CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE

CONTROVERSIES & UPDATES IN VASCULAR SURGERY

JANUARY 25-27 2018

MARRIOTT RIVE GAUCHE & CONFERENCE CENTER, PARIS, FRANCE

When and how to use distal protection devices for lower extremity revascularization

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Disclosure

Peter A. Schneider

Potential conflicts of interest to report:

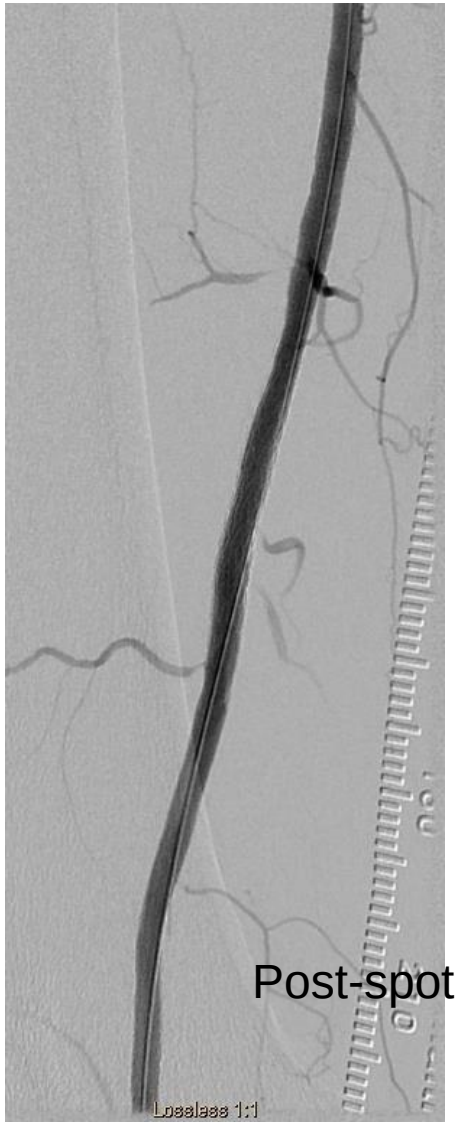
Enter patients in studies sponsored by: Gore, Cordis, Medtronic, Silk Road, Bard, NIH, Limflow

Modest royalty: Cook

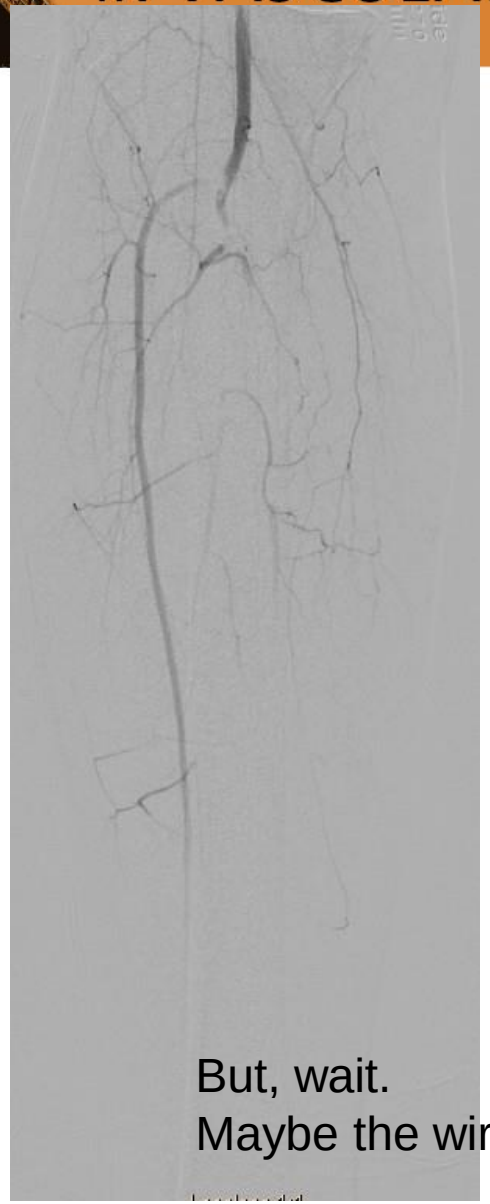
Scientific Advisory Board (non-compensated): Abbott, Medtronic, Boston Scientific

