2018 MID-ATLANTIC
CONFERENCE

8th ANNUAL CURRENT CONCEPTS IN
VASCULAR THERAPIES

THERE IS A ROLE FOR SURGICAL THERAPY FOR DEEP VEIN THROMBOSIS

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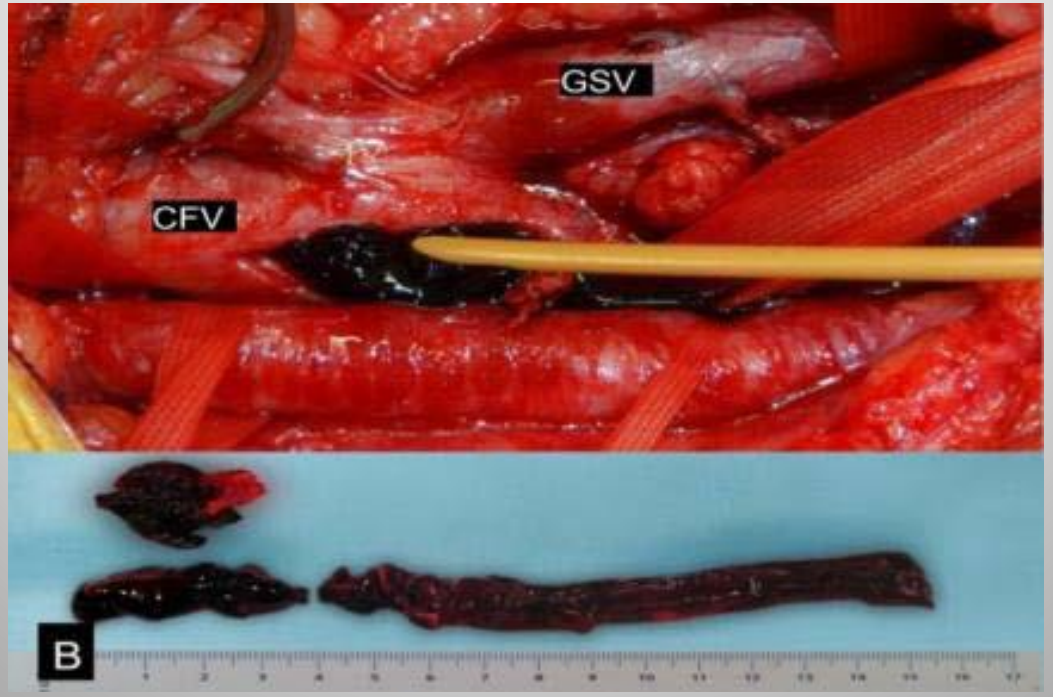
Vascular & Endovascular Surgeon

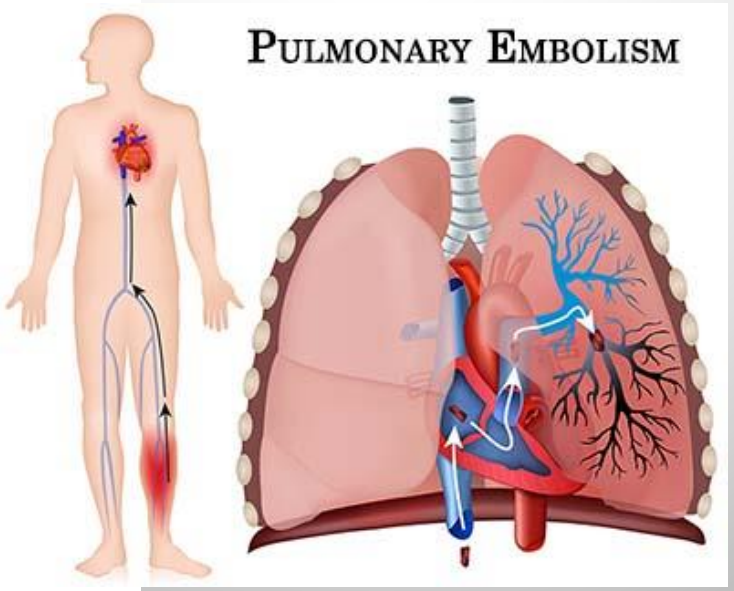
Acute DVT treatment options

- Anticoagulation – IV heparin
- Mechanical thrombectomy – AngioJet, AngioVac
- Thrombolysis – t-PA
- Operative surgical thrombectomy



