Update On The MLFM Stent For Treatment Of Complex Aortic Aneurysms Is Its Star Rising?

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DISCLOSURES
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Principle
Laminar flow → Thrombus in aneurysm sac & Side branches remain patent

Focus presentation
1) What are the pros and cons of MFM stents for use in aortic aneurysms?
2) How are the IFU in relation to Complex Aortic Aneurysm?

Results from clinical studies (1)
Prospective, nonrandomized STRATO trial for TAAA treatment (n=23)
12 mo FU in 20/23 patients:
- 15/20 stable thrombosis and patent side branches
- No ruptures
- 1 year survival: 96%


Results from clinical studies (2)
Analysis of European MFM registry for (T)AAA or type B dissection (n=103)
30-day results: 5.4% morbidity, 0% mortality
1 year FU results (median FU 6 months):
• No ruptures
• 95% side branches patent
• Intervention free survival 89%
• Aneurysm-related survival 92%, all-cause 87%

Case of aortic rupture (1)
Rupture 1 year after MFM treatment of pseudoaneurysm at proximal anastomosis (after open repair 10 years ago) → fatal VT intraoperatively

Case of aortic rupture (2)
Aortic rupture 18 months after primary treatment with MFM → reintervention → death of MI 4 days post-OR

MARS: Utrecht Experiences
CASE OF “SUCCESS”

4 mnths 81x44
12 mnths 77x43
CASE OF “SUCCESS”

Advantages

• Minimally invasive
• Side branches remain patent
• Easy to deploy
• Available off the shelf

Disadvantages

• Foreshortening, unpredictable/hard to control
• Should only be used within IFU!

- Primary treatment
- No rupture or contained leak
- No infection/mycotic aneurysm
- No myoproliferative disorder/coagulopathy
- No stenotic side-branches
- Price setting
• Lack of sac thrombosis?

Is Sac Thrombosis good or bad?

Figure 7: Change in (A) the ratio of aneurysm flow volume to total aortic lumen volume and (B) the ratio of thrombus volume to total aortic lumen volume for 17 patients with volume data at baseline and 12 months.

Vaislic et al. JEVT 2014;21:85-95

Is Sac Thrombosis good or bad?

2x ratio’s

“total aneurysm volume”

Vaislic et al. JEVT 2014;21:85-95
Intraluminal Thrombus is associated with Disruption of Wall Integrity

CONCLUSIONS:

Intraluminal Thrombus (ILT) appeared to be associated with aortic aneurysm thrombus. ILT thickness was positively associated with VSMCs apoptosis and elastin degradation and was positively associated with MMP-2 concentrations in the underlying wall. This suggests that ILT thickness affects AAA wall stability and might contribute to AAA growth and rupture. ILT thickness was not correlated with markers of lipid oxidation.

CONCLUSION:

Volumetry detects sac size changes that are not reflected in diameter measurements. Vice versa, diameters can increase without a total volume increase, which might indicate a variety of morphological aneurysm changes. Volume measurements should be performed in addition to diameter measurements.

Conclusion

• MFM stents perform well at short-term follow-up, if used selectively and within IFU

• Before mid- and long-term data from prospective controlled registries are available, its use remains controversial