Angiography and Interventional Accessory Equipment

MRT Program

Angiography and Interventional

- Angiography is study of vessels after an injection of contrast through a catheter that is positioned under fluoroscopic control to provide a diagnosis .
- Interventional includes procedures that intervene in disease process providing a therapeutic outcome
- Special accessory equipment is required complete exams

Sterile Supplies

- Hemostats
- Prep sponges and antiseptic solution
- Scalpel blade
- Syringe and needles for local anesthetic
- Basins and medicine cup
- Sterile drape/towels
- Band-Aids
- Sterile image intensifier cover



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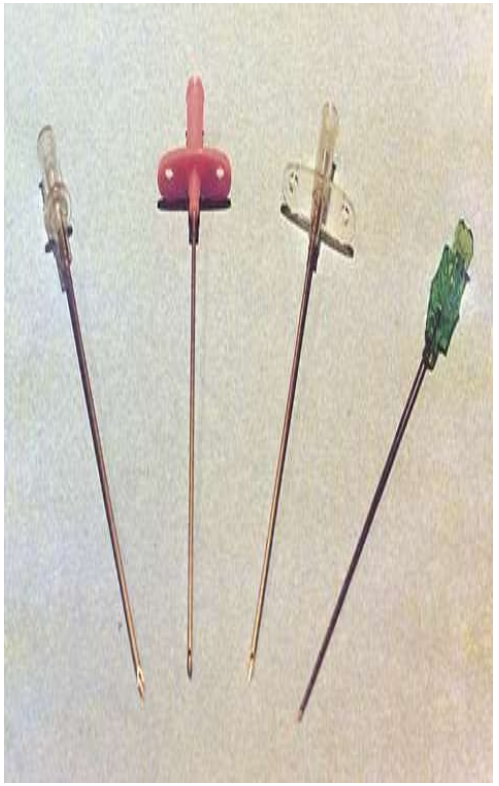
Items Used for Arterial Puncture

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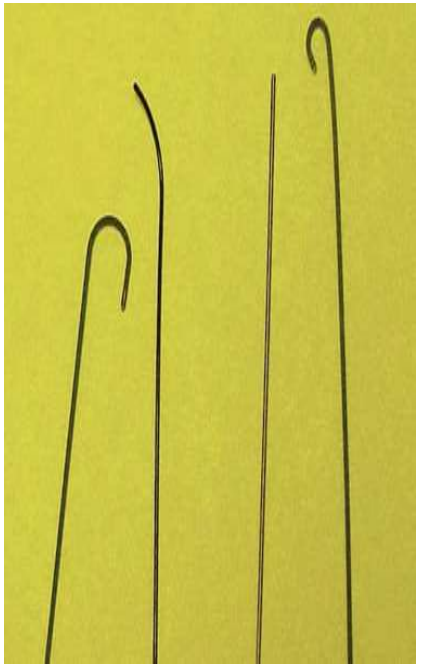
Vascular Needles

- Needle size based on its external diameter
- appropriate guidewire matching the internal diameter of needle must be known
- Most common is 18 gauge & 7cm long
- Compatible with most common used guide wire
- determined by guidewire size of patient and targeted entry vessel
- For least risk, smallest gauge needle is used



Guidewires

- Platform catheter for advancement prior to its introduction into a vessel
- Once in position in ROI the position of guidewire is fixed an the catheter advanced to meet it's tip
- Matched with access needle and catheter
- Made of steel and a core wrapped of spring wire (give s it stiffness)
- Length of core (mandrel) gives it flexibility (shorter=more flexible)
- Teflon coating less friction and decrease thrombogenicity of the guidewire
- Plastic alloy guidewires provide a smooth outer coating higher torque or maneuverability



