How Should Giant Popliteal Aneurysms Be Treated: Open vs Endo & Tips and Tricks

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Thanks Frank for your invitation

Popliteal Artery Aneurysms

Prevalence
1% of the general population
Most common type of peripheral aneurysms
Affecting men in 90% of the cases
Atherosclerotic origin predominantly

Popliteal Aneurysms

Elective Treatment
Diameter > 2-3 cm
Asymptomatic or Symptomatic
Presence of Thrombus
Popliteal Aneurysms

Complications

- Acute Limb Ischemia
  - Thrombosis
  - Distal Embolization
- Rupture
- Local Compression

Risk of Amputation

Amputation Rate

16 to 43% in patients presenting with severe ischemia

only 1% in elective repair

Distal Embolization

Extracted by Perioperative Fogarty Catheter Thrombectomy

The Surgical Rules

- Emergency Case
- Heparinization
- Runoff Status
- Revascularization Syndrome
- Limb Amputation
Saphenous Vein Bypass Graft
Knee Flexion
Dynamic Angiographic Control

Surgical or Endovascular Treatment?
Kropman RH, De Vries JP, Moll FL

49 studies
1 prospective randomized
6 prospective
42 retrospective

2197 patients / 2882 lesions

One Year Patency Rate
90% > Surgical treatment 75% > Endovascular

5 year Patency Rate > 85% with Vein Graft

The Endovascular Approach

Precise Stent-Graft Sizing
Appropriate Length
Avoid Multiple Stent-Grafts with Overlap

Endovascular Exclusion
Advantages

- Low Morbidity
- Short operative time and hospital stay
- Faster recovery
- No precluding surgical bypass later
Endovascular Exclusion

Drawbacks

Anatomical and physiological limitations

Occlusion:

local or extensive

Mechanical Complications:

dislocation & stent fracture

Stent Fractures at the Overlap Zone

Stent fractures in the Hemobahn/Viabahn stent graft after endovascular popliteal aneurysm repair


78 popliteal aneurysms in 64 patients
Stent fractures in 13 patients: 16.7 %
Mean follow-up 50 months (1 to 127 months)

Younger Age = Predictor for stent fracture

How to decide between endovascular and open repair of popliteal aneurysms?

Prof. Eric L.G. Verhoeven, MD

We have moved away from preferential endovascular treatment for all patients ...
We pay more attention now to unfavorable anatomy ...

Unfavorable Anatomy

Large Aneurysm > 5 - 6cm
Severe Tortuosity
Impaired Distal Run-off
Mega-Dolicho-Artery
Essential Large Collaterals

Safer Surgical Approach

78 years old man

Excellent general condition
Left lower limb pain & oedema
No previous history of claudication

Colour Duplex Scan Examination

Initial Diagnostic of DVT

Conventional Diagnostic Angiography
Conventional Diagnostic Angiography

- Inner Diameter
- Maximal Inner Length

Conventional Diagnostic Angiography

- Distortion / Angulation

Decision of Open Repair

**The Reasons**

- Large Diameter > 60mm
- Vein Compression / Risk of DVT
- Tandem Aneurysmatic Lesion
- Associated Stenosis
- Anatomy / Distortion - Angulation

Surgical Procedure

- Median Posterior Approach in Ventral Decubitus

Surgical Procedure

- Compressive Adherence to Popliteal Vein
Massive Internal Mural Thrombus

PTFE Bypass Graft

**Hight Risk of Thrombo-Embolic Complications**

Bypass Graft

**End-to-End Anastomosis**

Postoperative MRA

**Clinique Chirurgicale Val d’Or**

**Conclusion**

Evaluation of Patient Status
Decision of Operation
*Endovascular, Open or Hybrid*
Surgical Conversion
Follow-up

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