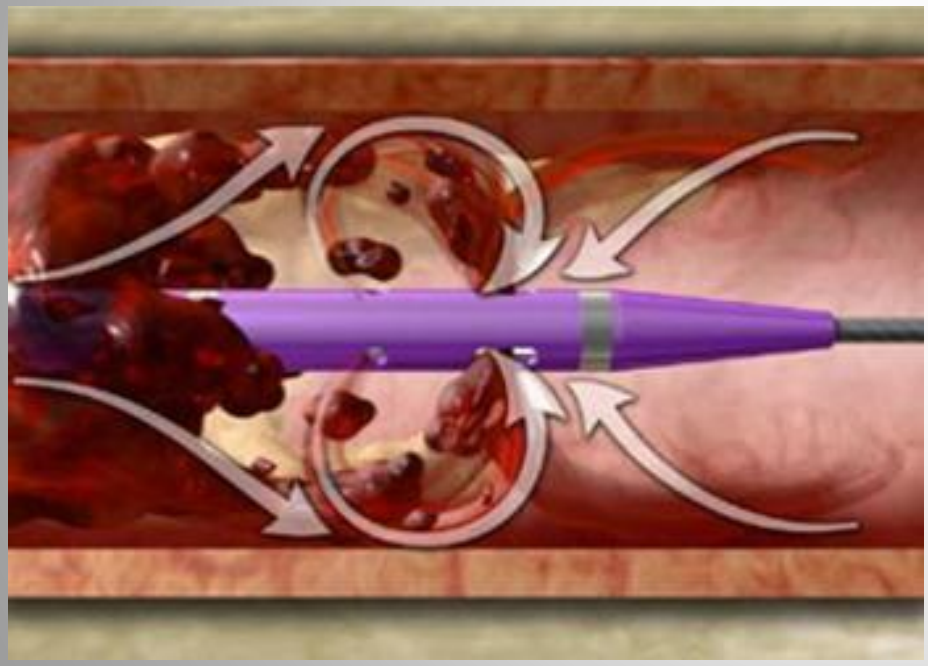
Acute DVT treatment options

- Anticoagulation
  - Prevents clot extension and migration (PE)
  - Ineffective for clot removal: valve damage and venous hypertension: edema/pain/ulcers



Acute DVT treatment options

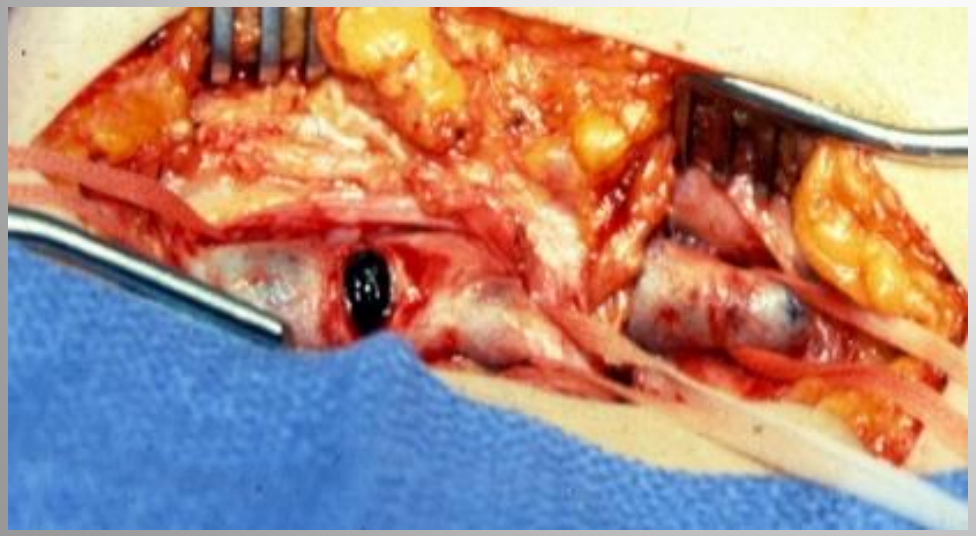
- Mechanical thrombectomy



- Thrombolysis

Acute DVT treatment options

- Open surgical thrombectomy
  - In OR under general anesthesia => implied risk
  - Traditionally utilized as a treatment of "LAST RESORT"
    - Neural/GI/GU bleeding situations, failure of previous therapies (poor result/equipment/expertise), urgency due to impending venous gangrene (phlegmasia cerulia dolens).
  - IS THIS STILL TRUE???



