

AV Graft thrombosis

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Overview

Diagnosis

- Disappear of thrill and bruit
- No flow during puncture for HD session
- More frequent than AVF
- Tolerate to balloon thrombectomy
- Most common – Venous outflow stenosis
 - From intimal hyperplasia

Definition

Early thrombosis

- Occur within 1st month after placement

Late thrombosis

- Occur from 1 month from placement

Early thrombosis

- *Almost is surgical technique!!*
 - Non-proper inflow/venous outflow selection
 - Narrow the lumen during suture or incorporate the back wall
 - Kinking or twist graft
 - Inadequate anticoagulation during surgery
- Early puncture and prolong pressure

Late AV Graft Thrombosis

Cause

- Underlying venous outflow stenosis (Most)
- Central venous thrombosis/stenosis
- Hypotension
- Continue trauma to access site by needle puncture → pseudoaneurysm
- External pressure on graft

Early



Inflow stenosis



Failure to
mature

Late



Outflow stenosis



Stasis



Thrombosis

Management

Procedure

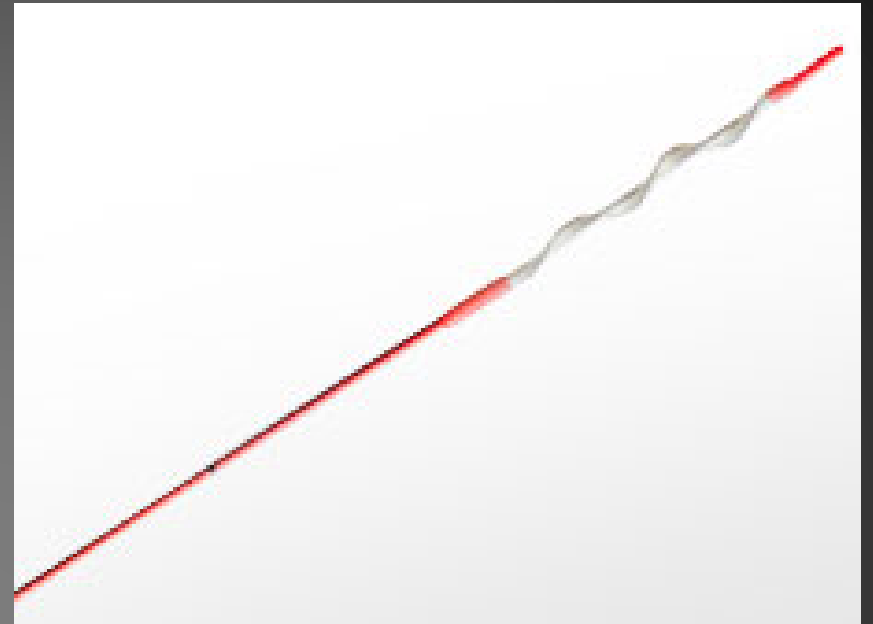
- Thrombectomy
- Correct underlying pathology

