Management of Complex DVT

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2020 OOA Convention

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Relevant Disclosure

Under the Oklahoma State Medical Association CME guidelines disclosure must be made regarding relevant financial relationships with commercial interests within the last 12 months.

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I have no relevant financial relationships or affiliations with commercial interests to disclose.

Outline

- General Approach to deep venous thrombosis (DVT)
- Current guidelines
- Diagnosis of DVT
- Simple DVT
- Not So Simple DVT
- Complex DVT
- Conclusion

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Approach to DVT

Provoked

- Reversible
- Non-Reversible

Unprovoked

- Reversible
- Non-Reversible

Provoked DVT

- ***Reversible***
  - Surgery, bedrest, pregnancy, infections, immobility
  - Short-term anticoagulation
- ***Non-Reversible***
  - Plus a clotting disorder
  - Short-term anticoagulation if no recurrence

Unprovoked DVT

- ***Reversible***
  - Venous obstruction, IVC filters (correctable conditions)
  - Short-term anticoagulation after correcting causes
- ***Non-Reversible***
  - Clotting disorders
  - Long-term anticoagulation even with cause correction

Current Guidelines Anticoagulation

- *Provoked DVT (proximal or distal)*
  - Anticoagulation with NOACs over warfarin for 3 months if no cancer.
  - Anticoagulation with LMWH over NOACs and warfarin with cancer.
- *Unprovoked DVT (proximal or distal) - First episode*
  - Anticoagulation for AT LEAST 3 months then reassess for the need for long-term anticoagulation.
    - Low to moderate risk of bleeding - long-term anticoagulation
    - High bleeding risk - 3 months and reassess.

Chest Guideline and Expert Panel Report 2016

Current Guidelines Anticoagulation

- ***Unprovoked DVT (proximal or distal) - Second episode***
  - Low to moderate bleeding risk - long term anticoagulation
  - High bleeding risk - 3 months
- ***Use of aspirin in DVT***
  - Unprovoked, after anticoagulation, if no contraindication to aspirin. (ASPIRE and INSPIRE RCTs).
  - Aspirin is not an alternative to anticoagulation to long-term therapy.

Chest Guideline and Expert Panel Report 2016

Current Guidelines Bleeding Risk

- Age > 75
- Previous bleeding
- Cancer
- Metastatic cancer
- Renal failure
- Liver failure
- Thrombocytopenia
- Previous stroke
- Diabetes
- Anemia
- Antiplatelet therapy
- Poor anticoagulant control
- Recent surgery
- Frequent falls
- Alcohol abuse
- NSAID use
- Reduced functional capacity

Categorization of Risk of Bleeding[d]			
	Estimated Absolute Risk of Major Bleeding		
	Low Risk[e] (0 Risk Factors)	Moderate Risk[e] (1 Risk Factor)	High Risk[e] (≥2 Risk Factors)
Anticoagulation 0-3 mo[f]			
Baseline risk (%)	0.6	1.2	4.8
Increased risk (%)	1.0	2.0	8.0
Total risk (%)	1.6[g]	3.2	12.8[h]
Anticoagulation after first 3 mo[f]			
Baseline risk (%/y)	0.3[i]	0.6	≥2.5
Increased risk (%/y)	0.5	1.0	≥4.0
Total risk (%/y)	0.8[j]	1.6[j]	≥6.5

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10th Edition of the Antithrombotic Guideline

Current Guidelines Anticoagulation

- ***Upper extremity DVT***
  - Anticoagulation if involved axillary vein to proximal veins.
  - Intensity and duration: Same with or without intervention.
- ***Recurrent DVT on anticoagulation***
  - Switch to LMWH temporarily while evaluation of other causes, compliance or true recurrent DVT.
- ***IVC filter placement***
  - Against IVC filter placement if patient can tolerate anticoagulation.

