



THERE IS NO ROLE FOR SURGICAL THERAPY FOR DVT

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Objectives of treatment for DVT

- Prevent death from PE
- Prevent recurrent VTE
- Prevent post-thrombotic syndrome

Therapy for Acute DVT

- Mainstay is anticoagulation – prevention of PE/death and recurrence
- Calf vein thrombosis 6-12 weeks
- Proximal vein ie fem-pop or iliofemoral 6 months or longer
- Low molecular weight heparin is at least as effective if not more effective than unfractionated heparin

Prevention of Post Thrombotic Syndromes

- Compression stockings (30-40 mmHg) for at least 2 yrs after the DVT event
- Removal of clot burden
 - Many studies have shown up to 95% of patients with iliofemoral DVT treated with anticoagulation alone develop venous hypertension and 90% suffer from symptoms of PTS including 15% with debilitating venous claudication and 15% with ulceration



Cause of post thrombotic syndromes

- Persistent obstruction of venous outflow – cause of the most severe symptoms
- Venous valvular dysfunction with valvular incompetence
- Both

Location of the initial DVT dictates future PTS

- With anticoagulation alone:
 - Popliteal and tibial DVT – up to 95% recanalize
 - Femoral DVT – at least 50% recanalize
 - Iliofemoral vein DVT – less than 20% recanalize and result in a normal unobstructed vein

Rational for early thrombus removal

- Large body of evidence supporting removal of iliofemoral thrombus to prevent PTS
- Restoration of venous patency
- Maintaining valve function
- Improved quality of life
- Decreased risk of recurrence

Thrombolysis

- Experimental observations in canine models of acute DVT - Successful thrombolysis preserves endothelial function and valve competence.
- Cases where spontaneous lysis occurs (clot resolution within 90 days) valve function was frequently preserved
- Worst cases of PTS were from the combination of valve incompetence and venous obstruction.
- Naturally follows that if the thrombus is eliminated, postthrombotic morbidity should be reduced or eliminated

Randomized Trials of Catheter Directed Thrombolysis (CDT)

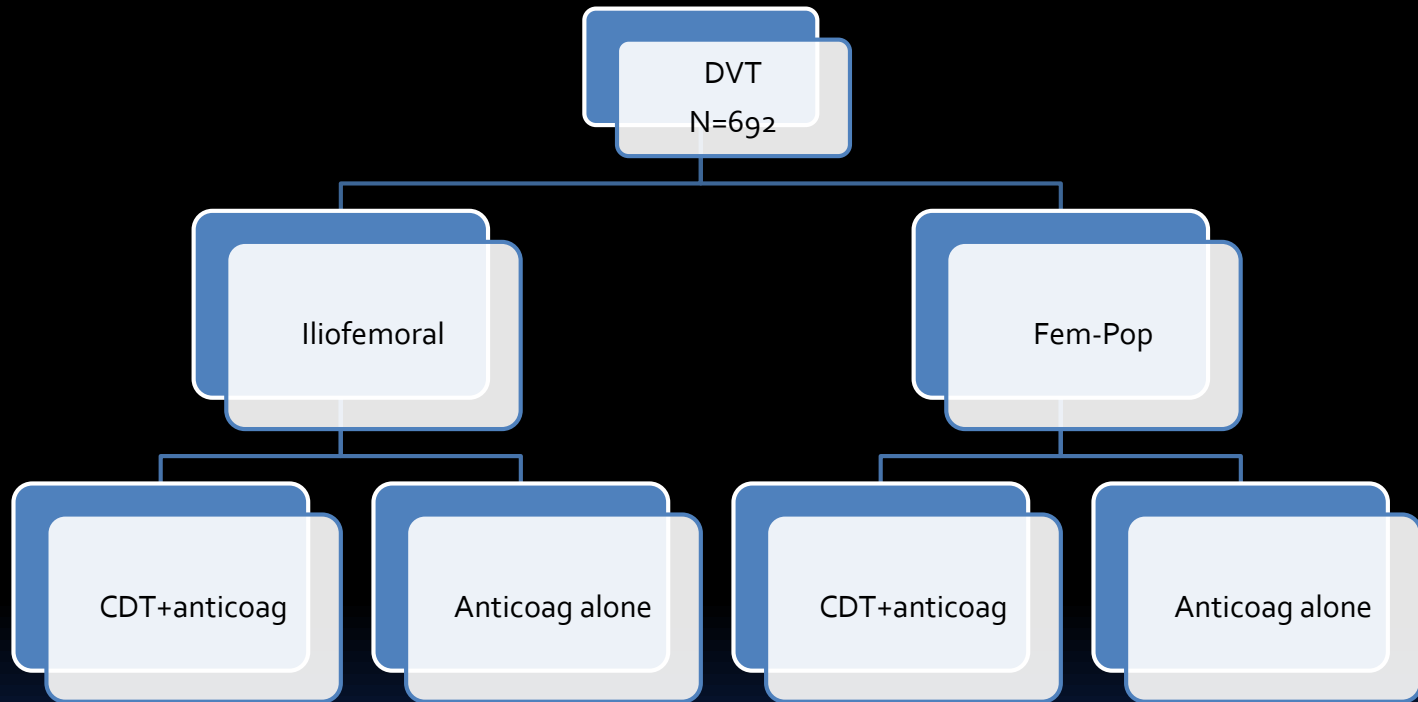
- CaVenT Trial
- ATTRACT Trial
- National Venous Registry Report
- PEARL Registry