Technique

- Open surgical technique
- Percutaneous technique
- Hybrid technique

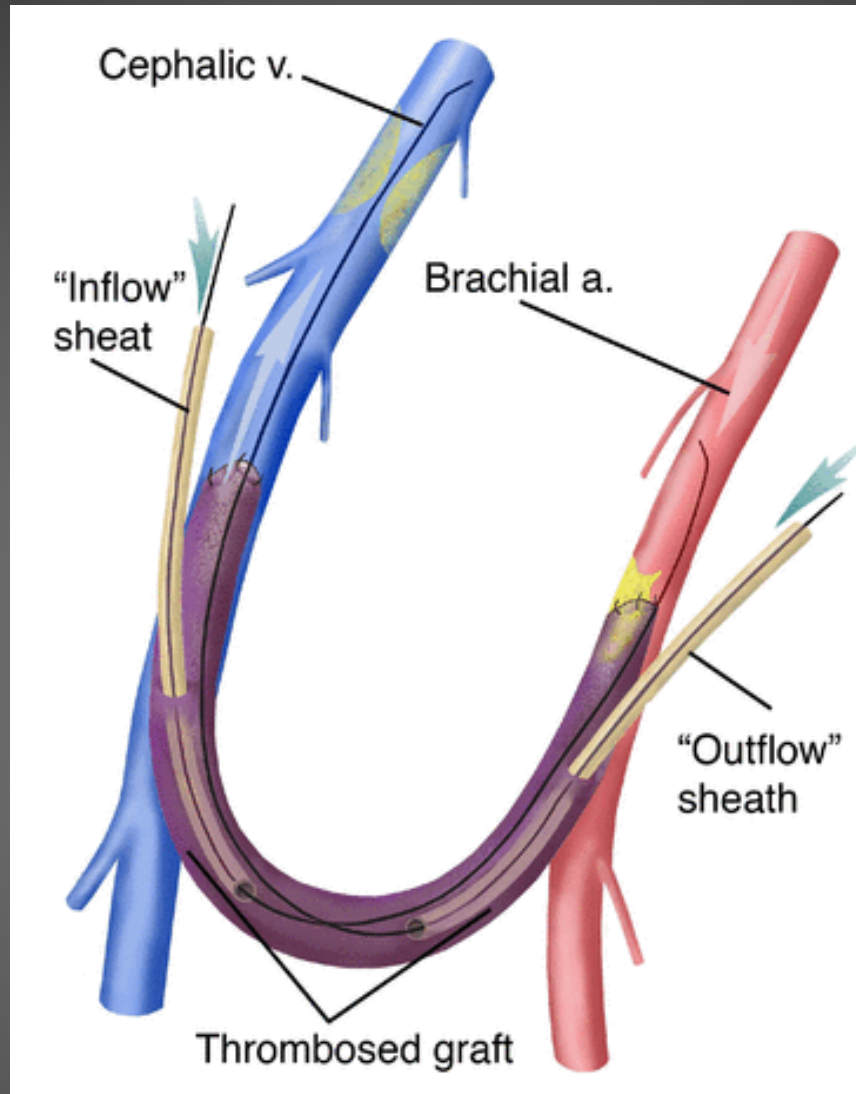
Open surgical technique

- *Thrombectomy*
 - Via small incision near venous outflow
 - Thrombectomy by Fogarty catheter
- *Correct underlying pathology*
 - Patch venoplasty
 - Interposition graft to more proximal venous outflow



Percutaneous technique

- ***Thrombectomy***
 - Thrombolysis
 - Mechanical thrombectomy device
 - Plus balloon thrombectomy at inflow
- ***Correct underlying pathology***
 - Balloon angioplasty
 - Stent or stent graft



Cross-sheath technique

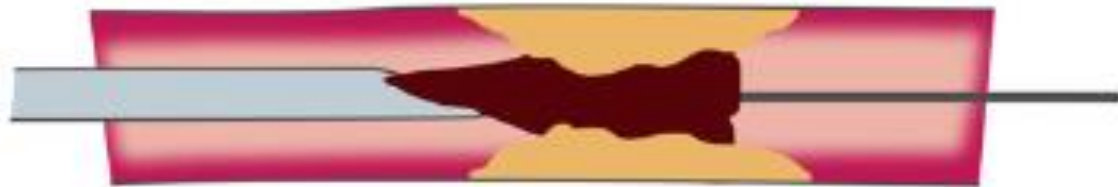
Thrombolysis

- Infuse with thrombolytic agent
 - Tissue plasminogen activator
- “Lyse-and-wait technique”
- “Lyse-and-go technique”
- Risk for residual debris to pulmonary circulation
 - Not usually associated systemic effect