Pharmacomechanical Catheter-Directed Thrombolysis for Deep-Vein Thrombosis

N Engl J Med 2017; 377:2240-2252 December 7, 2017DOI: 10.1056/NEJMoa1615066

- Randomly assigned 692 patients with acute proximal deep-vein thrombosis to receive either anticoagulation alone (control group) or anticoagulation plus pharmacomechanical thrombolysis (catheter-mediated or device-mediated intrathrombus delivery of recombinant tissue plasminogen activator and thrombus aspiration or maceration, with or without stenting). The primary outcome was development of the post-thrombotic syndrome between 6 and 24 months of follow-up.

Pharmacomechanical Catheter-Directed Thrombolysis for Deep-Vein Thrombosis

- Conclusions: Among patients with acute proximal deep-vein thrombosis, the addition of pharmacomechanical catheter-directed thrombolysis to anticoagulation **did not** result in a lower risk of the post-thrombotic syndrome **but did** result in a higher risk of major bleeding. (Funded by the National Heart, Lung, and Blood Institute and others; ATTRACT ClinicalTrials.gov number, NCT00790335.)

Hybrid operative thrombectomy is noninferior to percutaneous techniques for the treatment of acute iliofemoral deep venous thrombosis

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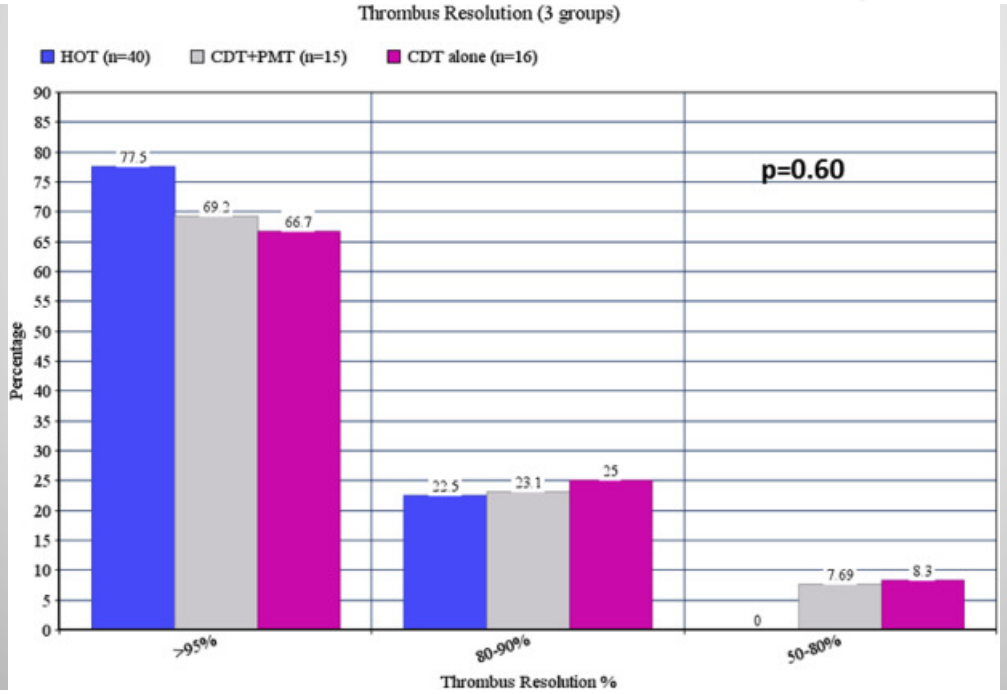
ABSTRACT

Objective: Hybrid operative thrombectomy (HOT) is a novel technique for the treatment of acute iliofemoral deep venous thrombosis (IFDVT) and is an alternative to percutaneous techniques (PTs) that use thrombolytics. In this study, we compare perioperative and intermediate outcomes of HOT vs PT as interventions for early thrombus removal.



Conclusions: PT and HOT have demonstrated good outcomes in the perioperative and intermediate periods. HOT is noninferior to PT as a technique for early thrombus removal and has the advantages that thrombus resolution is established in one operation and length of stay is significantly decreased. HOT avoids thrombolytic therapy, which may reduce major bleeding events. (J Vasc Surg: Venous and Lym Dis 2017;5:177-84.)

Advances in Operative Thrombectomy for Lower Extremity Venous Thrombosis

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KEYWORDS

• Thrombectomy • Vein • Iliac • Femoral • Venous • Thrombosis • Surgery • Open

KEY POINTS

- Open thrombectomy is considered when thrombus removal is indicated but thrombolysis is contraindicated.
- Open thrombectomy can reduce postthrombotic syndrome and venous reflux versus anticoagulation alone.
- Contemporary operative venous thrombectomy uses a hybrid approach with open thrombectomy for thrombus removal and ilio-caval stenting to treat residual outflow stenosis.

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Surgical Thrombectomy for Deep Vein Thrombosis

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Chapter
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Abstract

Iliofemoral deep venous thrombosis can result in phlegmasia cerulea dolens in the acute stage and postthrombotic syndrome in the chronic stage. Phlegmasia cerulea dolens may result in venous gangrene and limb loss. Postthrombotic syndrome is associated with poor quality of life. As soon as a diagnosis of iliofemoral deep venous thrombosis is made, every effort should be made to remove the bulk of thrombus from the venous system to prevent these sequelae. In the modern era, endovascular intervention is the most common practice for removing the thrombus burden. For patients who fail endovascular treatment, or have contraindications to thrombolysis, contemporary open surgical venous thrombectomy is the only surgical option to get rid of massive thrombus burden. This operation is not commonly performed these days, but it is important for modern-day vascular surgeons to have this technique in their armamentarium.

Acute Venous Iliofemoral Thrombosis: Early Surgical Thrombectomy Is Effective and Durable

Stefan Ockert,[1] Matthias von Allmen,[1] Michaela Heidemann,[2] Juliette Brusa,[1] Jan Duwe,[1] and Robert Seelos,[1] Lucerne, Switzerland

Background: The first-line recommendation for the treatment of acute iliofemoral deep vein thrombosis (IFDVT) is catheter-directed thrombolysis or pharmacomechanical thrombolysis. Recent analysis of surgical thrombectomy has shown comparable results. However, this procedure is not commonly given as much importance as interventional techniques. We analyzed the patient outcome of surgical thrombectomy using modern endovascular techniques in both the short and long term.

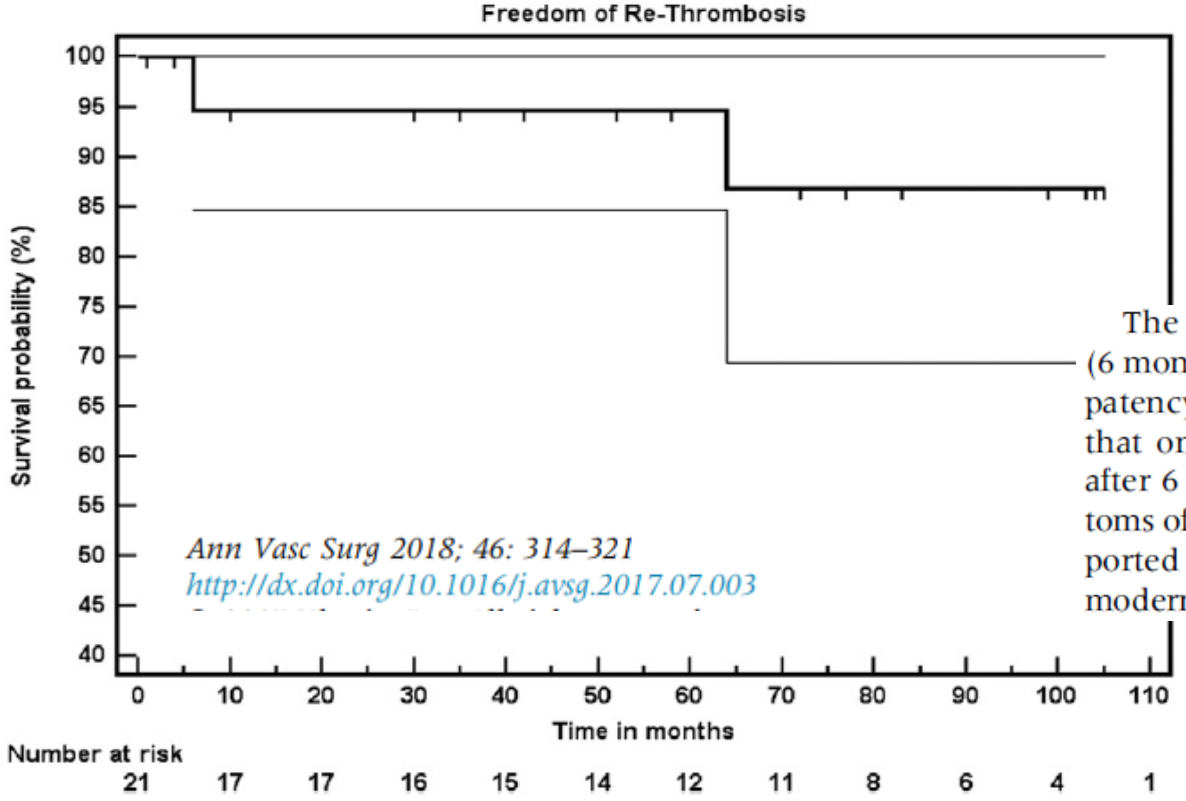


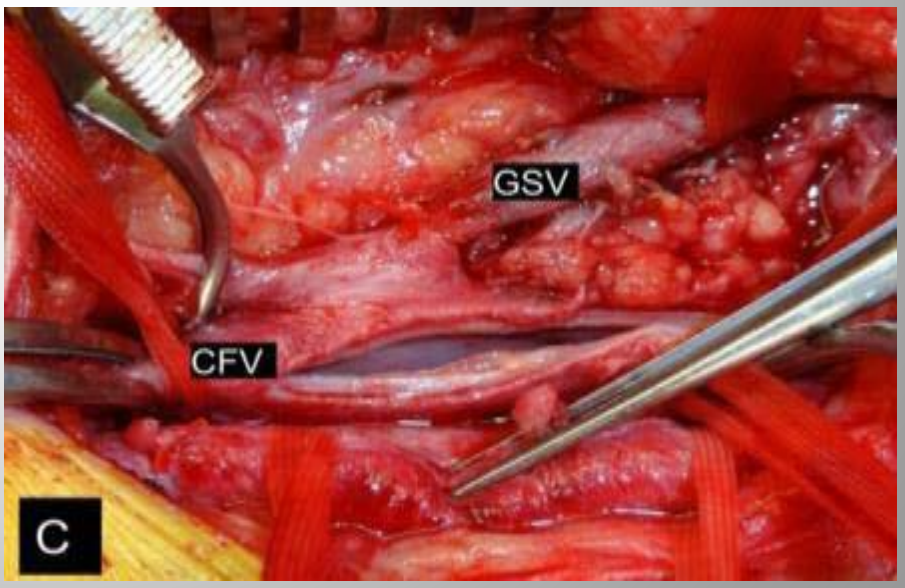
Fig. 1. Kaplan-Meier plot for freedom of rethrombosis after surgical thrombectomy of IFDVT.

