seen, progress the entire cannula a further 2mm, then fix the needle, advancing the rest of the cannula into the vein.
- Release the tourniquet
- apply pressure to the vein at the tip of the cannula and remove the needle fully
- Remove the cap from the needle and put this on the end of the cannula
- Carefully dispose of the needle into the sharps box(yellow in color)



...Technique:

- Check function by flushing with saline. If there is any **resistance**, if it causes any **pain**, or you notice any localized **tissue swelling**; immediately stop flushing, remove the cannula and start again.
- Apply the plaster to the cannula to fix it in place.
- Finally, ensure that the patient is comfortable and thank them for cooperation



Complications:

1. Phlebitis: Inflammation of the intimal lining of the vein. It is a progressive complication. Early recognition and management is key to limiting progression.

*Can be chemical, mechanical, and bacterial.

**Management:

- Remove the catheter
- Culture cannula if infection is suspected
- Apply warm moist compressors

2. Hematoma: A localized mass of blood outside of the vessel, usually creating a hard ,painful lump.

*Management:

With unsuccessful attempts, apply direct pressure and elevate extremity until bleeding stops.

3. Infiltration

4. Extravasation: simple or severe (Skin blanched, translucent tight, leaking discolored, bruised, swollen Gross edema >6 inches in any direction, deep pitting tissue edema circulatory impairment moderate to severe pain.

5. Peripheral nerve palsy

6. Skin and soft tissue necrosis

7. Cellulitis

Conclusion:

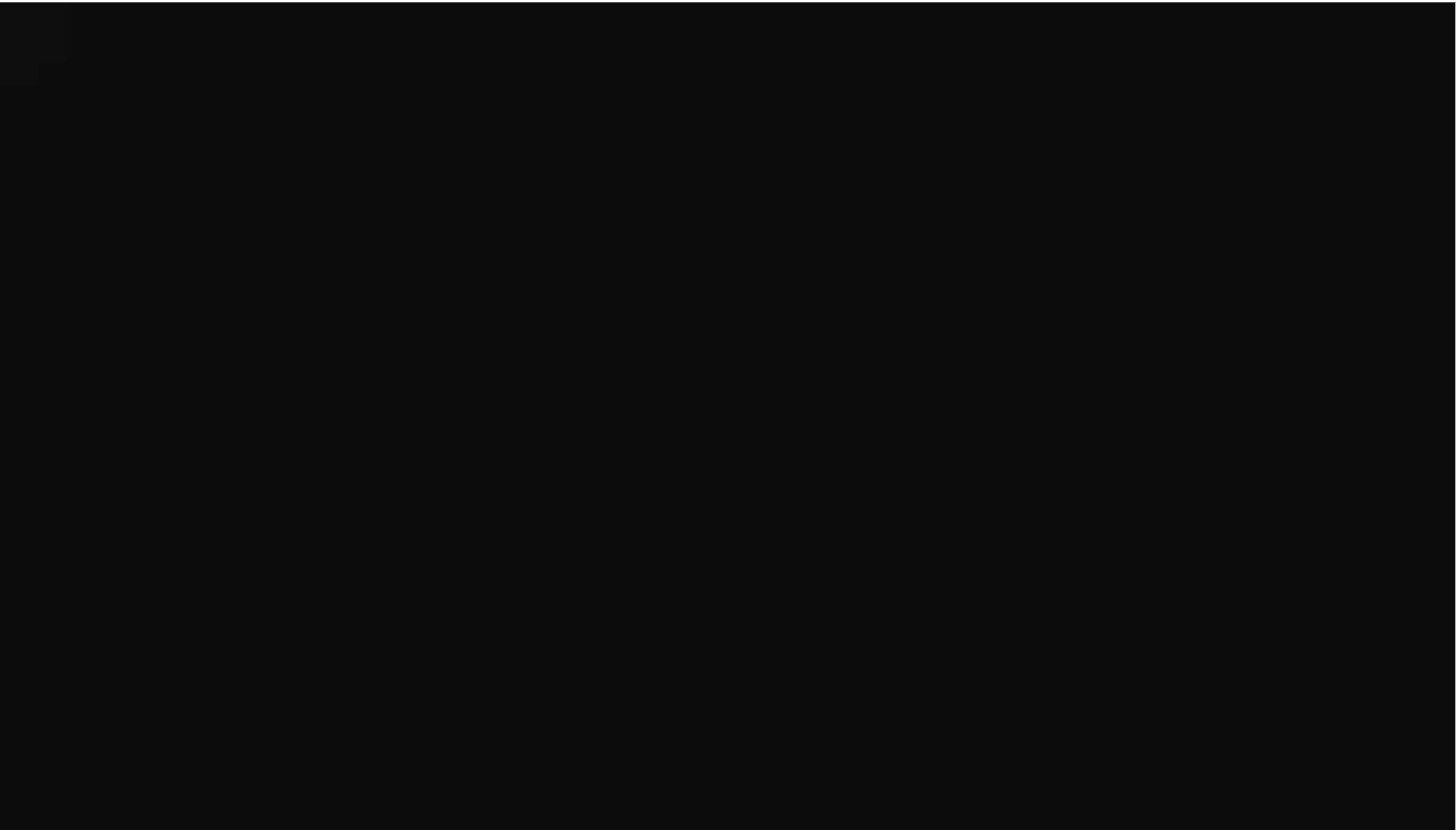
- Cannula is a rapid effective access to circulation
- Cannulation is a simple and may be a life saving procedure with minimal complications
- Is essential in daily anesthesia practice
- TIVA technique requires a reliable IV access