Mechanical thrombectomy device

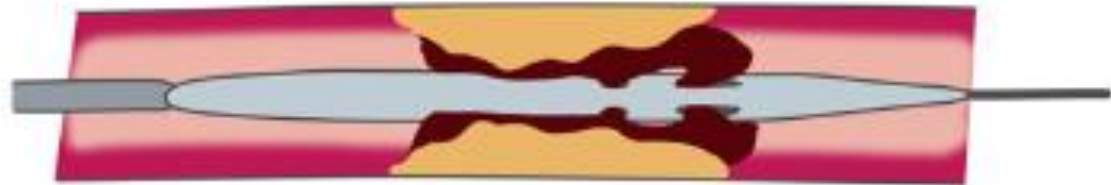
Thrombectomy

Catheter aspiration thrombectomy



Blood clot is removed using suction

Mechanical thrombectomy



Blood clot is broken up into small pieces and removed

AngioJet Rheolytic Thrombectomy System

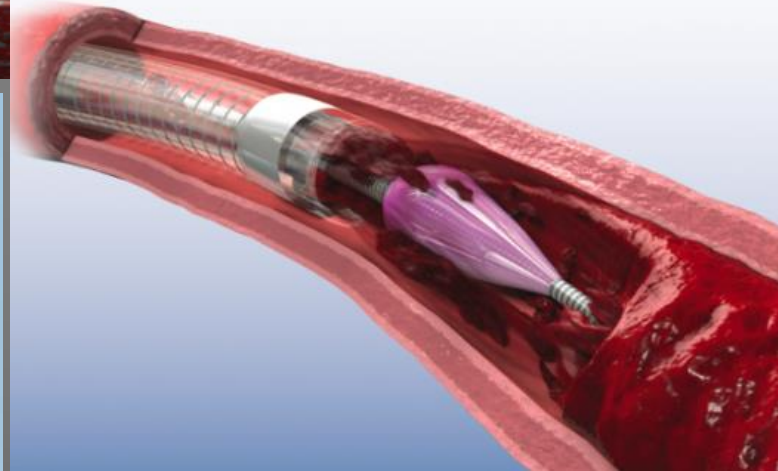