- Merrills Atlas of Radiographic Procedures

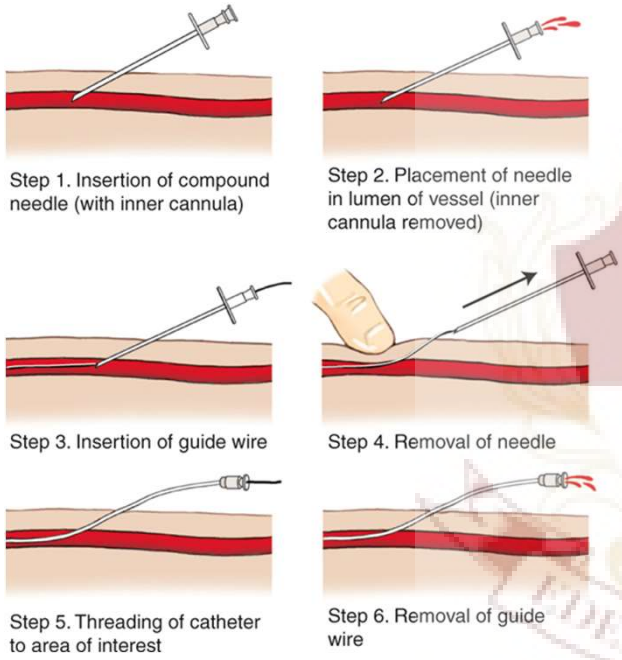
Introducer Sheaths

- Used when multiple catheters used
- Allows controlled access of vasculature while reducing trauma to vessel wall
- Most range in length from 10 cm – 90 cm
- Catheters measured by outside diameter units French size (Fr) and sheaths named according to size of catheter they fit
- Outer diameter is 1.5 – 2 Fr sizes larger

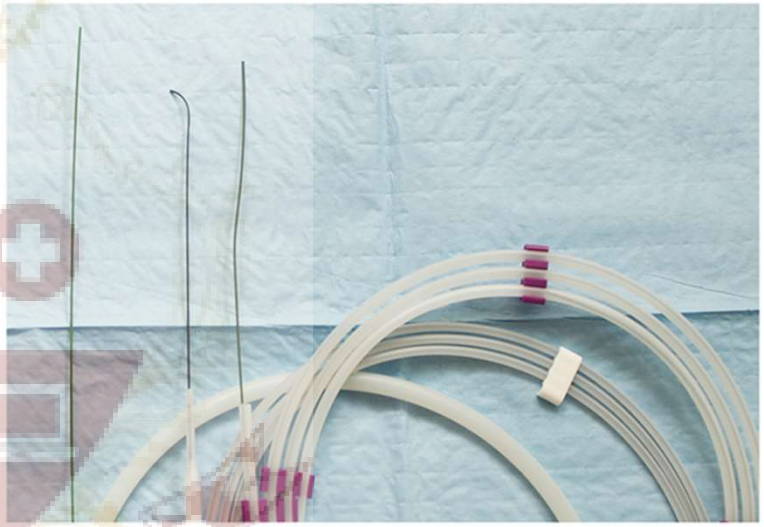


- Merrills Atlas of Radiography

Seldinger Technique



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https://youtu.be/D3H-Soo4xG0

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Catheterization

- Used for filling vessels with contrast
- Advantages are as follows:
  - Risk of extravasation reduced
  - Most body parts reached for selective injection
  - Patient positioned as needed
  - Catheter safely left in body during image review
- Femoral artery is most favoured site(axillary, brachial and radial arteries
- Catheter accesses the circulatory system through a vascular sheath.
- Directed to the area of interest using various guide wires and fluoroscopy.

