Valve Sparing Root Replacement: Reimplantation

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Objectives

• To understand the anatomic considerations for valve sparing root reimplantation procedure
• Outline the steps of the reimplantation procedure
• Appreciate the technical nuances of the procedure
• Review outcomes following the reimplantation procedure
Valve Sparing Root Replacement
AV Reimplantation: Step by Step

1. Root Preparation
2. Graft Sizing
3. Proximal suture line
4. Handling of the Prosthesis
5. Distal suture line
6. Leaflet coaptation assessment
7. