INFERIOR VENA CAVA FILTERS

Dr. AmirAhmad Arabzadeh
Vascular and endovascular surgeon
Assistant professor at Ardabil university of Medical Sciences
IVC is located on the right side
- the hepatic
- suprarenal
- Renal
- infrarenal segments
- The IVC is formed by the confluence of the left and right iliac veins around the L4 to L5
- The renal veins drain into the IVC at the L1 to L2
- The left gonadal vein
  - the left renal vein
- the right gonadal vein is more variable
  - the right renal vein
  - directly into the IVC
  - confluence of the IVC and the right renal vein
- The left, middle, and right hepatic veins
  - the infrahepatic vena cava
anatomic variations of the IVC

- Renal vein anomalies
- IVC transposition
- IVC duplication
- IVC agenesis
Technical Considerations of venographic-guided filter placement

- technical success rate is usually 98% to 100% with low complication

- Overall, acute procedure-related complications
  - malpositioning (1.3%)
  - hematoma (0.6%)
  - air embolism (0.2%)
  - arterial puncture (0.04%)
  - arteriovenous fistula (0.02%)
  - pneumothorax (0.02%)

- Fatal complications are rare
Suprarenal filter

- thrombus is present in the IVC
- malpositioning of an infrarenal filter
- duplicate IVC
- ovarian vein thrombosis
- during pregnancy

*Suprarenal filter placement can be performed but should be reserved for selected patients in whom the risk for PE outweighs the potential development of these filter complications*
Bedside placement of IVC filters

- transabdominal duplex ultrasound & intravascular ultrasound

- safe, effective, and reliable

- ill and immobilized patients
Venographically Guided Filter Placement

- Use of fluoroscopy either in an operating room setting with a mobile C-arm fluoroscope or in an endovascular or radiology suite with fixed-arm imaging is the standard approach for most filter placements.
- Depending on the clinical situation and the filter type used, femoral, jugular, or antecubital percutaneous right renal vein.
- Percutaneous venous access is obtained and a access is obtained
- Placement of filters based on bony landmarks alone
- Venographic images of the IVC are obtained for confirmation of venous landmarks, correlation with bony vertebral levels, and exclusion of the presence of thrombus at the intended deployment level.
Contraindication of IVC filter

- Chronically occluded vena cava
- Vena cava anomalies
- Inability to access the vena cava
- Vena cava compression
- No location in the vena cava available for placement
- Bacteremia, Sepsis
- Caval diameter less than 15 mm
suprarenal filter placement

- Venographic imaging of the suprarenal vena cava is required to confirm the level of the renal veins for the distal landmark and the position of the hepatic vein confluence.
- The suprarenal vena cava is generally larger than the IVC, and accurate diameter measurements should be made to confirm a diameter smaller than 28 mm.
- It is important to align the filter leg attachment point just above the most cephalic renal vein to avoid deployment of the filter hook into a renal vein, which may cause the filter to tilt.
THANKS FOR YOUR ATTENTION