Chief Medical Officer: Intact Vascular, Cagent

Easy wire passage



Post-spot stent

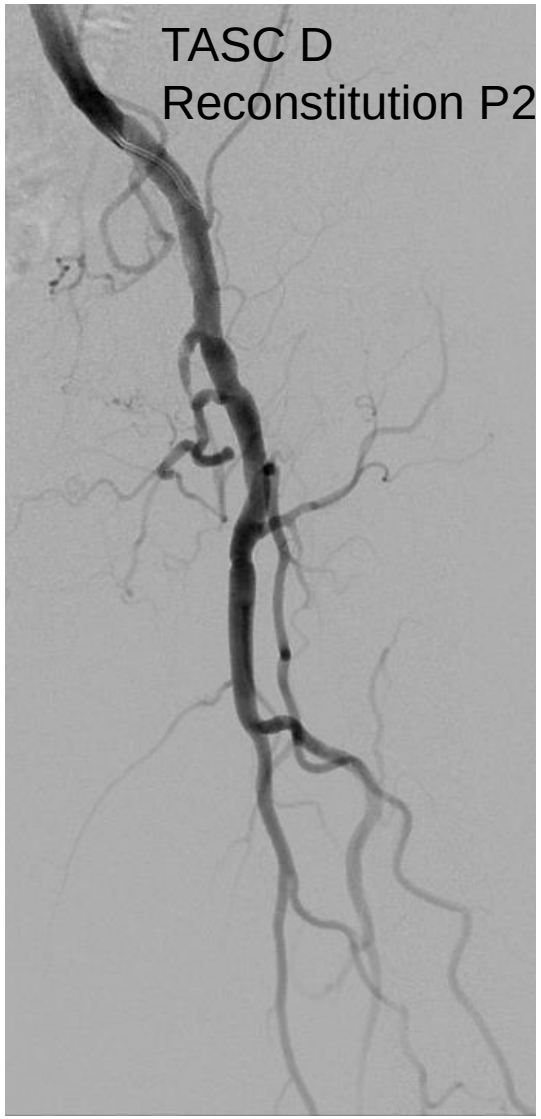


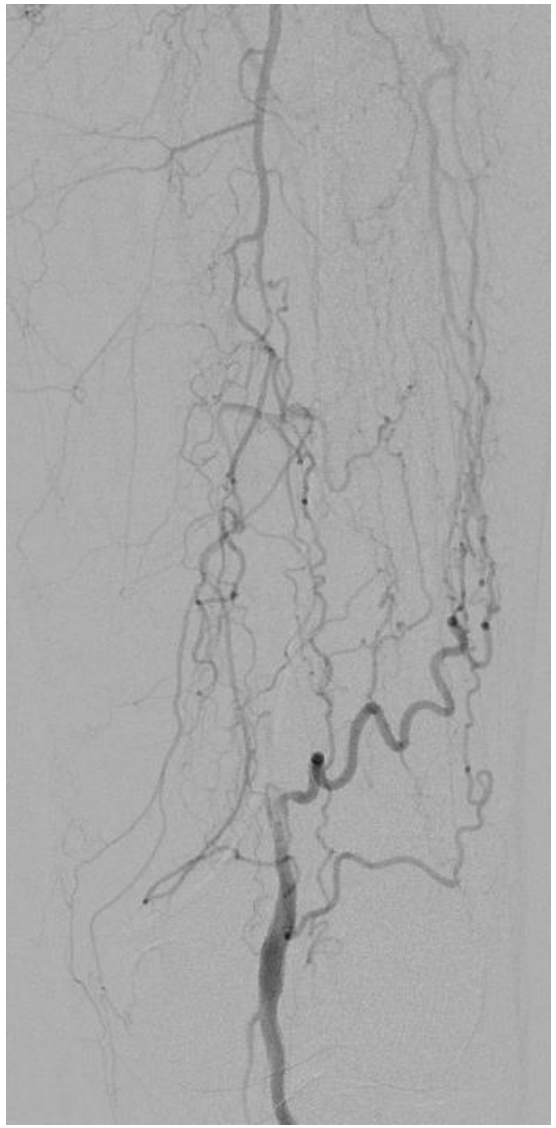
1 hour later

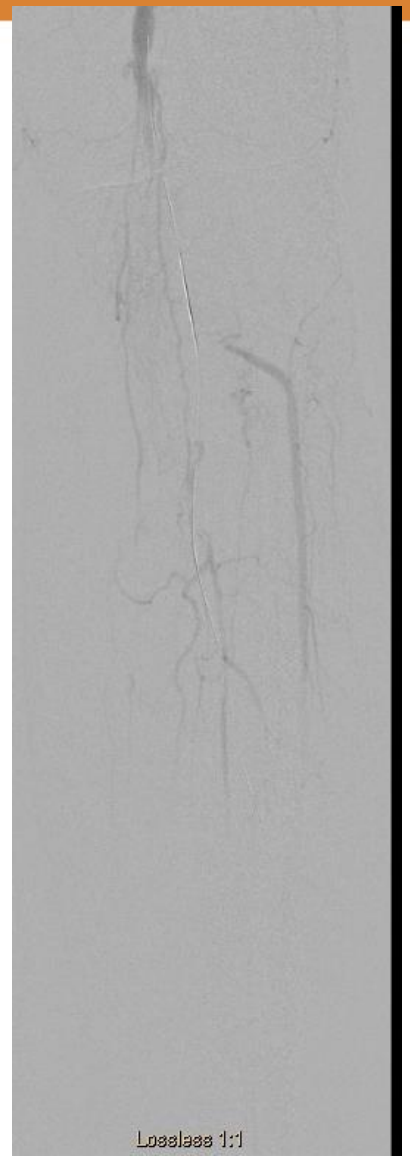
But, wait.
Maybe the wire went “too easy”

Wish I had used a filter!

