Step by step
Hybrid procedures in peripheral obstructive disease

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Disclosure

Speaker name:

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I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

I do not have any potential conflict of interest
Why hybrid procedures?

• About 14% of the population over 70 years is affected by POD

• Approximately 10% of these patients have multilevel disease and need aortoiliac and infrainguinal revascularization

Norgren L et al., J Vasc Surg 2007, 45, 55-67
Harris PL et al., Br J Surg 1985, 72:317-20
Open surgery in multilevel POD

- 450 Patients with complex limb threatening POD undergoing aortic inflow plus complex outflow procedures like profundaplasty and/or composite bypass conduits:

Morbidity rate 84.2%
Mortality rate 47.4%

Open surgery with simultaneous inflow and outflow bypasses is associated with high morbidity and mortality

Hybrid Techniques

Minimal surgery + Angioplasty (inflow/outflow)
Hybrid Techniques

+ inflow angioplasty

CFA
endarterectomy

+ outflow angioplasty

Femoral-femoral Bypass

Femoro-popliteal Bypass

Distal origin Bypass
Hybrid Techniques

open revascularization

endovascular techniques
What lesions and what patients do we treat in hybrid procedures?

- Multilevel atherosclerotic disease
- Centerpoint mostly CFA
- Cardiovascular and pulmonary high risk patients
- Critical limb ischemia Rutherford 4-6
- TASC B-D lesions
How do we treat?

- dedicated endovascular suite
- both groins sterile prepared

CFA endarterectomy and closure with bovine patch
1. Classical Hybrid case: Occlusion of CFA, central PFA and SFA

- 63 y/o male Pt.
- non-healing calf ulcer PAD  Rutherford 6 on the right side
- Multiple cardio-vascular risk factors
- COPD Gold III
Angiography

Occlusion of CFA and central PFA

Occlusion of SFA
CFA endarteriectomy first

Extensive endarteriectomy of CFA, PFA, and short segment SFA

Closure with bovine patch
Angioplasty

Cross-over access to the right SFA crossing the lesion with 0.018” PT2 wire/multipurpose catheter

PTA of SFA and Implantation 6/60 Nitinol Stent
2. CFA endarterectomy + Aorto-iliac angioplasty with bifurcated Endograft

- 82 y/o male Pt.
- CLI on the left side, PAOD Rutherford 3 on the right side
- Multiple cardio-vascular risk factors

Chronic Occlusion of left CIA, EIA, CFA
2. CFA endarterectomy + Aorto-iliac angioplasty with bifurcated Endograft

Retrograde puncture of the patch and placement of a 6Fr Sheath

Direct angiography of the femoral bifurcation
2. CFA endarterectomy + Aorto-iliac angioplasty with bifurcated Endograft

Retrograde access through the Patch to the left EIA after TEA (0.035” Terumo Stiff wire/multipurpose catheter)

Post Balloon dilatation (Admiral 9/40mm)

Endograft at the level of the renal arteries
2. CFA endarterectomy + Aorto-iliac angioplasty with bifurcated Endograft

Kissing Stent(Advanta™ V12 9/59mm) of the aortic bifurcation

Final Result
3. CFA endarterectomy + Remote SFA Endarterectomy

- 67 y/o male pt.
- CLI Rutherford 5 right side
- Multiple BTK arterial ulcers
- Failed endovascular SFA recanalization
- No venous conduit

Chronic Occlusion of right SFA
3. CFA endarterectomy + Remote SFA Endarterectomy

MollRing® Cutter transecting the distal intimal core

Distal intimal lap at the transection zone

After tacking the intimal lap with a self-expanding stent
We perform first the CFA-TEA and then the interventional part. Otherwise risk of subintimal wire passage in the iliac artery or SFA after puncture the occluded CFA. We try to cross the iliac lesion in an antegrade fashion via a cross-over or a brachial puncture when we fail the retrograde access.
We try to place the stents in the distal external iliac artery only **AFTER** CFA endarterectomy and patchplasty because of

- **poor clamping** for proximal bleeding control (crushing the stent)
- **thrombosis** of the stented iliac artery due to flow stagnation
Why Hybrid procedures?

- Less invasive procedure than open repair with decreased tissue trauma in high risk patients
- Overcome more complex anatomies in high-risk patients with CLI
- High initial technical success (up to 95%)
- Morbidity and Mortality even better than in OR despite selection bias
- Shortened hospital stay
- No need for extensive venous or xenogen graft material

Thank you for your attention!
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