The CaVenT trial showed PTS in 30.3% (6 months) and 41.1% (12 months) and iliofemoral patency only in 65.9% after 6 months. This means that one-third of patients suffered early occlusion after 6 months of treatment, as well as early symptoms of PTS. This is a high rate and far more than reported by several more recent surgical series using modern vascular and endovascular techniques.[25–27]

Open thrombectomy in acute iliofemoral venous thrombosis

Igor M. Ignatyev, Annals Vasc Med Surg. 2018;1(1):1001 (Russia)

- Personal series compared 37 transfemoral venous thrombectomy (6 hybrid cases) vs 24 patients with standard anticoagulation.
- 1/3 with contraindications for t-PA



Open thrombectomy in acute iliofemoral venous thrombosis

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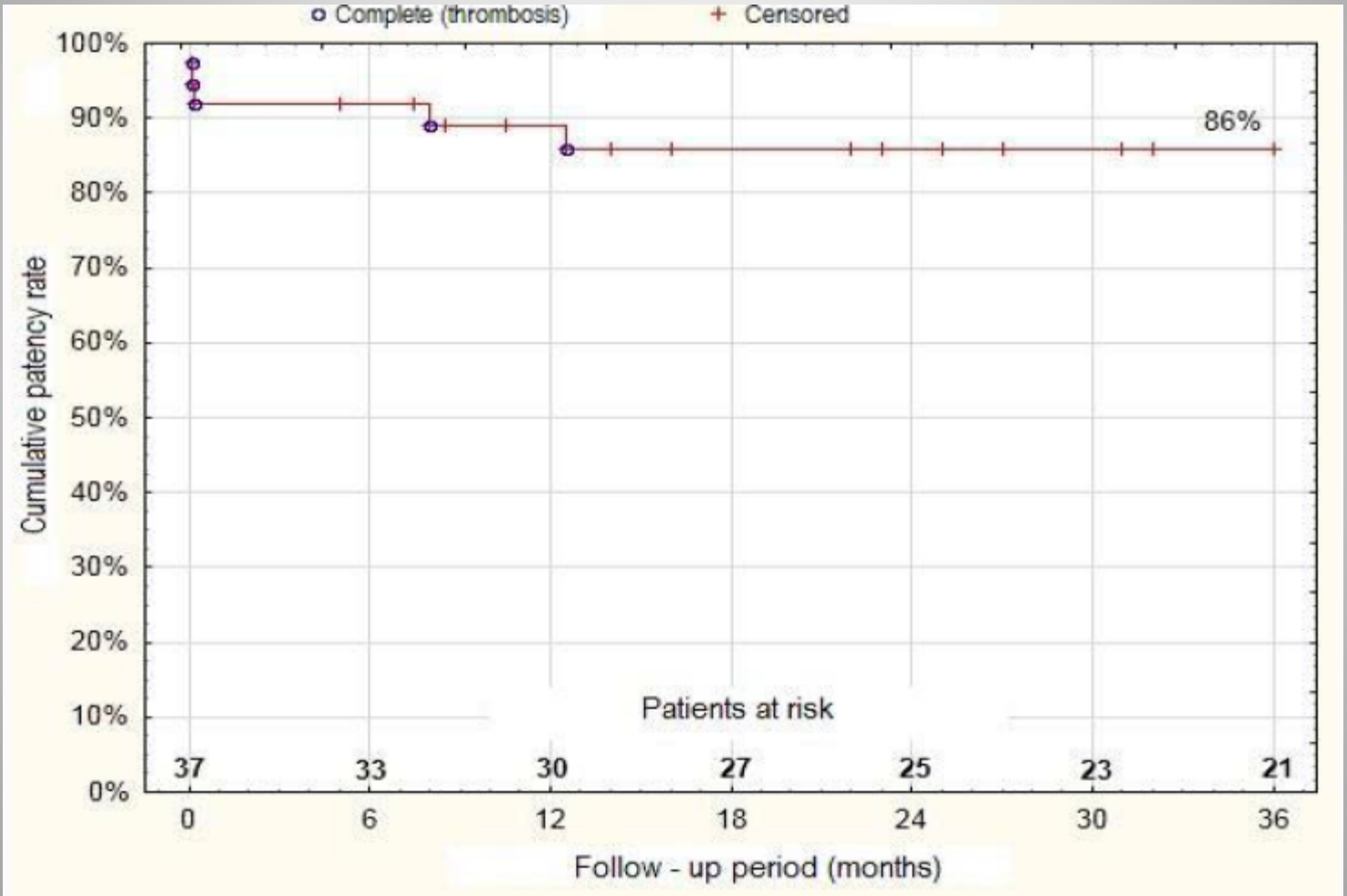
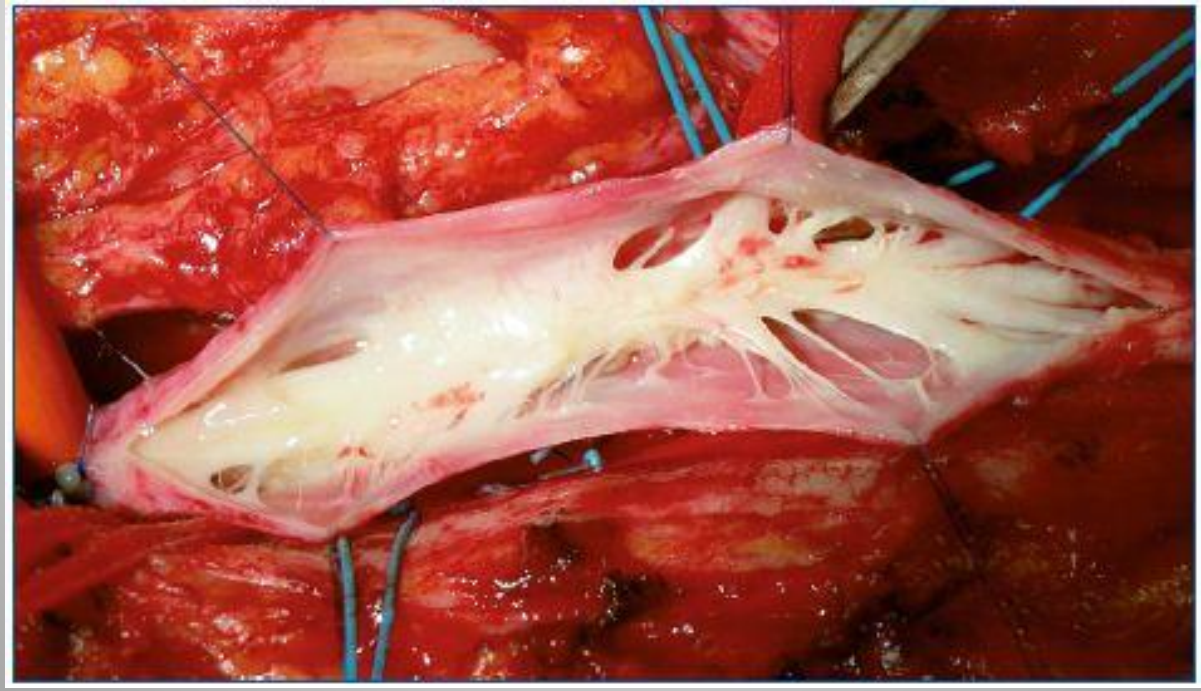