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Chest Guideline and Expert Panel Report 2016

Current Guidelines Intervention

- ***Patients most benefit from venous intervention***
  - Iliofemoral deep venous thrombosis
  - Subclavian to axillary vein thrombosis
  - Severe symptoms
  - Symptoms less than 14 days
  - Good functional status
  - Life expectancy > 1 year
  - A low risk of bleeding

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10th Edition of the Antithrombotic Guideline

Post Phlebitic Syndrome

- AKA Post Thrombotic Syndrome
- Villalta Score
  - 0-5 points - No PTS
  - 5-15 points - Moderate PTS
  - > 15 points - Severe PTS
- End points for venous endovascular intervention

Post Phlebitic Syndrome

Post Phlebitic Syndrome

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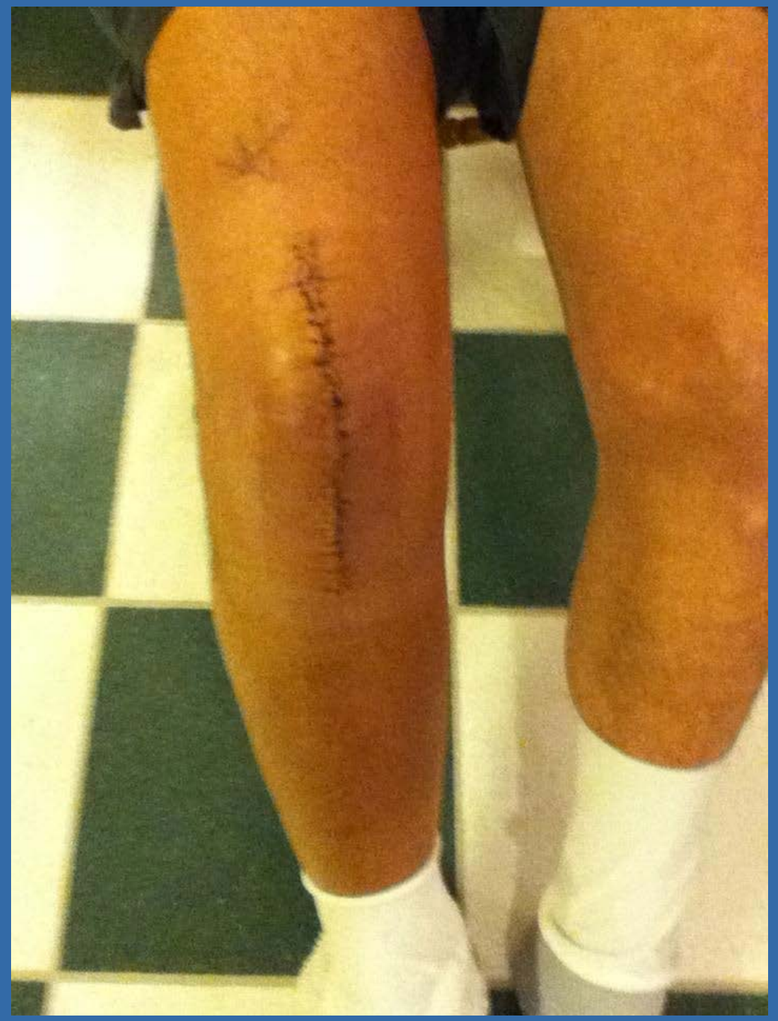
Case 1 - Simple DVT

- 55 year-old man with right calf pain and swelling after right knee surgery
  - Duplex showed DVT in calf veins and popliteal vein
  - Anticoagulation for 3 months
  - No compression stockings needed
  - Discussed future recurrences and DVT prophylaxis



Case 2 - Simple DVT

- 55 year-old man with heterozygous Factor V Leiden with calf pain and swelling after right knee surgery.
  - Duplex showed DVT in calf veins and popliteal vein
  - Anticoagulation for 3 months
  - No compression stockings needed
  - Discussed future recurrences and DVT prophylaxis

Case 3 - Not So Simple DVT

- 55 year-old man with heterozygous Factor V Leiden with calf pain and swelling after right knee surgery.
  - Duplex showed extensive DVT up to the right common femoral vein
  - Anticoagulation for 3 months
  - No compression stockings needed
  - Discussed future recurrences and DVT prophylaxis

Case 4 - Not So Simple DVT

- 55 year-old woman with heterozygous Factor V Leiden with pain and swelling after LEFT knee surgery.
  - Previous RIGHT knee surgery without problems.
  - Duplex showed LEFT extensive iliofemoral DVT
  - Severe pain and swelling
  - High risk of Post Phlebitic Syndro

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Case 5-7: Not So Simple DVT

- 45 yo woman woke up with a swollen left leg
  - Duplex showed DVT up to mid femoral vein
  - Anticoagulation for 3 months
  - No clotting disorder
  - Symptoms resolved after 3 months

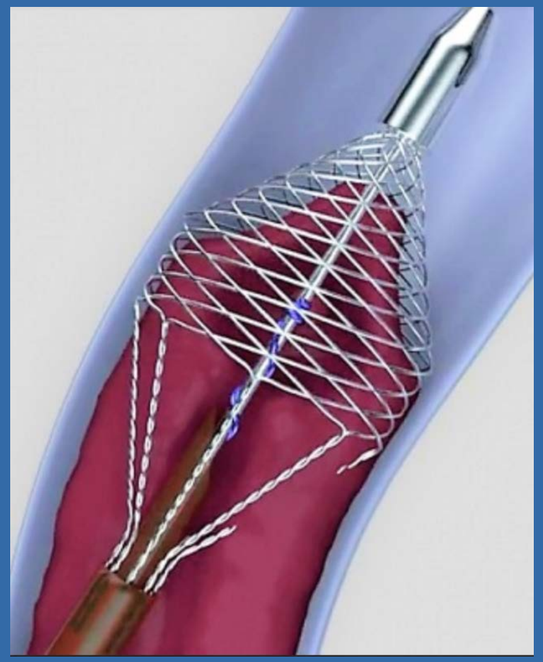
Case 6 - Not So Simple DVT

- The same 45 yo woman woke up with a swollen left leg
  - Duplex showed extensive left iliofemoral DVT
  - Heterozygous Factor II Prothrombin G20210A
  - High risk of Post Thrombotic Syndrome

Case 7 - Not So Simple DVT

- The same 45 yo woman with a swollen left leg 24 hours after a 360 spine surgery
  - Cannot tolerate anticoagulation
  - Cannot tolerate thrombolytic procedure
  - Severe left leg pain and swelling

