

Complications of Central Line Insertion

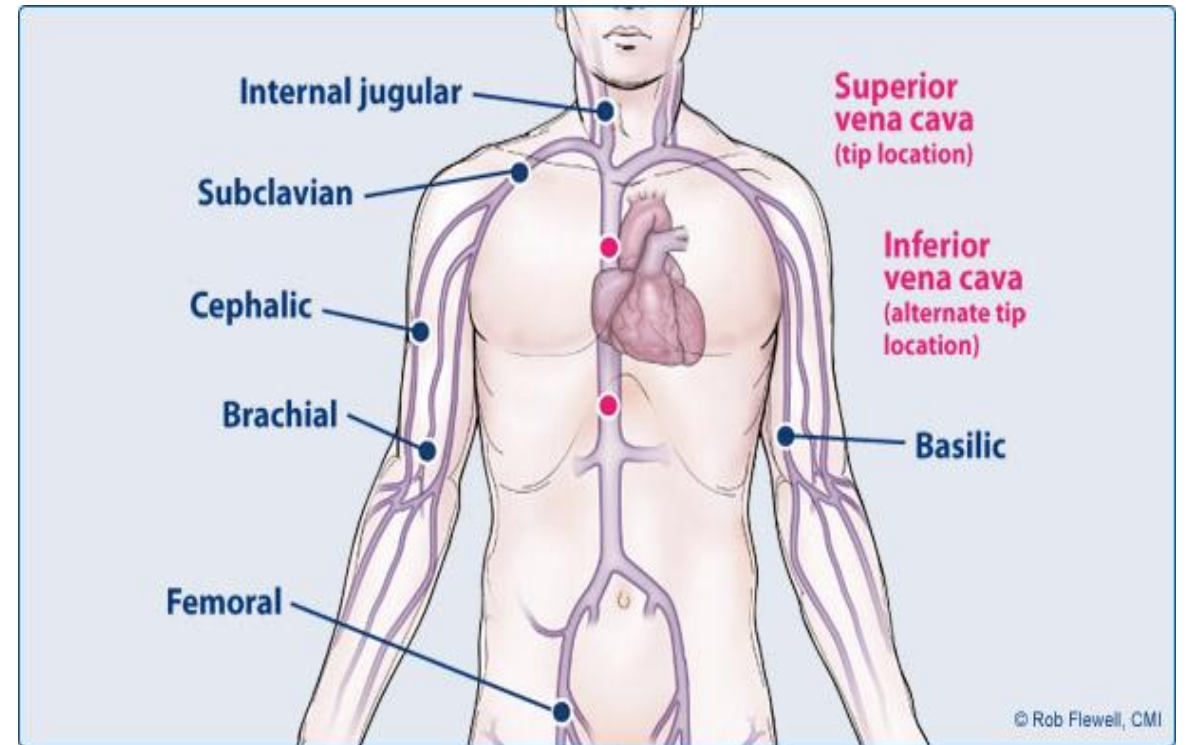
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Central Line OR Central Venous Catheter

It is a tube that doctors place in a large vein in the neck, chest, groin, or arm to give fluids, blood, or medications or to do medical tests quickly

Common Sites of Insertion :

1. Internal jugular vein.
2. Subclavian vein.
3. Femoral vein



Case

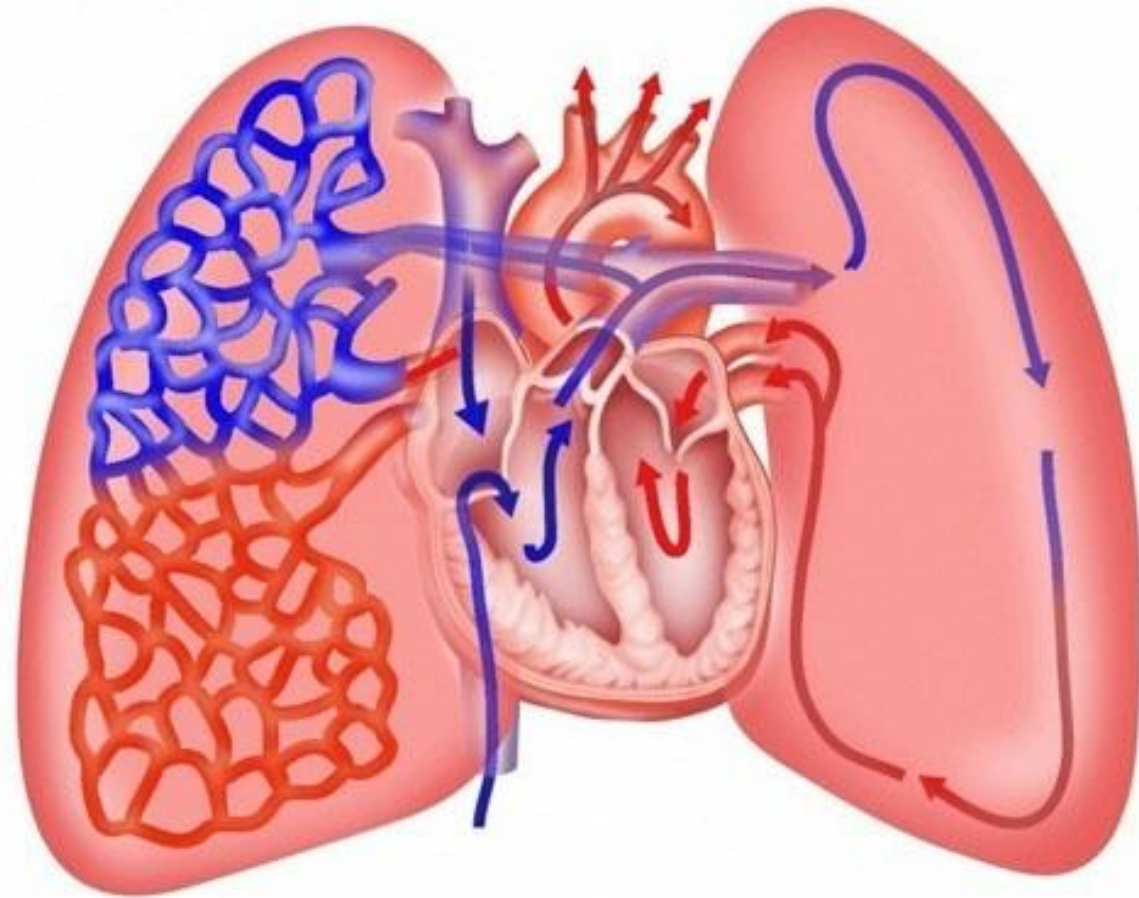
A 25-year-old male presented with road traffic accident. He was
.scheduled as emergency exploratory laparotomy

After induction of anesthesia, the patient was positioned for a
.central line insertion through IJV

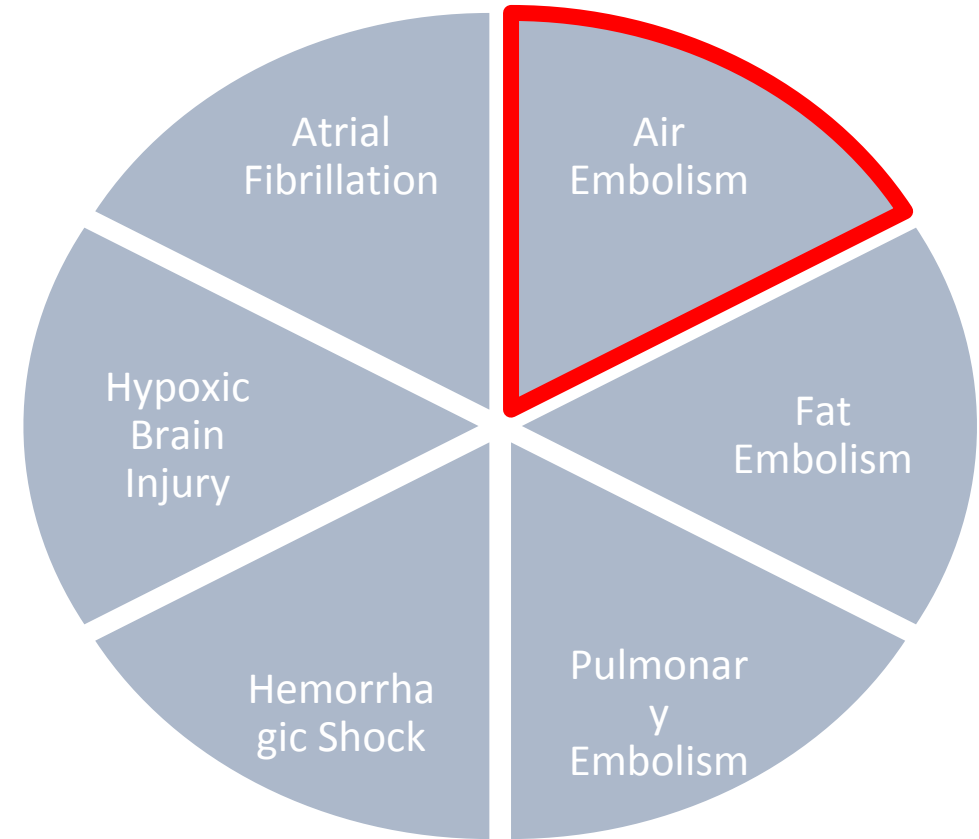
While insertion of the catheter the patient has sudden
tachyarrhythmia and a sudden drop in end tidal CO₂, also drop
..in saturation and hypotension was noticed

What may be the possible diagnosis?

Air Embolism



Differential Diagnosis



What are the different methods for the detection of air embolism?

Investigations

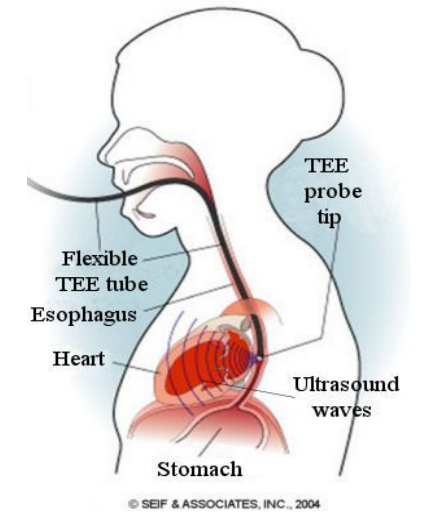
Imaging

Invasive
Trans esophageal echocardiography TEE

Non-invasive
Doppler, CT, MRI

Laboratories

ABG: hypoxemia, hypercapnia and metabolic acidosis



After a pulse is found, a blood sample is taken from the artery

TEE

Highest sensitivity for detecting the presence of air in the **right ventricular** outflow tract or **major pulmonary veins**. Also identifies paradoxical air embolism PAE

Doppler
US

Most sensitive noninvasive method for detecting **venous air emboli**

CT

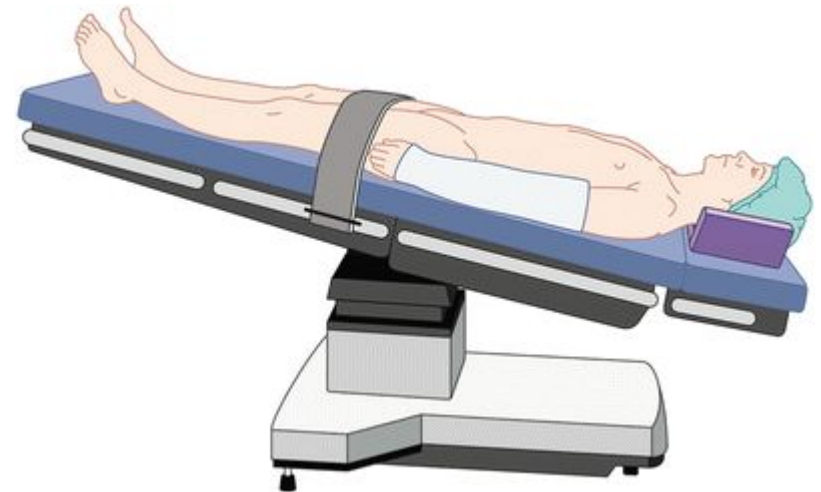
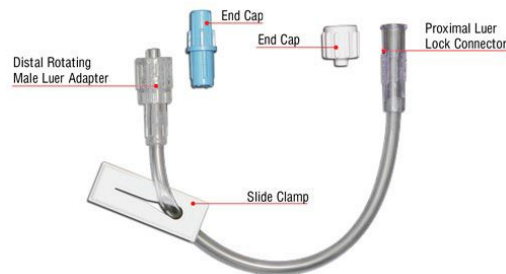
Can detect air emboli in the **central venous system** (especially the axillary and subclavian veins), **right ventricle**, and/or **pulmonary artery**

MRI

MRI of the brain may show **increased water concentration** in affected tissues, but this finding alone may not be reliable for the detection of gas emboli

How can you prevent air embolism while inserting central venous catheter?

- ★ When removing the cath, position the patient in the Trendelenburg's position to increase the intrathoracic pressure.
- ★ Apply an occlusive dressing (an antiseptic ointment or petroleum gauze)
- ★ Keep the patient flat for 30 mins after removal and monitor for signs and symptoms of embolism.
- ★ Hydration
- ★ Avoidance of Nitrous Oxide
- ★ Expel air from syringes prior to any injection or infusion
- ★ Always assure that central catheter ports are **clamped** when removing Caps or lines.
- ★ Use Luer-lock connections for needleless IV ports



How will you manage this case?

How will you manage this case

Oxygen 100%

Airway, breathing, circulation and call for help

Flood surgical site with saline

Position patient in Trendelenburg/left lateral decubitus position

Consider inserting a central venous catheter to aspirate gas

Consider hyperbaric chamber if indicated

THANK YOU
Any Questions?