Catheters

- Can be maneuvered by pushing or pulling on it until in a specific location
- A wire is sometimes placed inside the catheter used to help manipulate it into place
- At end of exam the catheter is removed and pressure us applied to site until homeostasis is achieved but blood flow through vessel achieved
- Patient is placed on bedrest and observed for hematoma
- Closure devices may be utilized

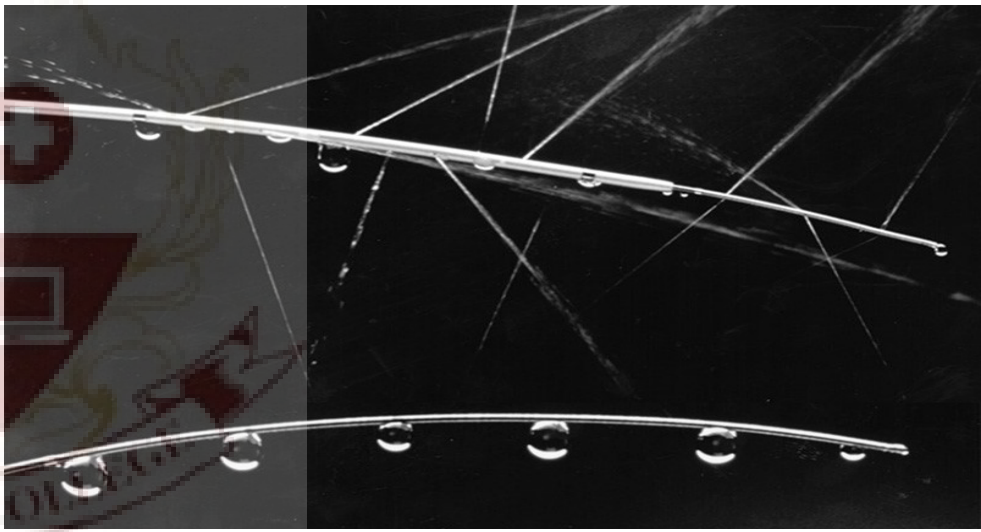
Catheters

- Various forms with particular advantage in shape and maneuverability and maximum injection rate
- Made of pliable plastic that allows to be straightened for insertion over the guidewire resume original shape after the guidewire is withdrawn
- Catheters may have only one end hole or multiple side holes 9Large organs for flush injections)
- A pigtail catheter is special multiple hoke catheter that allows higher volume of contrast media with less whiplash effect, causing less impact to vessel injected
- https://youtu.be/69v4-7S76Fs

  Pigtail Drainage Catheters

Spray/Infusion Catheters

- Used in thrombolysis interventional procedures to dissolve blood clot
- Pulse spray and infusion catheters
- Stents are loaded with pharmacological agent that inhibits regrowth of vascular tissue within the artery
- https://youtu.be/Mtk21emgKG4



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Catheters

- Range in size from 4 Fr (0.05 inch)- 7 Fr)(0.09 inch)
- Smaller and larger available
- Most have inner lumens that allow insertion over guidewires ranging from 0.032 to 0.038 inch in diameter



- Cook,Inc Bloomington IN

Catheters, Dilators, & Sheaths

- https://www.youtube.com/watch?v=82sFUrDTmmM Catheters/Dilators & Sheaths



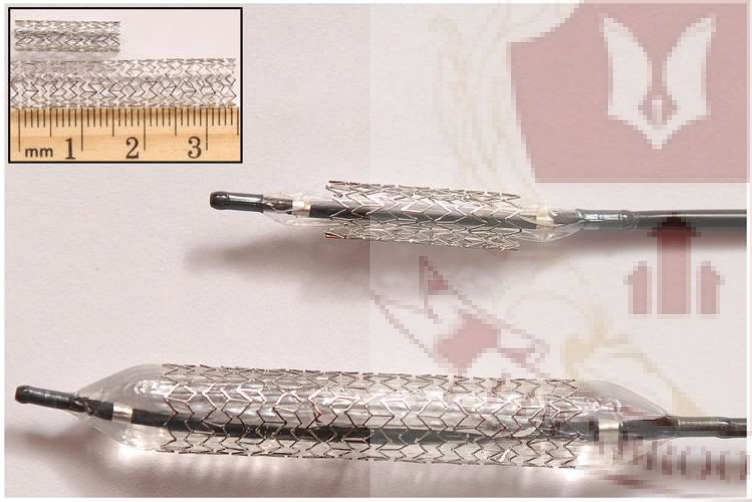
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Stents