Case 7 - Solution



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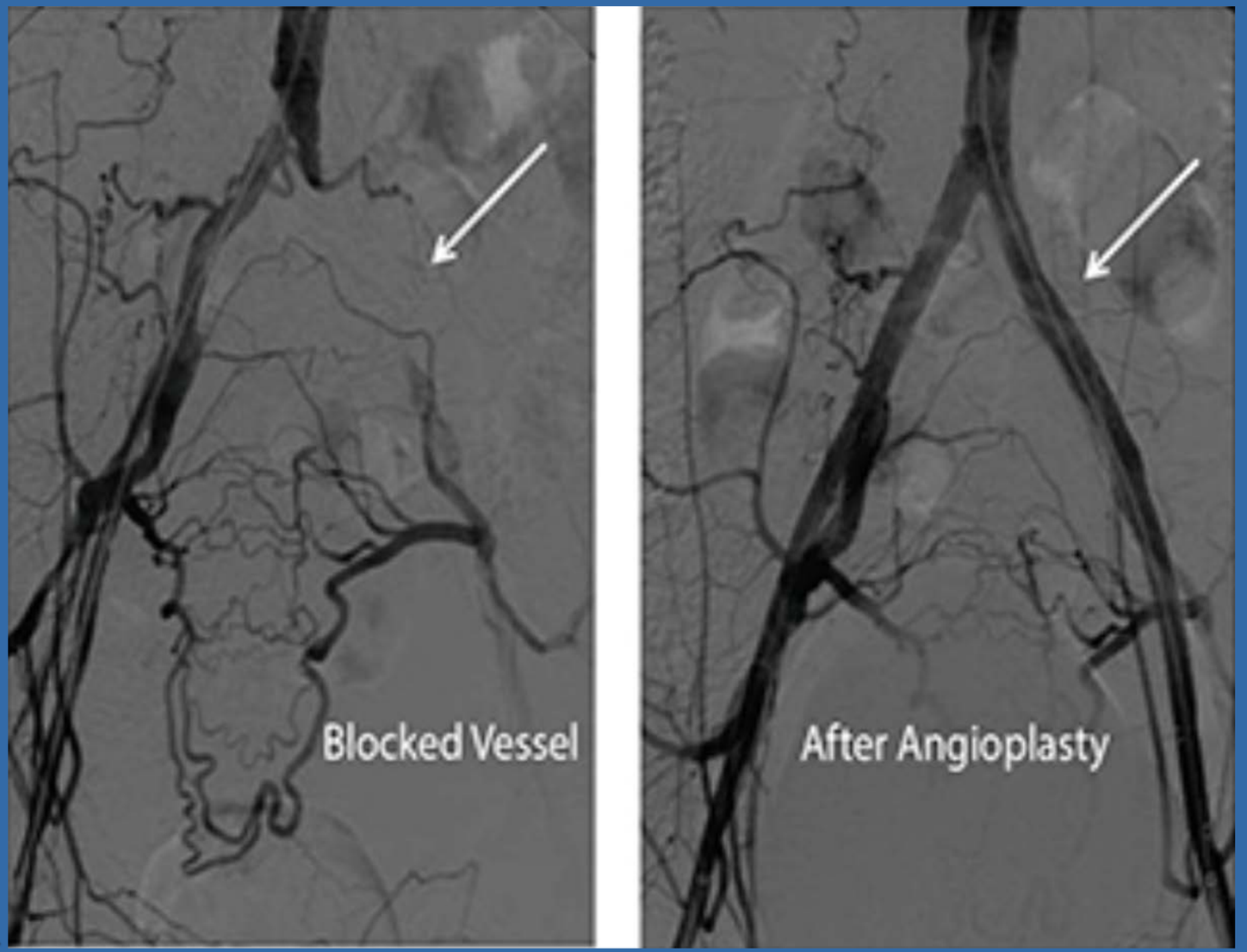
Case 7 - Solution



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Case 8 - Complicated DVT

- 75 yo woman with a swollen left leg, renal insufficiency with Cr 1.7, CHF, anemia Hgb 9, and recurrent nosebleed.
  - Extensive left iliofemoral deep venous thrombosis by duplex.
  - May not tolerate anticoagulation due to nose bleed.
  - May not tolerate thrombolytic procedures due to nose bleed, anemia, and renal insufficiency.
  - Severe left leg pain and swelling to the point of numbness and diminished distal pulses.

==> Phlegmasia Cerulea Dolens

Case 8 - Solutions

- Nose pack
- Hydration
- Careful manual thrombectomy
- Left iliac vein stenting
- Low dose anticoagulation
- Compression wraps
- Diuresis
- ENT to cauterize nose

