Aortic remodeling after thoracic endovascular aortic repair of type B aortic dissections

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Early Signals of Remodeling Benefit in Acute Type B TEVAR

Pre & Post GORE TAG Device Implantation

Early TAG in 04-01 trial!

cTAG 08-02 trial!

Complicated Rupture

Awesome!!

Excellent Aortic Remodeling !!
Acute Type B “High Risk Un-Complicated” with Distal Aortic Remodeling

Very compelling!!

Consideration of early intervention appears reasonable in following scenarios:

- Initial aortic diameter $\geq 4.0$ cm with patent false lumen
- $\geq 22$ mm false lumen in proximal DTA
- IMH with PAU in proximal DTA
- Recurrent/refractory pain or HTN
- Size of Entry Tear

Also Young (44 yrs old) and on 4 drug anti HTN drugs
When Should We Intervene on Uncomplicated Type Bs?

- Penn Experience in 203 Patients
- Complications rates higher <2wks after onset
- >2 weeks and <90d appears ideal

<table>
<thead>
<tr>
<th>Timing (vs hyper acute)</th>
<th>Adjusted OR</th>
<th>95% CI</th>
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</thead>
<tbody>
<tr>
<td>Acute</td>
<td>0.74</td>
<td>0.31-1.72</td>
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<tr>
<td><strong>Sub Acute</strong></td>
<td><strong>0.18</strong></td>
<td><strong>0.04-0.83</strong></td>
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<tr>
<td>Chronic</td>
<td>0.33</td>
<td>0.10-1.11</td>
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Key Question

- If TEVAR for Type B is safer in the subacute period, can we still expect excellent remodeling in this time period?
Acute (<90d) vs Chronic Remodelling

In Acute Phase:

- Better TL remodelling
- Similar FL remodelling
- Better FL Thrombosis

- Dohle D, Desai ND. EJCTS2019
Chronic Dissection Concepts: OPEN DTA/TAAA vs TEVAR

OPEN TAAA
- Aortic replacement
  - Max. invasive but definitive
  - Circ. Arrest, cpb, organ and spinal ischemia

TEVAR
- Aortic Remodelling concept
  - Exclude entry tear
  - Increase size of true lumen
  - Thrombosis of false lumen
  - Prevent growth
  - Prevent aortic rupture
Factors Associated with Poorer Outcome:

- More Proximal Extent or Entry Tear
- Less Viscerals off the True Lumen
- More than 2 Lumens
- More Distal Fenestrations
- Extension into Iliacs
Predictors of Positive Aortic Remodeling with TEVAR

Minimal fenestration in distal thoracic aorta

All 4 visceral branches from TL
Aortic Remodeling: Thrombosis of FL
Penn Sizing Algorithm:

In general – size to the Maximum Total Aortic Diameter
40mm Graft
Predictors of Poor Aortic Remodeling with TEVAR

Complex multiple fenestrations in distal thoracic aorta

All 4 visceral branches NOT from TL
Continue Distal Aortic Degeneration

1 month

4 years
How to TEVAR Complex Anatomy

False Lumen Interventions
• FL Plug
• Knickerbocker
• Intentional Fenestration
• Closing fenestrations
  • Plugs, Branches
• Paving whole Aorta
Conclusions

- TEVAR is effective in FL remodeling in Acute and Chronic Type B Dissection
- TEVAR is Safer in the Subacute Period
- Complex distal anatomy requires more complex solutions and TEVAR alone is not enough