Hybrid Procedures—when and how?

Holger Staab, MD
University Hospital Leipzig, Germany
Clinic for Vascular Surgery
Disclosure

Speaker name:

...............................H. Staab..................................................

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
What do we know about PAD?

- About 14% of the population over 70 years is affected by PAD

- 30% of patients with claudication have a progressive disease

- 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 PAD

- 450 Patients with complex limb threatening PAD
- The majority of complications and deaths occurred in patients undergoing aortic inflow plus complex outflow procedures (profundaplasty and/or composite bypass conduits), in which the morbidity/mortality rates were 84.2% and 47.4%
- Limb salvage was 97% at 30 d

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

Open Surgery versus Hybrid Repair in iliac and common femoral artery disease

• Hybrid Repair is similar to aorto-iliac bypass considering short term and long term patency and limb salvage rates

• Hybrid repair should be considered for all patients with extensive iliac femoral occlusive disease regardless the severity of TASC classification, particularly in those with high surgical risk

Criterias and Indications for hybrid repair

- Patients with RC 5 and TASC D lesions and those with major tissue loss RC 6 regardless of TASC lesion are better served with additional distal revascularization to improve limb salvage, reintervention and survival rates.

What lesions do we treat in hybrid procedures?

- Multilevel atherosclerotic disease in cardiovascular high risk patients involving the common femoral artery with critical limb ischemia Rutherford stage 4-6

- Multilevel aneurysmatic disease
Hybrid Techniques

+ inflow angioplasty

CFA endarterectomy

+ outflow angioplasty

Retrograde iliac endarterectomy with Moll Ringcutter

Femoral-femoral Bypass
How do we treat?

- dedicated endovascular suite
- both groins sterile prepared
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- dedicated endovascular suite
- both groins sterile prepared

First CFA endarterectomy and closure with bovine patch
1. 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
1. CFA endarterectomy + Aorto-iliac angioplasty with bifurcated Endograft

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

Direct angiography of the femoral bifurcation
1. 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
1. CFA endarterectomy + Aorto-iliac angioplasty with bifurcated Endograft

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

Final Result
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
2. Case multilocular symptomatic Aneurysm of AA, CIA, CFA and acute venous thrombosis of Iliac and femoral vein

- 64 y/o active male Pt.
- Swelling of left thigh
- Hypertension as single cardio-vascular risk factor

Aortic aneurysm: 37mm
CIA aneurysma left 46 mm
CIA aneurysm right 35 mm
AFC aneurysm right 39 mm
AFC aneurysm left 48 mm
Acute venous thrombosis of left CFV, EIV
2. Case multilocular symptomatic Aneurysm of AA, CIA, CFA and acute venous thrombosis of Iliac and femoral vein
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Right aneurysm of CFA

Left aneurysm of CFA
Endovascular treatment

Implantation Cook Zenith™ 26 mm aortic Prothesis

Cook ZBIS™ 12-45-12 in both common iliacs

Bard Fluency™ AII 13,5/30 mm left AII 12/60 mm

Connecting main body with Medtronic Endurant™ 16/125 mm and left Cook 16/74 mm
3. Case Multilocular symptomatic Aneurysm of AA, CIA, CFA and PA and acute venous thrombosis

Venous thrombektomie of CFV, GSMV, IEV and A-V Fistula
3. Case Multilocular symptomatic Aneurysm of AA, CIA, CFA and PA and acute venous thrombosis

Interposition of 8 mm Dacron Prothesis CFA right and left
Final result
Hybrid procedures—Synopsis

- Less invasive procedure than open repair with decreased tissue trauma
- 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

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