RECIRCULATION REGION

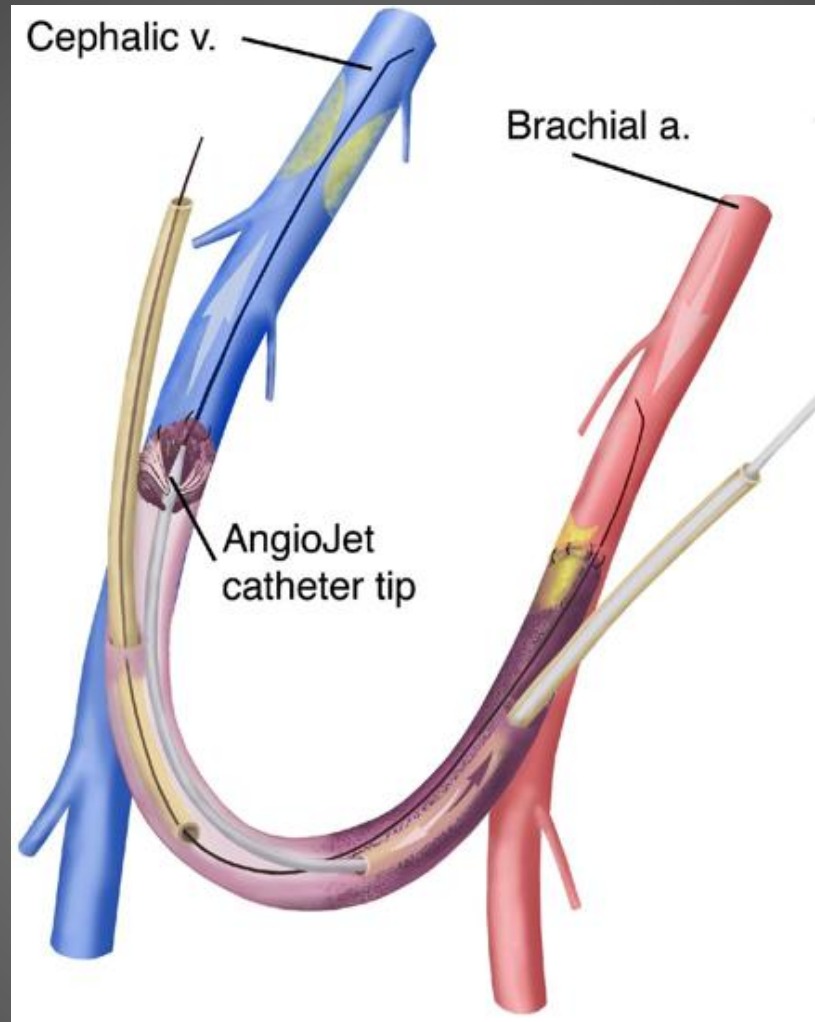
entrained fluid

Saline jets enclosed in catheter create strong vacuum at inflow windows

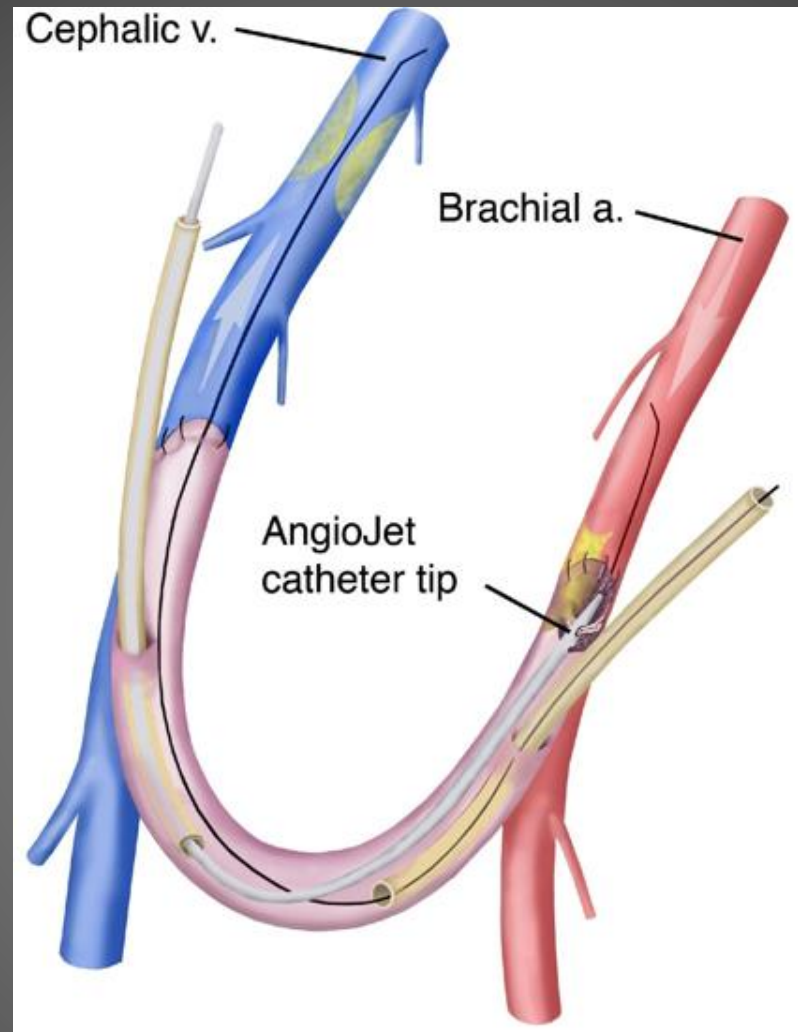
Indigo™ System

Percutaneous Mechanical Thrombectomy

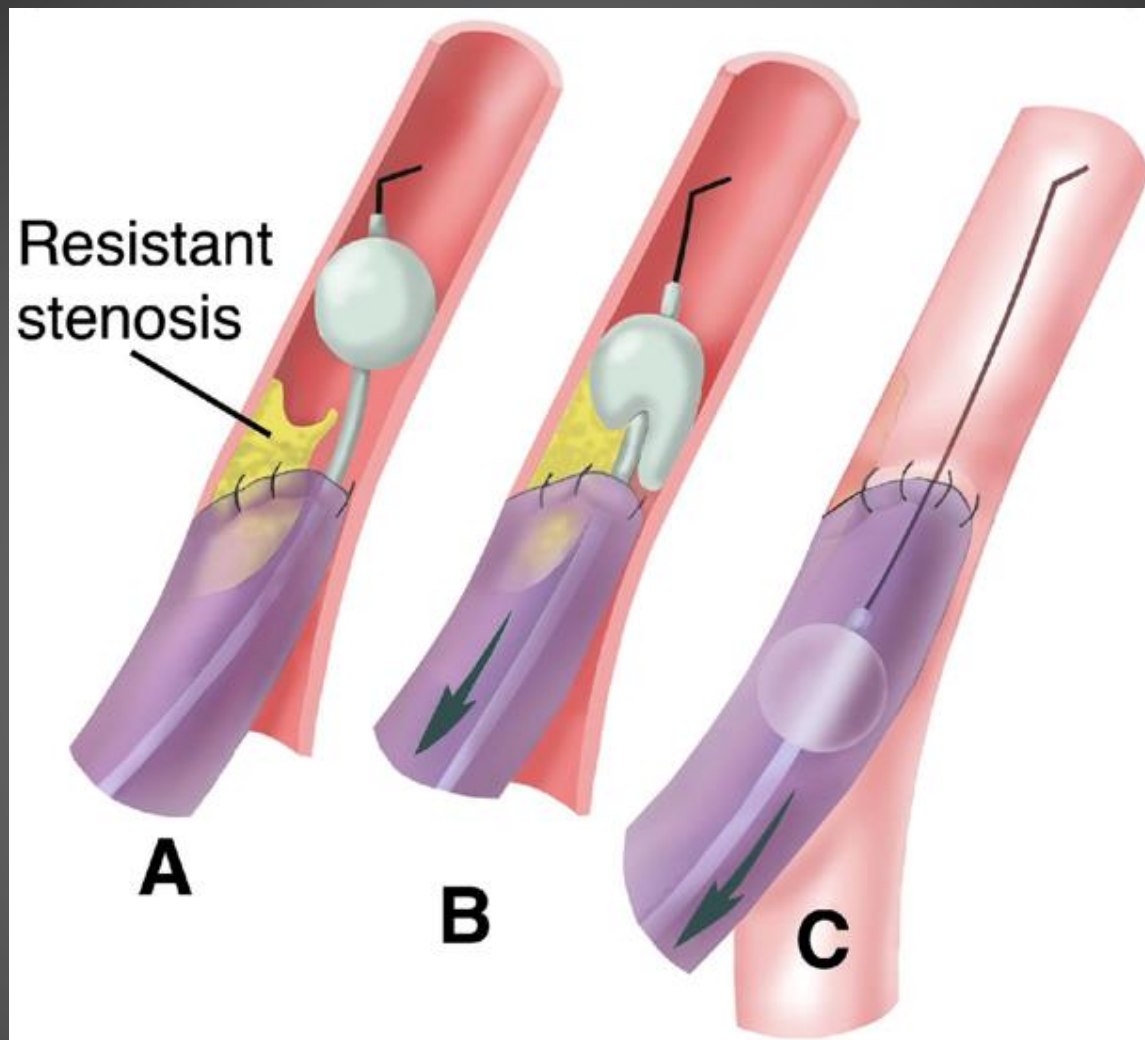