Case 8 - Results

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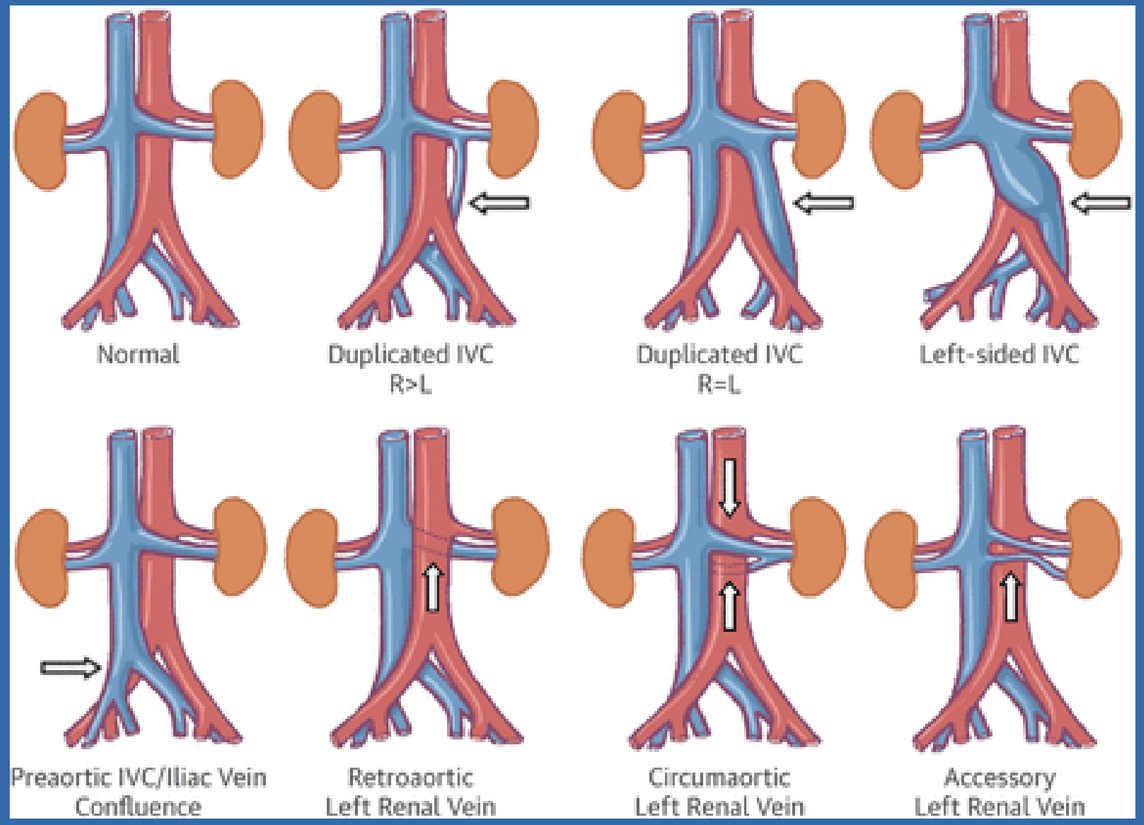
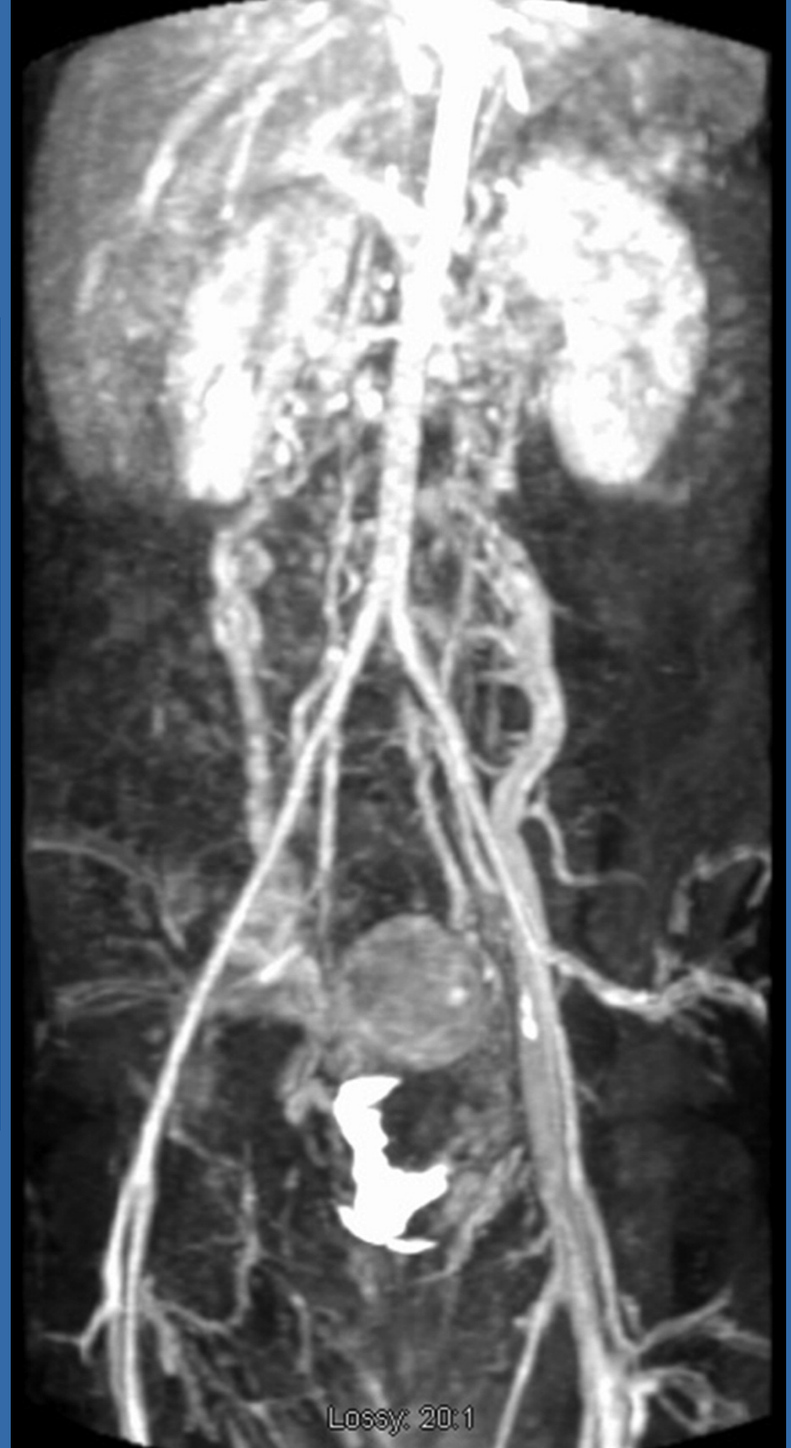
Case 9 - Complex DVT