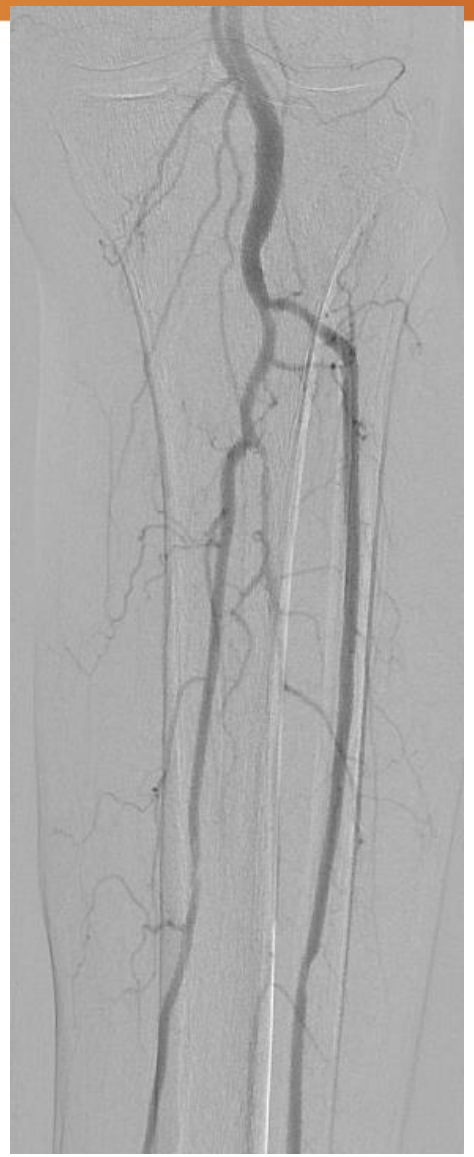
TASC D
Reconstitution P2



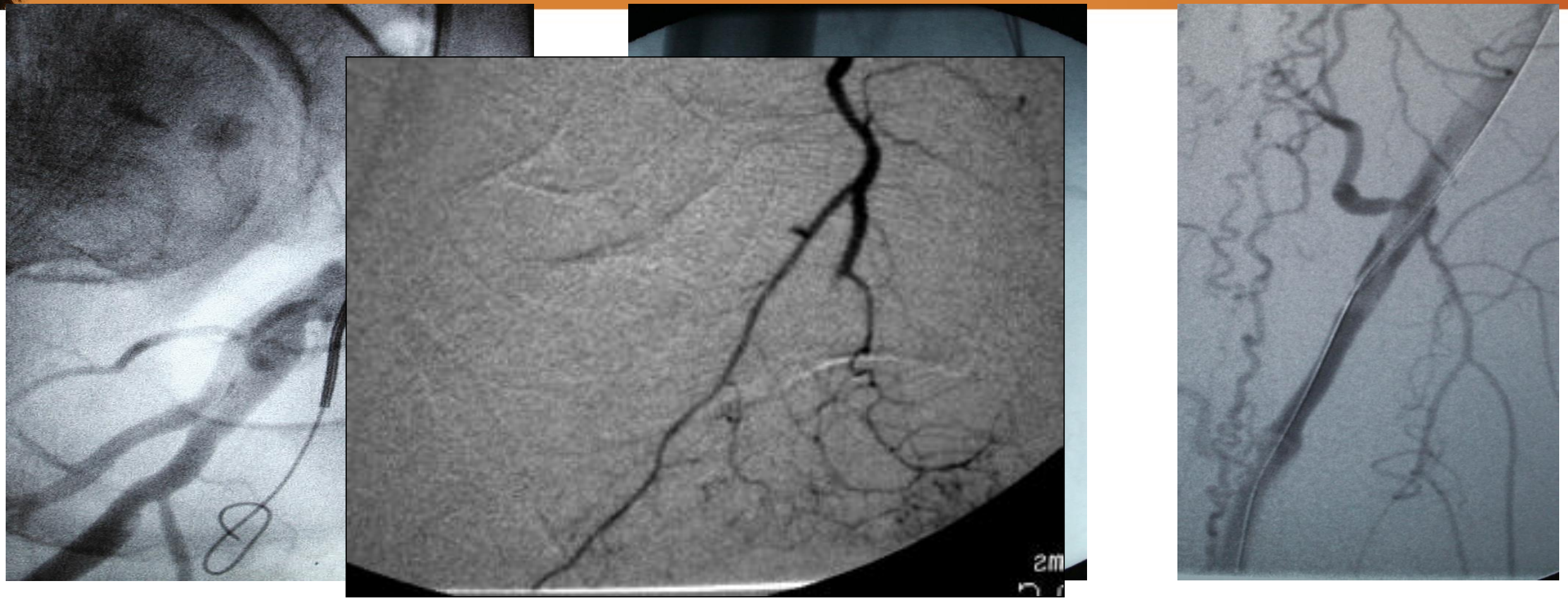




TPA, angiojet, anticoagulation



Wish I had used a filter!



Embolus to lateral plantar

Many of these remain subclinical-we don’t know the long-term damage.

Problem of distal embolization

Reports of Embolization During Angioplasty/Stent Procedures and Thrombolytic Therapy for Treatment of Peripheral Artery Occlusive Disease

	N	Distal Embolization	Additional Treatment
Lin[10]	493	8 (1.6%)	Surgical revision
Jahnke[15]	328 (226 OTW, 102 RX)	4 (1.8%) OTW 0 (0%) RX	Aspiration
Matsi[17]	295	11 (2.7%)	NA
Wholey[20]	237	9 (3.8%)	2 amputations
Matchett[13]	80	15 (19%)	4 amputations
Uher[12]	76	2 (2.6%)	Surgical revision
Chalmers[19]	72	6 (8.3%)	Thrombectomy
Dyet[11]	43	1 (2.3%)	Surgical revision

Muller-Hulsbeck et al. J Endovasc Ther 2009;16:I163

Clinically apparent intra-procedural embolization Ranges from 2-19% overall
Larger series of fem-pop interventions for PAD=2-4%

Lower Extremity Filters: Rationale

- Manage embolization:
  - carotid and coronary vein graft stenting.
- As more complex lower extremity lesions are treated with endovascular techniques the risk of embolization increases.
  - Now also applied to aortic arch.
- Quality of runoff is a significant determinant of limb salvage and also the ability to proceed with future options.

Lower Extremity Filters

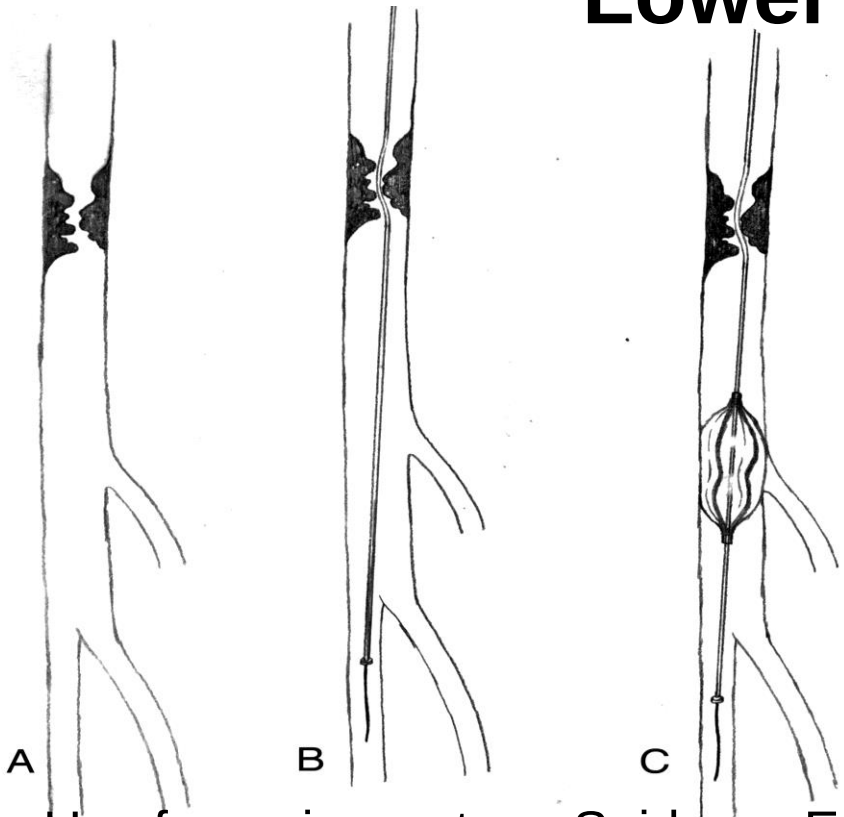
Author	N	Indication	Debris	Predictors	Comment
Schneider et al Veith, 2008	45	Selective	79%	Atherectomy ISR	Filter occlusion 15%
Allie et al TCT, 2008	115	Selective	70%	Atherectomy Occlusion	>2mm in 24%
Shammas et al JEVT, 2008	40	Primary	55%	Atherectomy	>2mm in 45%
Karnabatidis JEVT, 2006	48	Primary	58%	Occlusion Long lesion Thrombectomy	>3mm in 12%

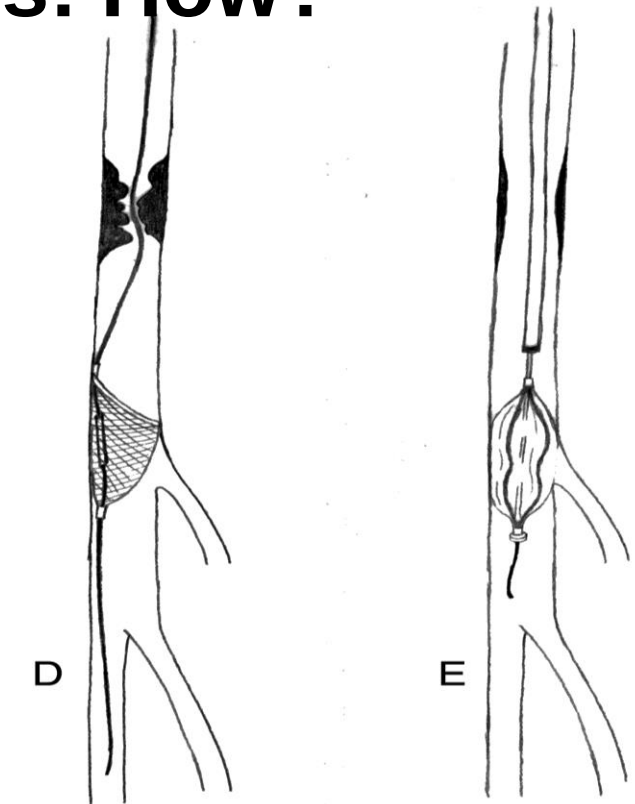
When to Use a Filter?

Complex Lower Extremity Lesions

- Atherectomy: Directional, Rotational, Laser
- Embolizing lesions
- Thrombus removal: with percutaneous thrombectomy
- ISR and occluded stents
- Recent SFA occlusion (high thrombus content)
- Long segment lesions?

Lower Extremity Filters: How?

