Value of Preliminary Selective Lumbar and Inferior Mesenteric Artery Embolization to Prevent Type 2 Endoleaks after EVAR: When it is Indicated, Risks and 3-Year Results

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Disclosure

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- None

Incidence of Type 2 Endoleaks

Risk Factors for Type 2 Endoleaks

Preoperative measures: embolization of the aortic branches

Intraoperative measures: direct embolization of the aneurysm sac

Natural History and Reinterventions for Type 2 Endoleaks

The natural history is poorly understood. Some experts consider type II endoleaks to be benign, whereas others have implicated them as a cause of late rupture.

Several treatments are available: conversion to open repair, embolization and laparoscopic clipping.

The optimal management and its long-term success is currently unknown.

Patients need continuous surveillance after EVAR to detect aneurysm growth and endoleaks which increases the overall costs of AAA treatment.

Prevention of Type 2 Endoleaks


Selective LA and IMA Embolization

Occlusion:
- LA >2mm
- IMA

No Occlusion:
- LA with ostial stenosis
- LA arising from the neck, to be covered by the Stent graft

Cannulation of the LA and IMA

"The tower of power"

Diagnostic Catheters
Guiding Catheters

Occlusion of the Ostial Segment of LA and IMA

Coils
Vascular Plug

No particles or fluids (CAVE: distal embolization and risk of SCI)

Technical Aspects and Challenges

- Kinked access vessels
  - “reinforced tower of power” and buddy wire

Technical Aspects and Challenges

- Very large aneurysms sac:
  - “open” the angle of a diagnostic catheter with a guiding catheter to reach the aortic wall

Technical Aspects and Challenges

- Loss of coils
  - Removed with a snare
EVAR after Occlusion of Aortic Branches

Leipzig Experience

Infrarenal Aortic Aneurysm
September 2014 - September 2017
(n=201)

Emergency Treatment
(n=40)
19.9%

Planed Treatment
(n=161)
80.1%

Angiography pre EVAR
(n=120)
64.16%

No Angiography pre EVAR
(n=32)
15.92%

No Occlusion of LA and IMA
(n=117)
58.2%

Occlusion of LA and IMA
(n=12)
5.9%

- Severe Kinking of iliac Arteries (n=4)
- Severe obesity (n=4)
- Logistic reasons (n=4)

Angiography post EVAR
(n=104)
51.84%

Unable to pass the stent graft
(n=7)
3.46%

Patients Characteristics

Variables | No | %
---|---|---
Total | 117 | 100
Men | 105 | 89.74
Age (years) | 71.5±8 | 60.81
History of Hypertension | 113 | 96.58
Diabetes | 43 | 36.75
Coronary Artery Disease | 45 | 38.46
Hypercholesterolemia | 50 | 42.74
Smoking | 70 | 59.83
COPD | 21 | 17.95
FIBO | 35 | 29.91
GFR <60 | 24 | 20.51
BMI (kg/m²) | 28±5 | 24.04
Previous abdominal surgery | 22 | 18.80
AAA Diameter, mm | 55.11±7.65 | 51.66
Relevant LA, median (min, max) | 4 (1-6) | 3.9
Relevant LA, (n) | 452 | 38.5
IMA, (n) | 85 | 7.25

Occlusion Sessions

Same session with EVAR: 18 Pts (15.3%)

Variables | n (%) | occluded LA, median (min,max) | 3 (1 - 6)
occluded LA, n (%) | 361 (79.86)
occluded IMA, n (%) | 74 (87)

Complications | n (%)
Backpain | 9 (7.7)
Abdominal pain | 2 (1.7)

EVAR after Branch Occlusion

- Time Coiling-EVAR (days): 37.8 ± 34.9
- Local anesthesia: 99 Pts (84.61%)
- Percutaneous access: 117 Pts (100%)

Type of Stent graft | N | %
---|---|---
Ovation | 44 | 38
Zenith | 27 | 23
Endurant | 17 | 15
Excluder | 10 | 9
Jotec | 10 | 9
Aorfix | 5 | 4
Altura | 2 | 2
InCraft | 2 | 2

30 Days Results

- EndoLeak Type 2: 2 Pts (1.7%)
- EndoLeak Type 1: 2 Pts (1.7%)
- Limb occlusion: 1 Pts (0.85%)
- Pseudoaneurysm: 3 Pts (2.5%)
- Conversion to open repair: 0 Pts
- Death: 0 Pts
Conclusions

- Routine embolization of aortic branches of AAA before EVAR is safe and technically feasible.
- This procedure is associated with a reduction in type 2 endoleaks.
- We are collecting long term data to determine whether this benefit is sustained over time.

Thank you!

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