CaVenT Trial

- Long term outcomes after CDT vs anticoag alone
- 209 Patients
- Primary endpoints – Iliofemoral patency at 6 months and PTS at 2 yrs
- Conclusions – CDT resulted in increased patency ($P=0.012$) and decreased PTS symptoms ($P=0.047$)
- Absolute risk reduction of PTS = 14.4%

ATTRACT Trial – NIH

prospective randomized trial



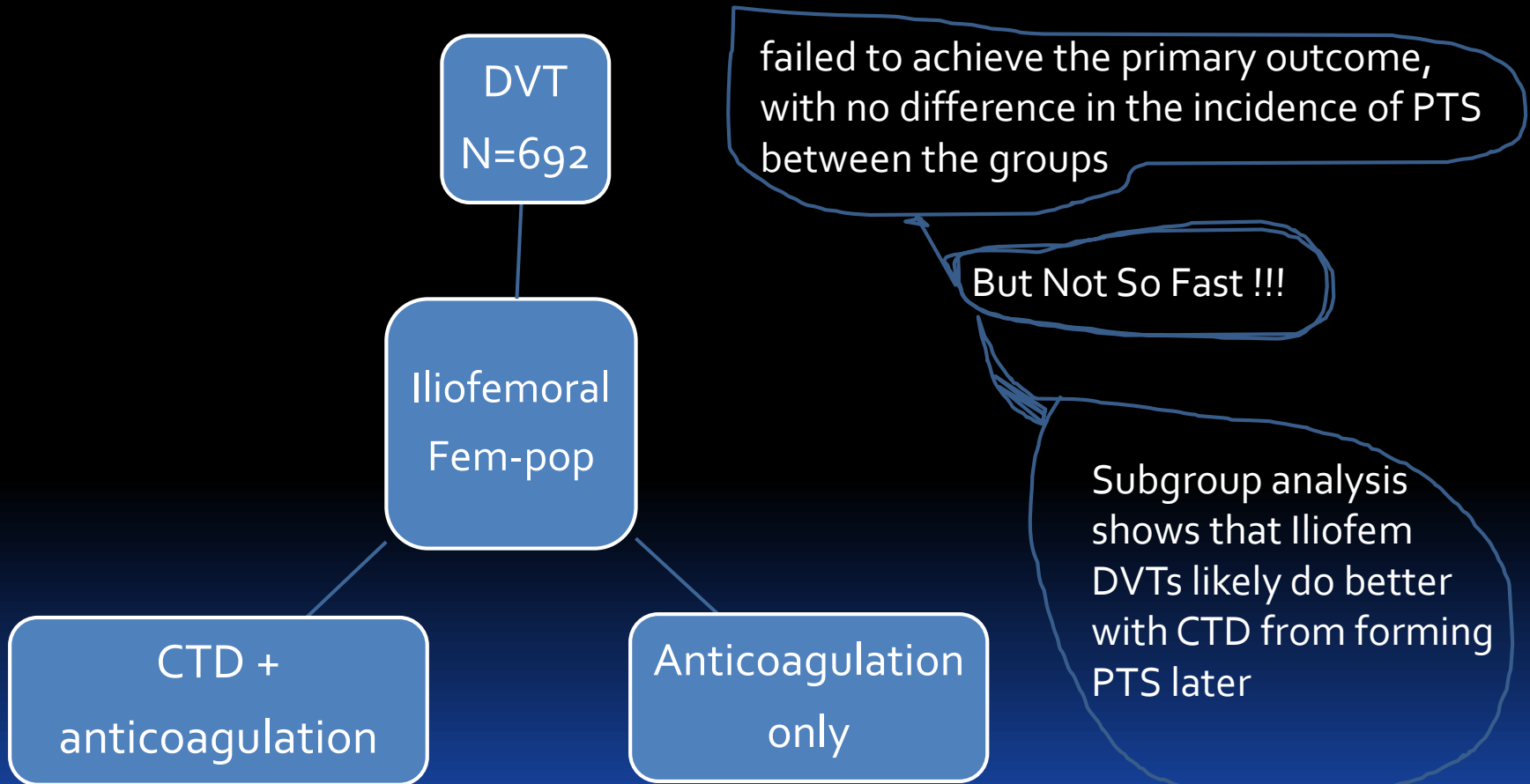
PTS follow up for 24 months
Villalta score, CEAP class, QOL, Venous
clinical severity score, Venous duplex –
patency and valve function