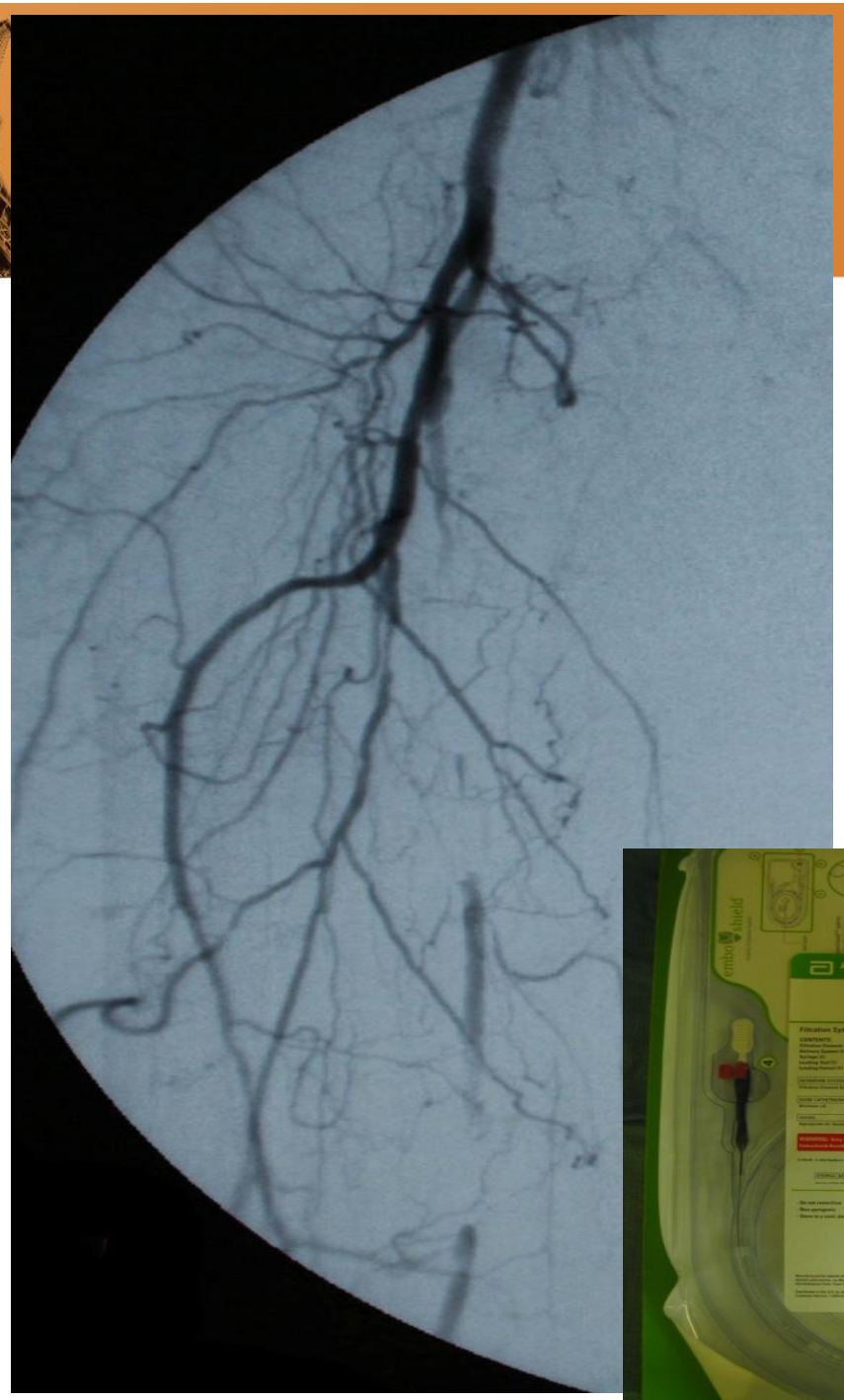


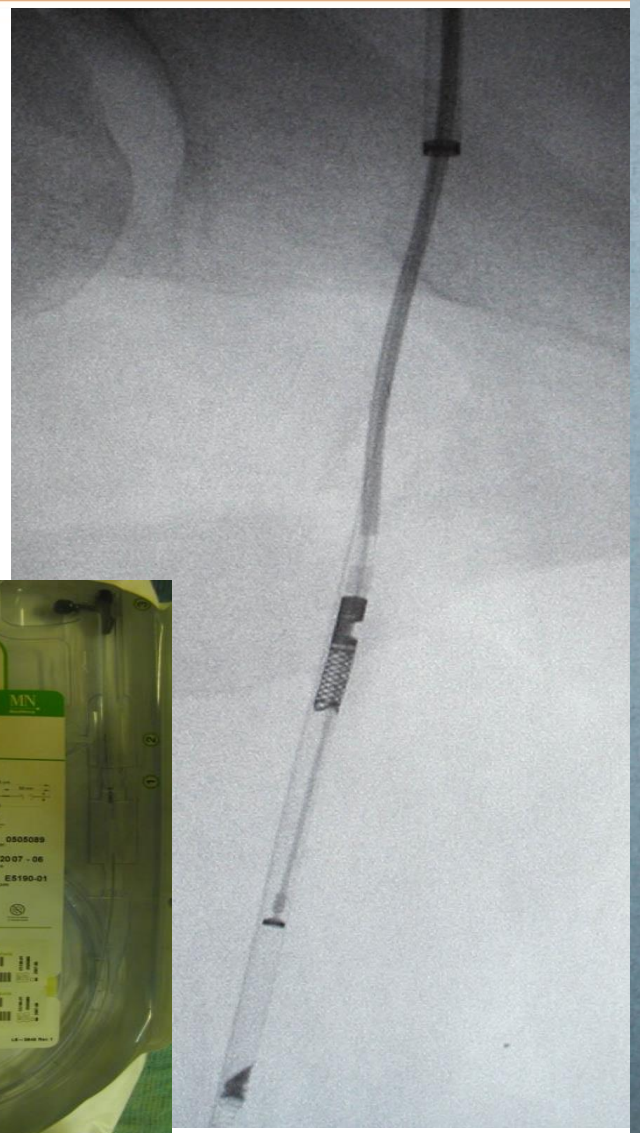


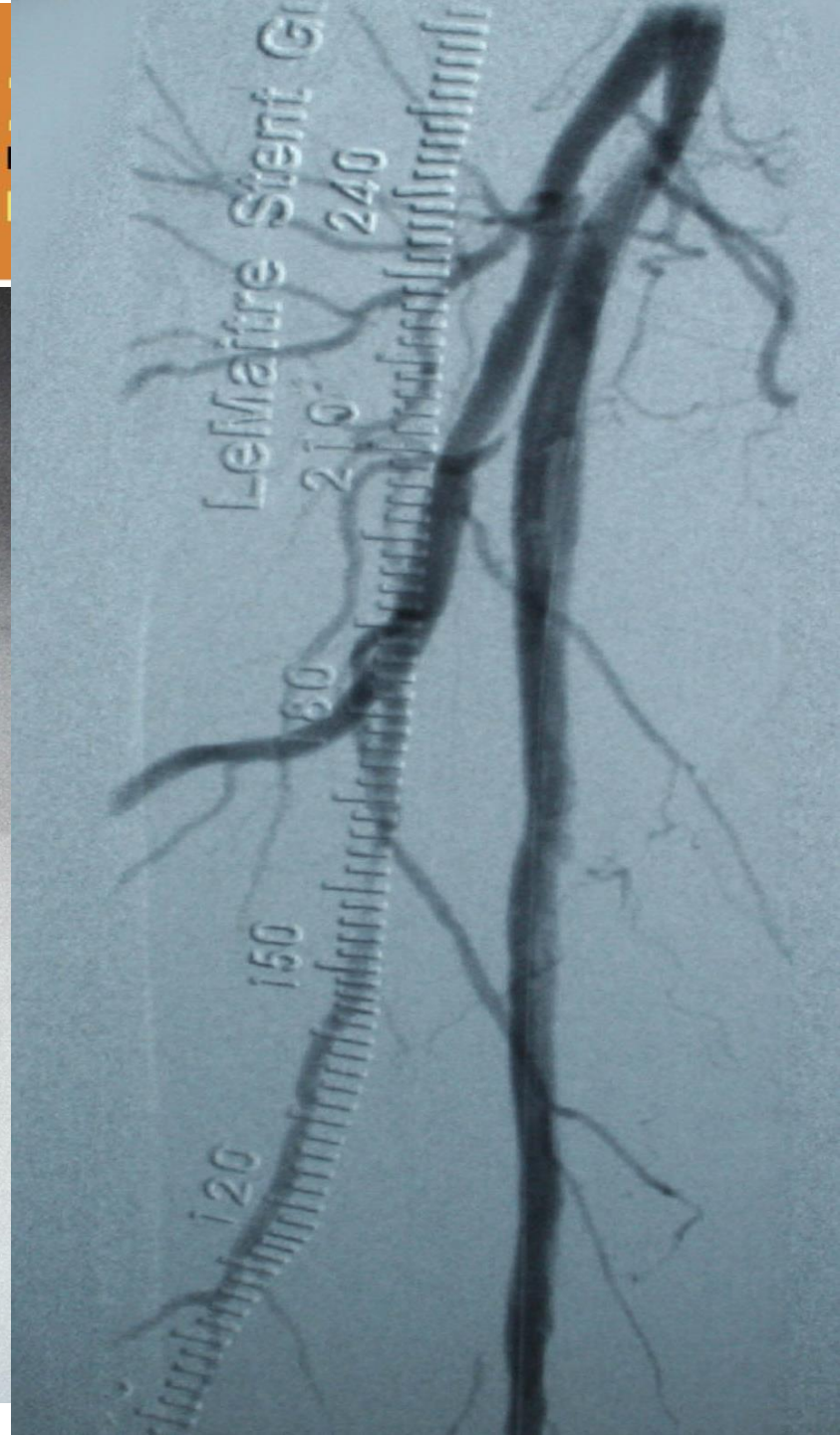
Use free-wire system: Spider or Emboshield
Place wire in tibial, park filter at trifurcation
Aspirate prior to removal

Disadvantages: Wire may not be ideal
If wire must be exchanged, filter must be removed
Filter may move during case

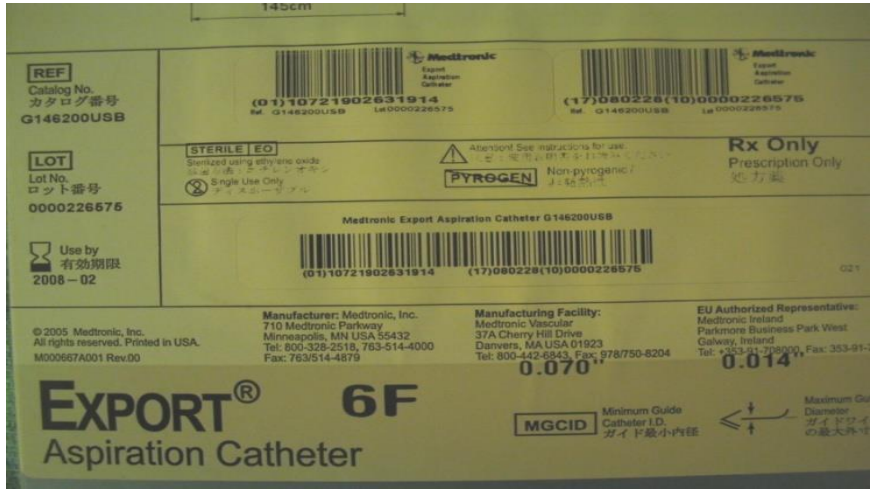
Silverhawk atherectomy of long SFA lesion