- Inserted to assist in maintaining patency of the vessel.
- Cage-like device inserted in the lumen of the vessel across treated area during angioplasty to maintain patency.
- May be self-expanding or balloon expandable.
- Many stents are impregnated with pharmacological agent that inhibits regrowth of vascular tissue within the artery.
- https://youtu.be/t-zCBKRg7Cs

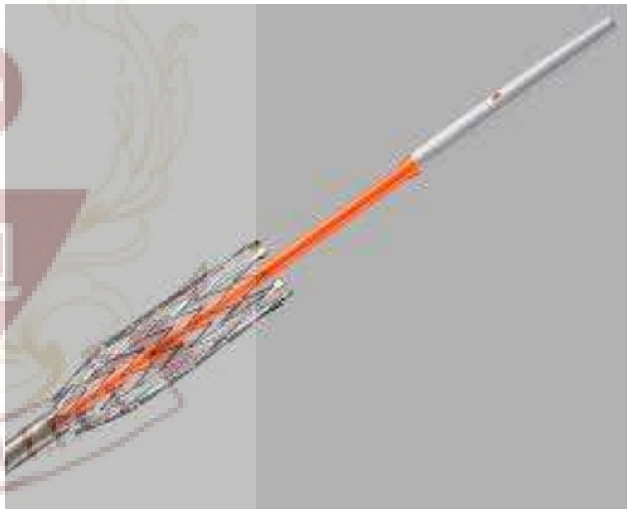
Balloon and Self Expanding Stents

- Balloon Expanding Stent
- https://youtu.be/m5OMurxhGhQ



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- Self Expanding Stent

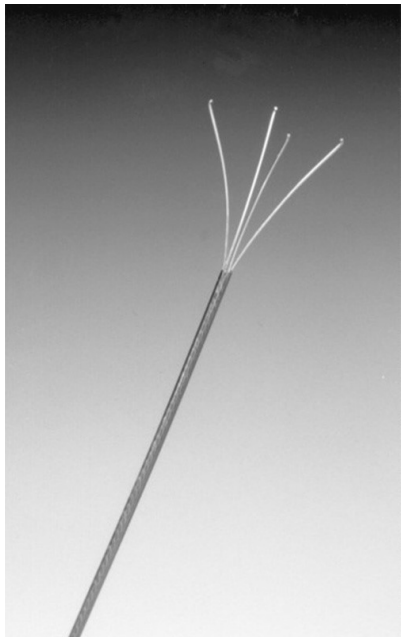


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Retrieval Instruments

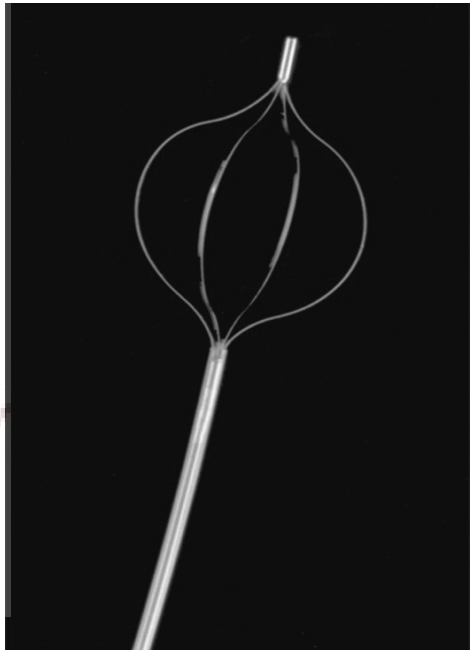
Used for extracting vascular foreign bodies blood clots

Grasping forceps



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Retrieval basket



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