ATTRACT Trial

- the design of the ATTRACT trial included patients with acute DVT in the femoropopliteal segments alone as well as those with more proximal iliac thrombosis, in part to ensure completion of patient enrollment in a reasonable amount of time
- Although limiting enrollment only to iliofemoral cases, in which there is known to be a higher risk for late post-thrombotic syndrome (PTS), might have provided a higher chance of meeting the primary outcome measure, this would have risked failure to meet recruitment goals mandated by the funding agency and the study budget

ATTRACT Trial – NIH

prospective randomized trial



National Venous Registry

- Largest report of patients treated with lytic therapy for acute DVT. (71% Iliofemoral)

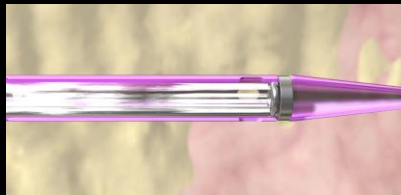
	Complete resolution of thrombus	< 50 % Clot resolution	
Patent vein at 1 yr All pts	78%	37%	(P<0.001)
Patent vein at 1 yr 1 st Iliofemoral DVT	96%		
Valve reflux at 6 mos	28%	62%	(P<0.02)
Quality of Life	Fewer PTS symptoms		

Pharmacomechanical Thrombolysis Options

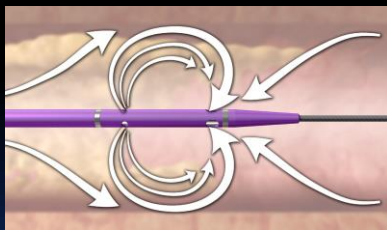
- Endovascular Mechanical Thrombectomy
 - AngioJet (Boston Scientific) – with or without powerpulse spray feature
- Ultrasound Accelerated Thrombolysis
 - EKOS System (Ekos Corp)
- Isolated Segmental Pharmacomechanical Thrombolysis
 - Trellis Catheter (Covidien)

ANGIOJET™ ULTRA Thrombectomy System

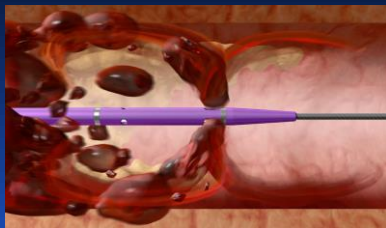
ENHANCING YOUR OPTIONS FOR RESTORING FLOW



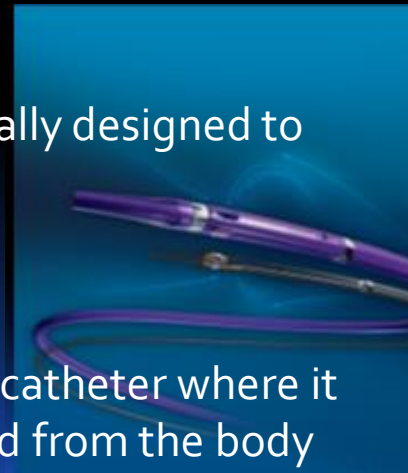
Saline jets travel backward within the catheter at high speed creating a powerful vacuum effect