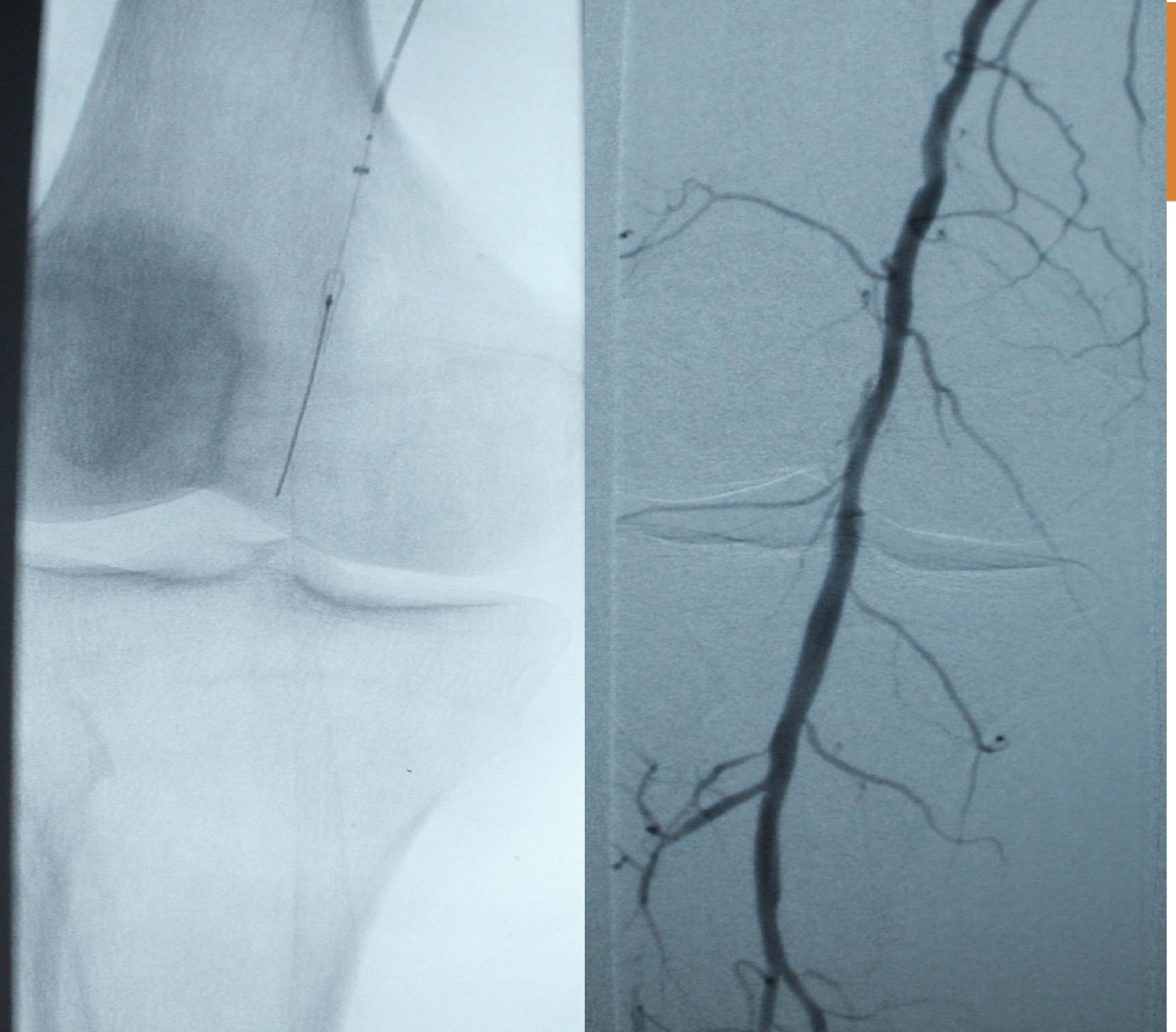


Filter



No flow due to occluded filter

After aspiration of filter



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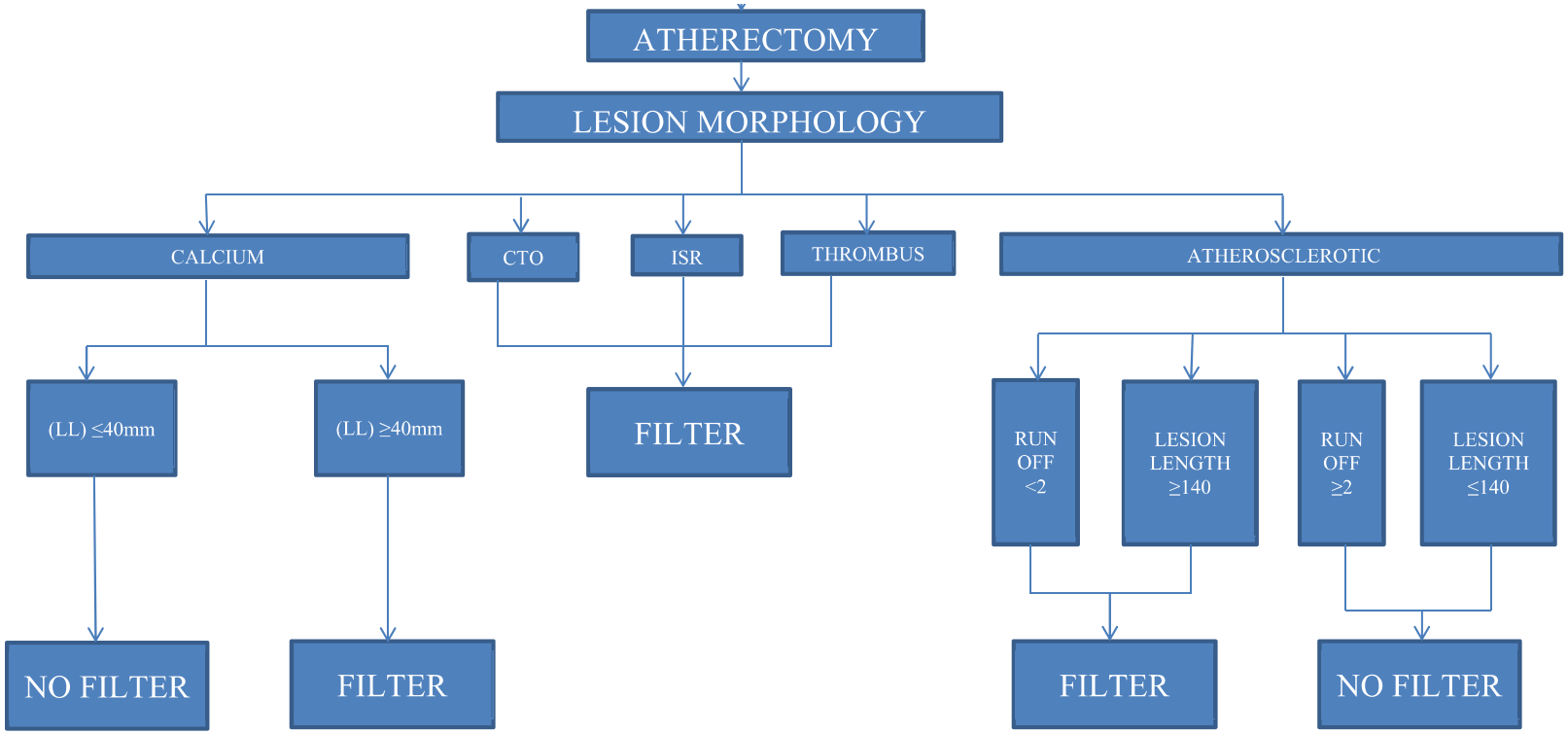
Algorithm for Filter Use with Atherectomy