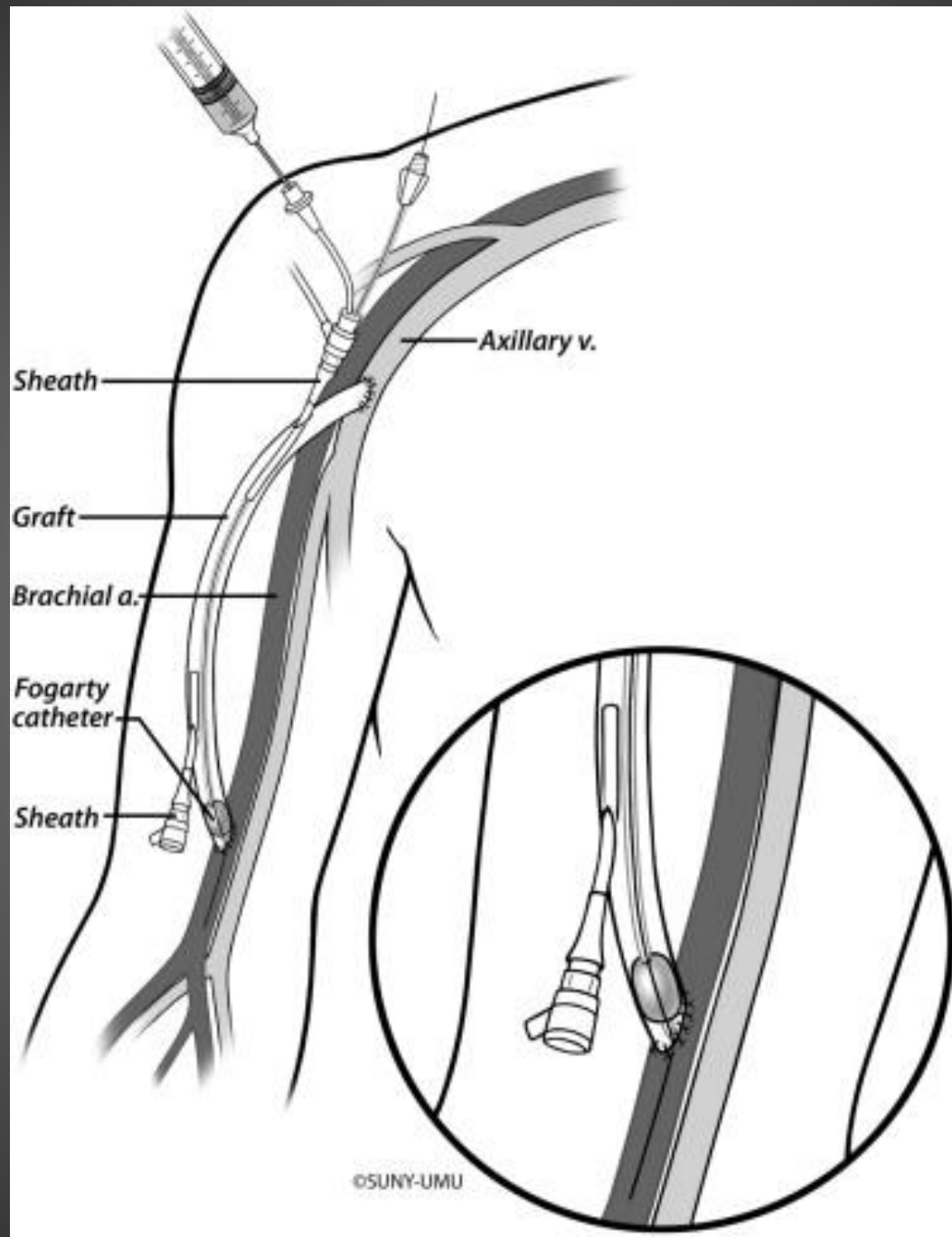
Venous outflow thrombectomy

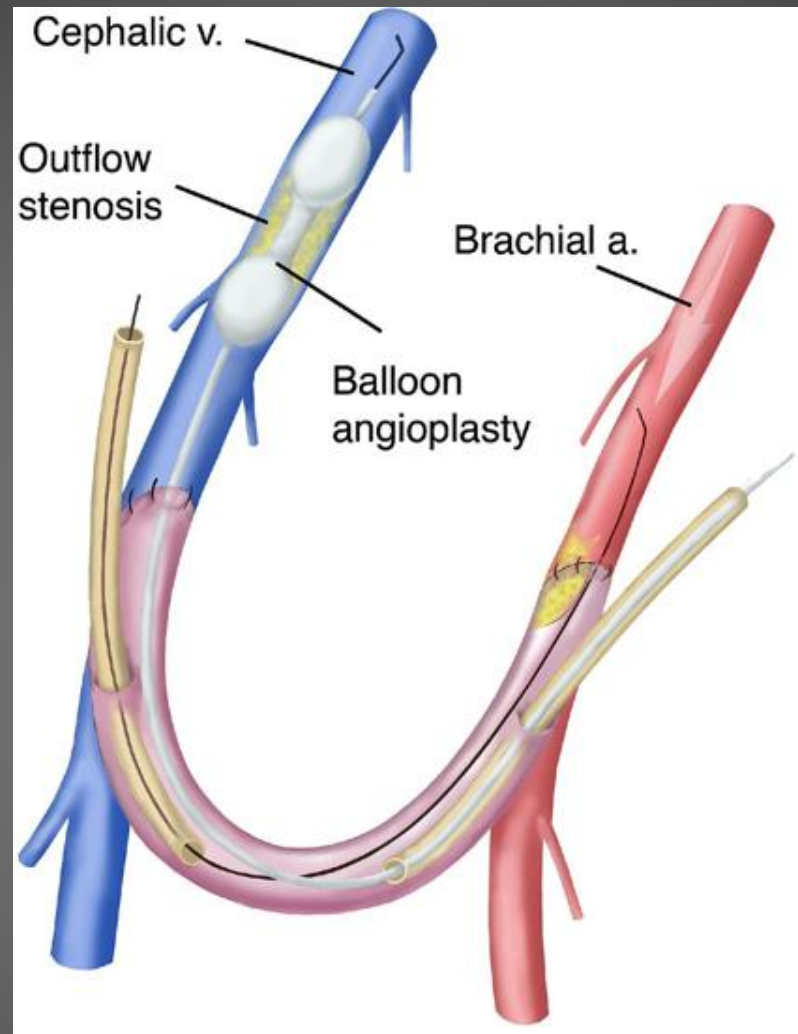


Arterial inflow thrombectomy

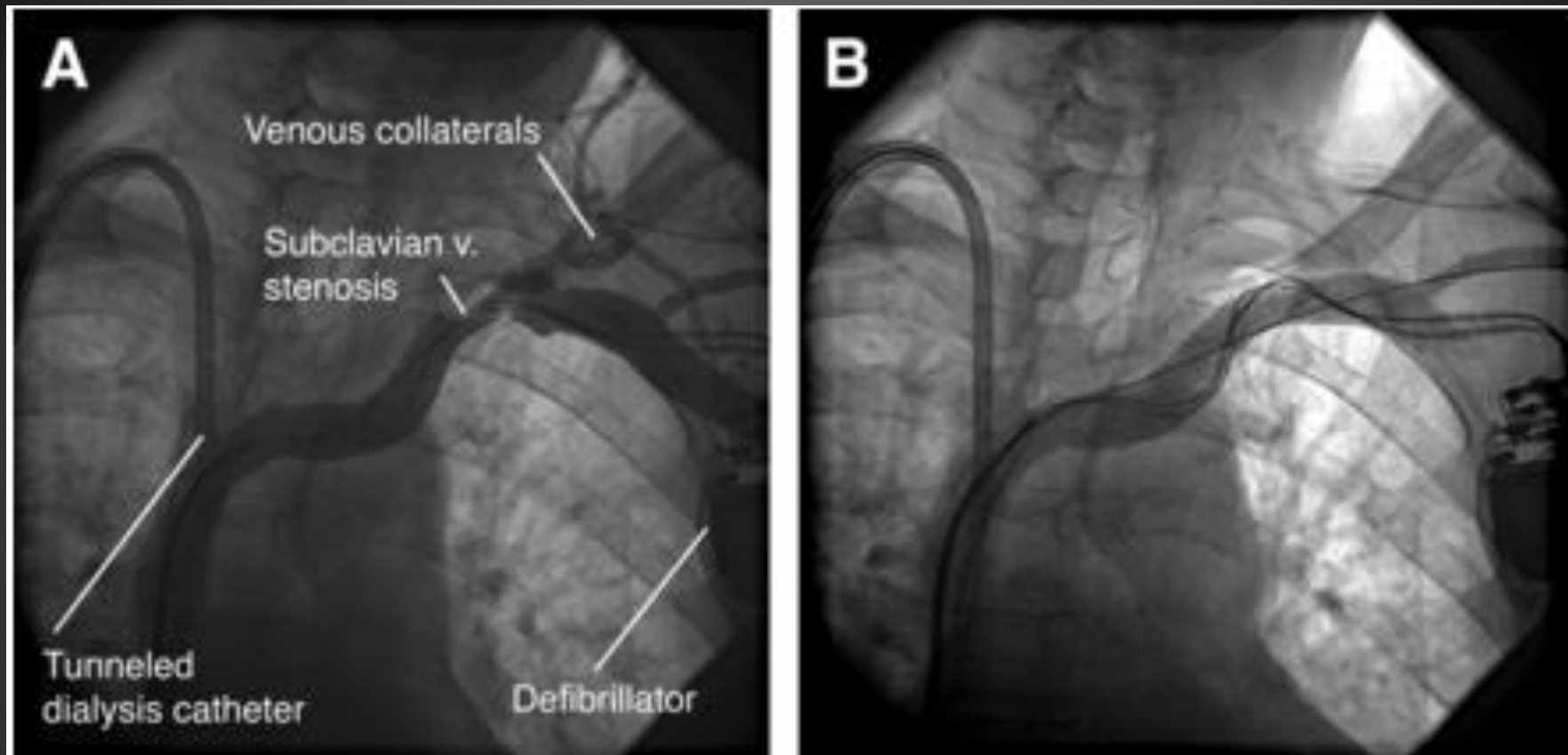


Mechanical thrombectomy of arterial inflow (White thrombus)





Angioplasty venous outflow



Central venography +- venoplasty

Hybrid technique

- *Open surgical thrombectomy*
 - Clear thrombus with risk of pulmonary embolism
- *Correct underlying pathology*
 - with balloon angioplasty+stenting

Achievable Goal ; KDOQI 2006

Percutaneous thrombectomy

- 3 months primary patency → 40%

Surgical thrombectomy

- 6-month primary patency → 50%
- 1-year primary patency → 40%

Surveillance

- Bruit and thrill examination
- Sign of venous hypertension
 - Increase post-dialysis bleeding
 - Arm swelling
 - Superficial vein dilatation on chest wall and neck
- When perform angiography??
 - Venous pressure > 120 mmHg
 - Flow in graft < 650 ml/min

Thank you ^^