Cross-Stream™ flow is specially designed to optimize thrombus removal

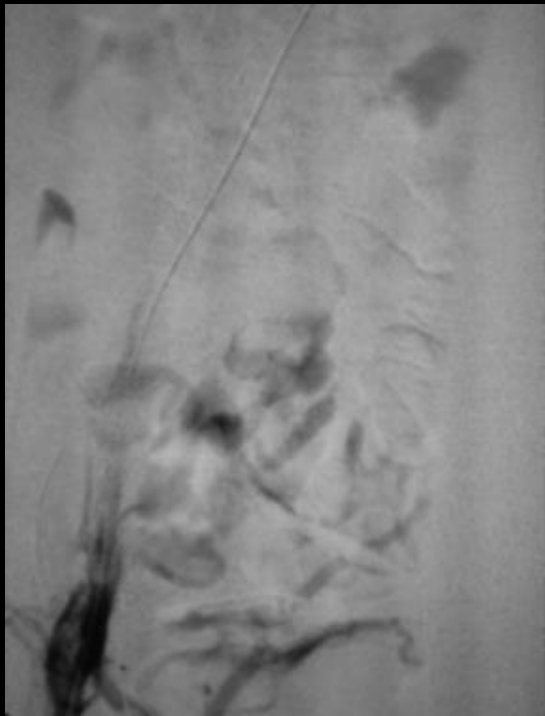


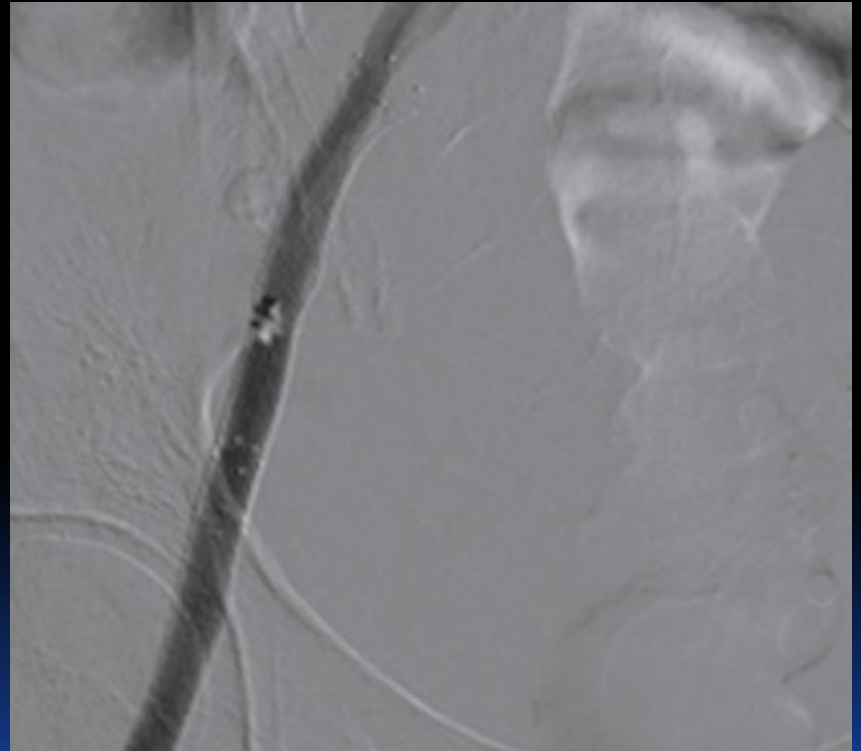
Thrombus is drawn into the catheter where it is fragmented and evacuated from the body




Recent PEARL Registry data

- AngioJet Thrombectomy removed a mean of 95% thrombus burden in veins—with 76% of DVT treatments completed in less than 24 hours and 81% of patients remaining free of rethrombus at 12 months
- 86% of cases utilized Power Pulse and/or Rapid Lysis approach (N=371 patients)
- Less lytic and shorter procedure times using either Power Pulse or Power Pulse plus CDT than with CDT alone with AngioJet
- 87% of AngioJet venous cases were completed in 2 or less sessions







Because of the advances in endovascular therapy in lysis and catheter directed thrombectomy, the goal of thrombus removal to decrease the risk of PTS and improve quality of life can be achieved without surgical intervention...

...This is a sure bet for improved patient satisfaction



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