- 25 yo woman G0P0 on oral contraceptive woke up with a painful swollen left leg, also spotting from menstruation.
  - Duplex showed extensive iliofemoral deep venous thrombosis of the left leg
  - No clotting disorders
  - Axial imaging showed IVC atresia

IVC Atresia





Case 9 - Solutions

- Anticoagulation with heparin drip
- Direct Venography to define central venous anatomy
- Thrombectomy and low dose infusion of thrombolytic
- Monitor for gynecologic bleeding
- Transitioned to Lovenox for 1 month then NOACs
- Stop oral contraceptive
- Aggressive compressive therapy
- Possible iliocaval reconstruction

Current Trend in DVT Therapy

- ***Calf DVT*** - Anticoagulation for 3 months
  - Provoked vs. Unprovoked
- ***Femoral Popliteal DVT*** - Anticoagulation for 3 mo or longer depending on:
    - Provoked or unprovoked
    - Residual thrombus at 3 months
    - Presence of hypercoagulable state
    - Severely symptomatic patients - needs venous interventions.
- ***Iliofemoral DVT*** - Anticoagulation and venous interventions.

Current Trend in DVT Therapy Trials and Society Guidelines

- ***Iliofemoral DVT*** Trials
  - ATTRACT Trial
  - CaVenT Study
  - Bern Venous Stent Registry
  - TORPEDO Trial
  - PEARL I and PEARL II Trials
  - BERNUTIFUL Trial

- ***Iliofemoral DVT*** Guidelines
  - SVS/AVF Clinic Practice Guidelines
  - SIR Quality Improvement Guidelines
  - AHA Scientific Statement

Conclusion

- DVT can range from simple provoked to complex.
- DVT with bleeding, IVC filter thrombosis, congenital anatomic defects of central venous system and IVC - Most complex.
- Management requires familiarity with current guidelines and techniques as well as types of anticoagulation and duration of therapy.
- Familiarity with thrombophiliac conditions is important.
- Refer if not comfortable with management.

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Thank you !!!

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