Ascending Thoracic Aorta: Postsurgical CT Evaluation
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GOALS
- Recognize several common surgical techniques and indications
- Identify normal imaging aspects of the postsurgical aorta
- Highlight frequent complications in the postsurgical setting

WHEN TO TREAT?
- Ascending aorta > 5 - 6 cm
- Descending aorta > 6 - 7 cm
- Marfan or familial > 4.5 cm
- Bicuspid valve > 4.5 cm
- Growth > 0.5 cm/year
- All symptomatic aneurysm

OVERVIEW
- How to choose?
  - Long and short-term outcome
  - Preserve valve
  - Surgery time -> ischemia - DHCA
  - Annuloaortic ectasia
  - Percentage of aneurysmal arch

SURGICAL TECHNIQUES
- OPEN REPAIR
  1. Supracoronary Graft +/- Valve
  2. Composite Artificial Graft
  3. Composite Biologic Graft
  4. Arch Repair

CLOSE REPAIR
- TEVAR
- Gore Tag
- Zenith TX2
- Talent

OPEN REPAIR
- Interposition - excision native aorta
- Inclusion - wrapping native aorta
- Inclusion
  - ↓ morbidity and mortality
  - Technically easier
  - Potential space - thrombus, flow or both
COMPONENTS

- Graft - hyperdense (wo contrast)
- Graft margin - ↑ attenuation felts
- Δ caliber

SUPRACORONARY GRAFT

INDICATIONS
- Ascending aortic aneurysm with aortic degenerative valve without dilatation of the sinotubular junction or sinuses of Valsalva
- Atherosclerotic origin

DESCRIPTION
1. Ascending aortic graft
2. Preservation of native coronary ostia
3. Valve replacement - Wheat Procedure

COMPLICATIONS
- Late development of aneurysmal and dissection of the native aortic root
- More common in annuloaortic ectasia (Marfan’s), collagen disease or aortitis in which a composite method is preferred
**COMPOSITE - BENTALL**

**INDICATIONS**
- Dilatation (or dissection) of the sinotubular junction or sinuses of Valsalva With aortic degenerative valve

**DESCRIPTION**
1. Ascending aortic + aortic valve composite graft
2. Anastomosis coronary arteries
3. Classic Bentall
4. Modified Bentall (Also button Bentall)

**COMPLICATIONS**
- Classic Bentall - pseudoaneurysm coronary anastomosis
- Modified Bentall - the button technique decreases incidence of pseudoaneurysm at the anastomotic site
- Pseudoaneurysm aortic proximal or distal anastomosis
COMPOSITE - CABROL

INDICATIONS
- When “button” techniques are not feasible
- Aortic dissection, annuloaortic ectasia, atherosclerotic aneurysm, poststenotic dilatation

COMPLICATIONS
- High mortality first 30 days (4-20%) in patients with aortic dissection
- Long term complications (uncommon) - coronary insufficiency from kinking of graft limbs or intimal hyperplasia, acute thrombosis of one limb of the coronary graft, detachment of the prosthetic valve, endocarditis

COMPOSITE - CABROL

DESCRIPTION
1. Ascending aortic + aortic valve composite graft
2. Second graft interposed between the coronary arteries and anastomized side-to-side to the composite graft
**COMPOSITE - ROSS**

**INDICATIONS**
- Aortic valve pathology in young patients
- Advantages over prosthetic valves: favorable hemodynamics, low risk of endocarditis, low thrombogenicity, no anticoagulant therapy, growth potential in children

**DESCRIPTION**
1. Replacement of the abnormal aortic valve
2. Replacement of aortic valve with patient’s own pulmonary valve
3. Pulmonary valve replace with cadaveric pulmonary valve

**COMPLICATIONS**
- Low mortality (2.5%)
- Aneurysmal dilatation aortic root

**ELEPHANT TRUNK**

**INDICATIONS**
- Extensive thoracic aortic aneurysm involving the arch and descending aorta
- Aortic dissection, annuloaortic ectasia, atherosclerotic aneurysm, poststenotic dilatation
**ELEPHANT TRUNK**

**COMPLICATIONS**

- First stage - mortality (~10%), aortic rupture, stroke (5.3%), neurological deficits, vocal cord paralysis, bleeding
- Interval - mortality (~8%) - rupture untreated segment
- Second stage - mortality (~7%), paraplegia
- Mortality without second stage ~30%

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**THANKS**