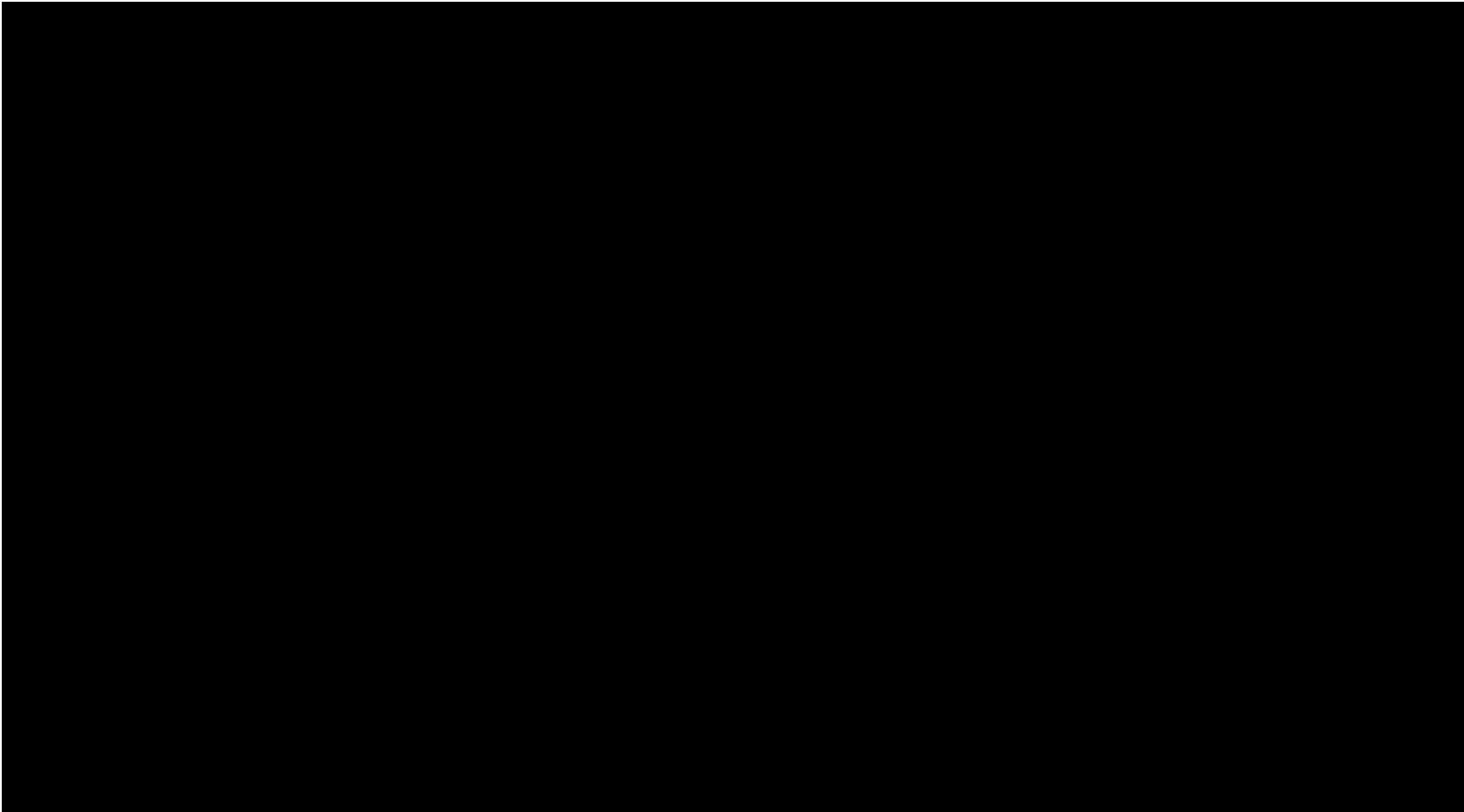
Central line insertion:

- I. Indications
- II. Contraindications
- III. Site of insertion
- IV. Complications
- V. Ultrasound guidance

Arterial line insertion:

- Indications
- Sites
- Complications
- Technique





Thank you
QUESTIONS?