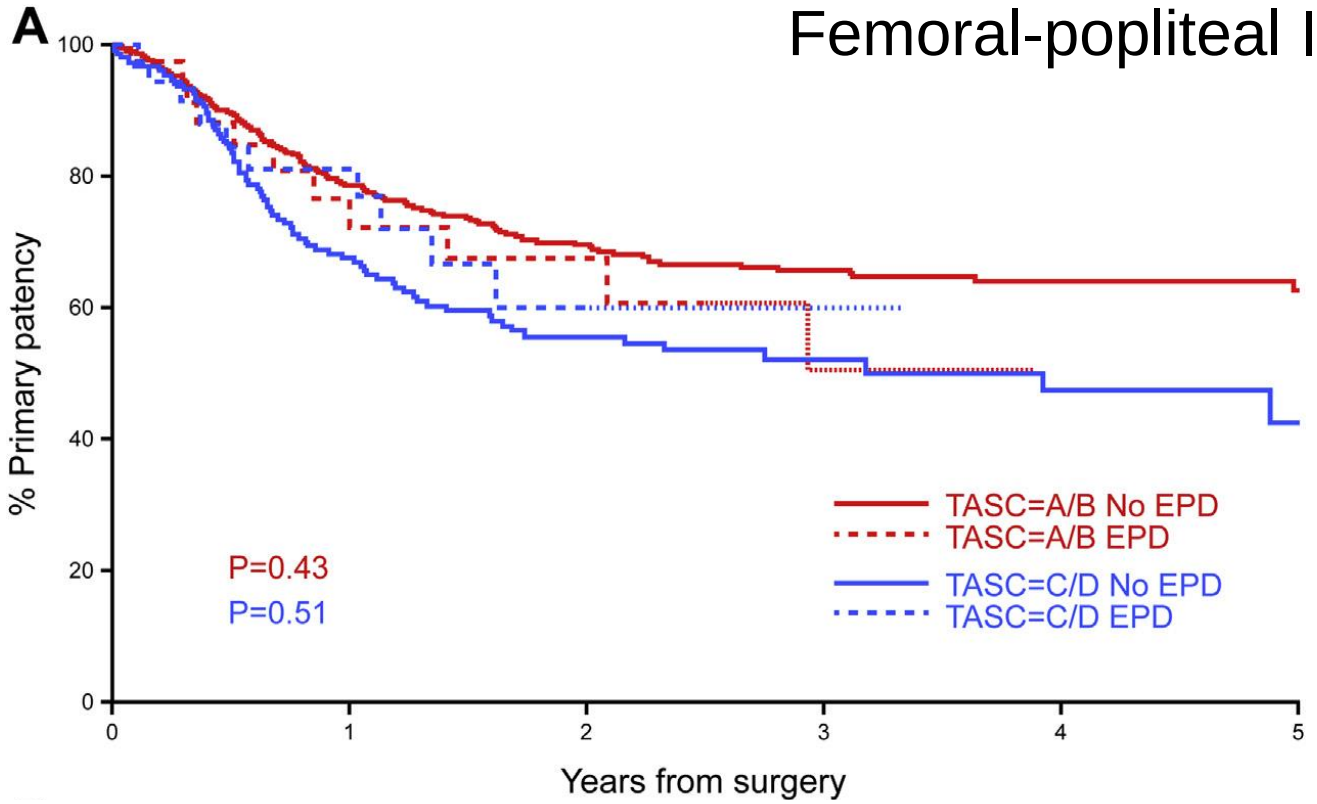


Higher risk of emboli

CTO
ISR
Thrombus
Long lesion >140mm
Calcified lesion >40mm

Krishnan et al. JACC Intv 2017;10:403

Femoral-popliteal Interventions with and without Filters



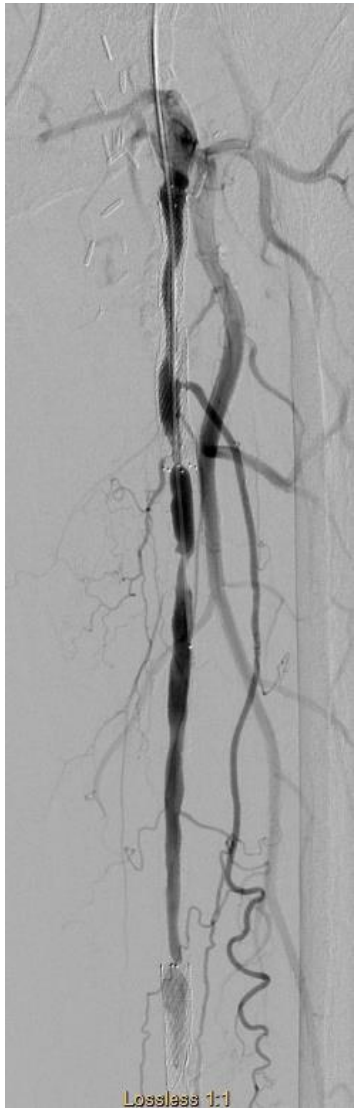
566 patients,77 treated with Filters
4% of patients had clinically significant event
Emboli associated with occlusions
Debris retrieved 68%
2 patients had distal emboli despite filter

