Background

• Takayasu’s arteritis (TA) is an inflammatory large vessel vasculitis of unknown origin.
• Originally described in young Japanese females
• Incidence in North America is rare
• Vascular inflammation can lead to arterial stenosis, occlusion or aneurysmal formation.

Mayo Clinic Bypass Series for Takayasu’s

<table>
<thead>
<tr>
<th># of Patients</th>
<th>51</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age</td>
<td>38 (10-72)</td>
</tr>
<tr>
<td>Female</td>
<td>44 (86%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>34 (67%)</td>
</tr>
<tr>
<td>AA</td>
<td>3 (6%)</td>
</tr>
<tr>
<td>Asian</td>
<td>3 (6%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>other/unkn</td>
<td>9 (18%)</td>
</tr>
</tbody>
</table>

Early Complications (< 30 days) in 51 Patients

- Mortality 2
- Graft Occlusion 2
- Graft Stenosis 1
- Graft Infection 1
- Recurrent Laryngeal Nerve Injury 1
- Thoracic Duct Injury 1
- Aneurysm Rupture 1

Late Complications (> 30 days) in 51 Patients

- Graft Stenosis 12
- Graft Occlusion 4
- Graft infection 2
- Pseudoaneurysm 2

Mean Follow Up 74 months (1 - 265)

- Mortality 2
- Graft Occlusion 2
- Graft Stenosis 1
- Graft Infection 1
- Recurrent Laryngeal Nerve Injury 1
- Thoracic Duct Injury 1
- Aneurysm Rupture 1
Graft Outcomes by Disease Activity

<table>
<thead>
<tr>
<th>Disease Activity</th>
<th>1st Patency</th>
<th>2nd Patency</th>
<th>Re-Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Dz</td>
<td>50%</td>
<td>63%</td>
<td>58%</td>
</tr>
<tr>
<td>Non-Active Dz</td>
<td>81%</td>
<td>97%</td>
<td>25%</td>
</tr>
</tbody>
</table>

\[ p = 0.0281 \quad p = 0.1267 \quad p = 0.0381 \]

Grafts in patients with unknown disease activity (3) or lost to follow up (6) were excluded from analysis.

Should Endovascular Therapy be Used for Takayasu’s Arteritis

- YES!....but where and when
- Let’s look at the data

Treatment Aortic Syndrome in TA
- 48 Mid aortic stenosis from TA (Che 2018)
- All treated with PTA+Stenting
- All Pre-dilated in a graded fashion
- Self expanding stents used

Stenting for MAS in Takayasu’s Arteritis
- Early Results
- 1 Dissection
- 1 RetroP Bleed

<table>
<thead>
<tr>
<th></th>
<th>PRE</th>
<th>POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean stenosis</td>
<td>81%</td>
<td>15%</td>
</tr>
<tr>
<td>Systolic gradient</td>
<td>71mmHg</td>
<td>14mmHg</td>
</tr>
</tbody>
</table>

Stenting for MAS in Takayasu’s Arteritis
- Long Term Results

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABI</td>
<td>0.75</td>
<td>0.92</td>
</tr>
<tr>
<td>Systolic BP</td>
<td>179</td>
<td>150</td>
</tr>
<tr>
<td>Anti HTN Meds</td>
<td>3.1</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Endo Treatment Renal Arteries in TA
- 19 patients with RAS (Gulcu 2017)
- All with RAS <70%
- All with uncontrolled HTN
- MRI or Doppler followup
Endo Treatment Renal Arteries in TA

- Stents used in 16/19 (84%)
- Restenosis 8/16 (50%)
- Treated all 8 again
- Re-restenosis in 2 (25%)
- 1 occluded Renal artery
- 94% patency at 8.3 years

Treatment of Supra-aortic Lesions in TA

- 14 procedures in 12 patients (Luo2017)
- PTA              PTA + Stent
  - Carotid 5 2
  - Subclavian 3 2
  - Innominate 1 1

Treatment of Supra-aortic Lesions in TA

- Results
- Early----1 “minor” stroke
- Long term
  - Primary patency @3 years-68%
  - Secondary patency @3 years-76%

When Endo Treatment for Takayasu’s

- Non-Active disease is best
- Unfit for open surgery
- Short lesions do better
- In active disease...urgent or emergent accept short term success as a bridge to open

Tips and Tricks for Endo Treatment in TA

- Use graduated balloon for PTA...start small
- Supra-aortic lesions...short inflations times
- DES?
- DCB?
- Covered Stents?