Figure 4: Cumulative patency rate of iliofemoral veins after thrombectomy (%).

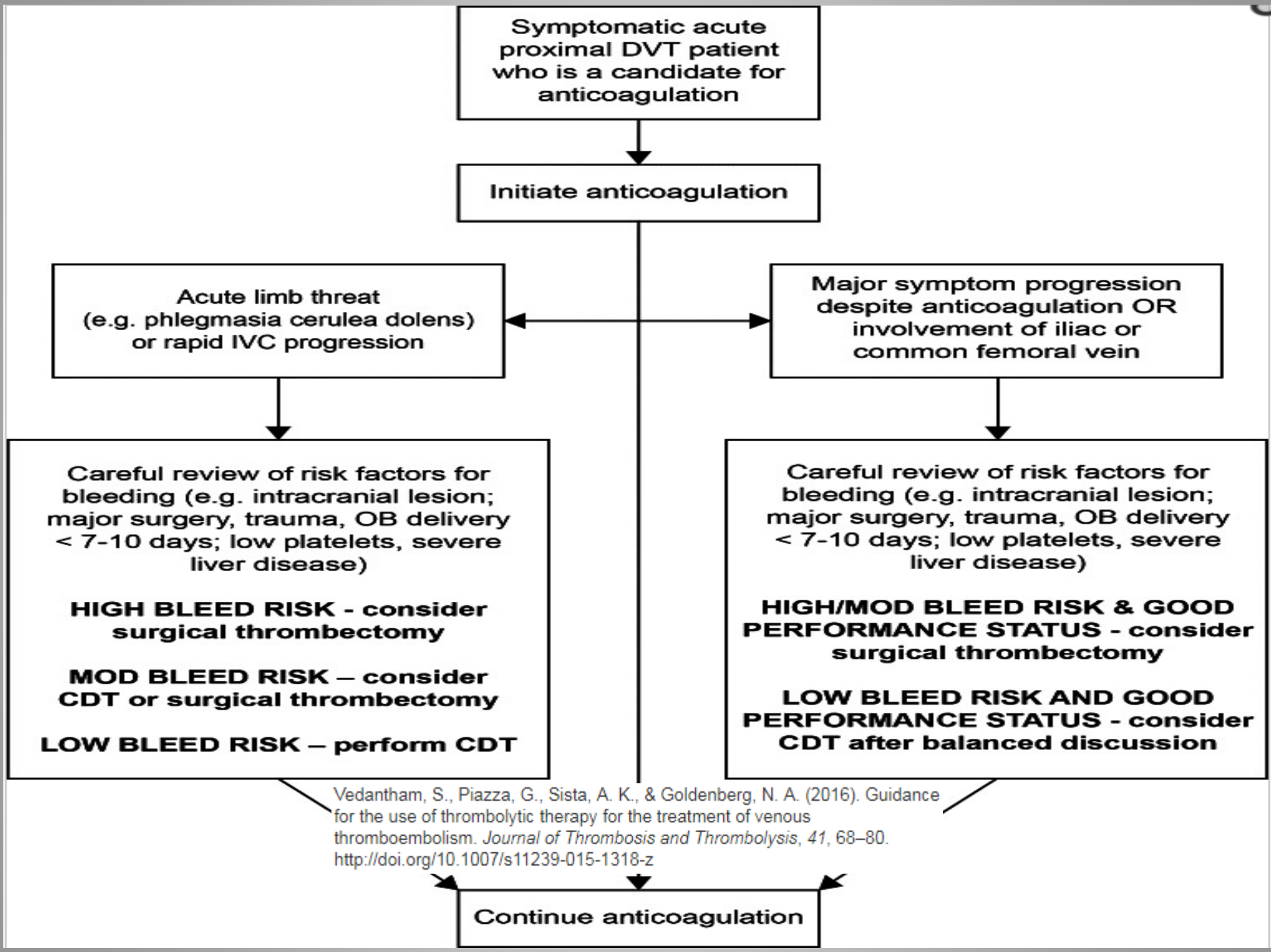
Chronic DVT treatment options

- Healed DVT forms scar within the vein lumen.
- Restricts venous return => swollen painful leg.
- Treatment is “endovenectomy” of synechiae, vein patch angioplasty, and iliac stenting.



Society for Vascular Surgery and American Venous Forum Guidelines (2012)

- Early thrombus removal in selected patients meeting the following criteria:
  - 1st episode of acute ileofemoral thrombosis
  - Symptoms < 14 days duration
  - Low risk of bleeding
  - Ambulatory with good functional capacity
  - Acceptable life expectancy
- Prefer: cath directed pharmaco-mechanical treatments
- If contraindications to t-PA => open venous thrombectomy



Vedantham, S., Piazza, G., Sista, A. K., & Goldenberg, N. A. (2016). Guidance for the use of thrombolytic therapy for the treatment of venous thromboembolism. *Journal of Thrombosis and Thrombolysis*, *41*, 68–80. http://doi.org/10.1007/s11239-015-1318-z

I want to leave you with these thoughts:

- Contraindications to t-PA “high risk for bleeding”
  - Active internal bleeding, recent stroke, malignant tumor, within 10 days major trauma/surgery, age over 75 years, coagulopathy, thrombocytopenia, endocarditis, intracardiac thrombus, severe uncontrolled HTN, pregnancy, septic thrombus, allergy.
- CaVenT (Norway) data:
  - 55% with contraindications to t-PA
    - And of those, 30% were candidates for surgical thrombectomy
- Ignatyev series: 33% contraindications to t-PA

And, one more thing…

Is there a role for surgical therapy for deep vein thrombosis?