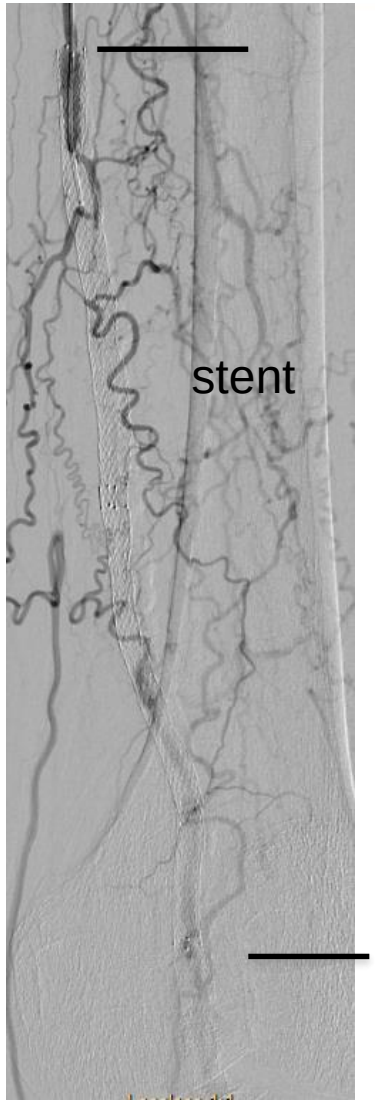
Emboli associated with re-intervention 21%
Amputation at 30d: 11%

Mayo experience
No difference in long term patency: filter vs no filter

Mendes et al. J Vasc Surg 2014:59:359

Long-segment occluded stent with poor runoff

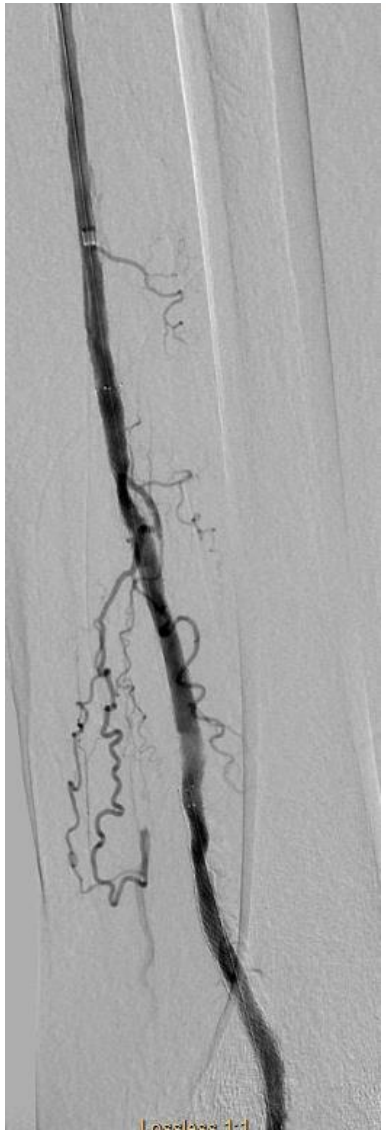


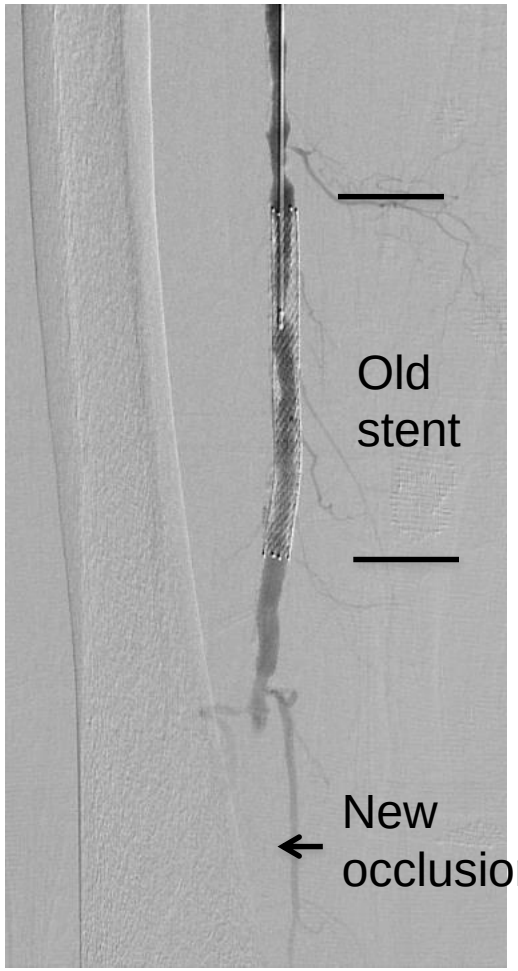


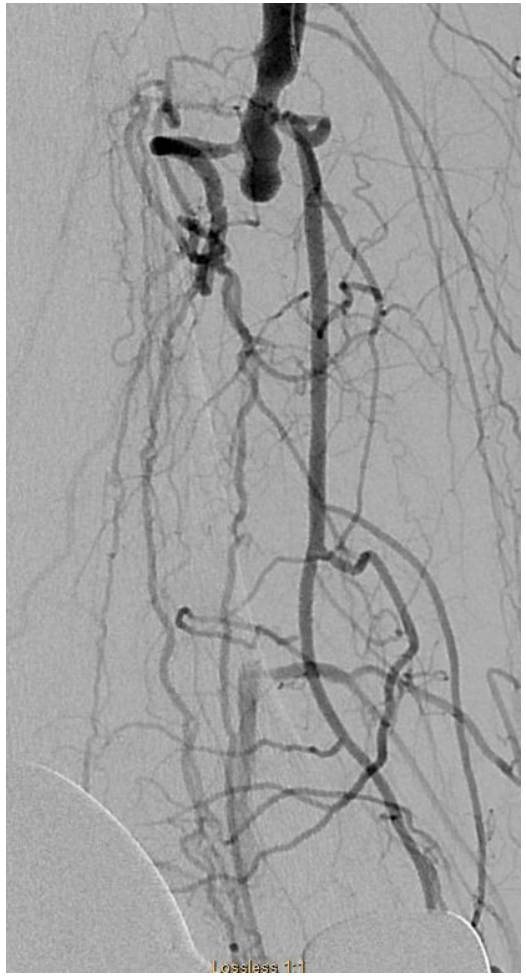
Diseased runoff

Reconstituted P1/P2 at distal end of occluded stent

Spider filter in BK popliteal







Emboshield NAV6

Sudden onset rest pain with occlusion P1.
Patent but diseased SFA stent. Slow filling of runoff vessels.

Lower Extremity Filters

Conclusion

- Will likely assume increasing role.
- Selective use of filters is warranted:
  - more likely to be helpful when managing complex lesions.
- Compelling case can be made for filters during:
    - Atherectomy, embolizing lesions, thrombus removal, ISR, recent occlusion, (long segment/TASC D lesions-not clear)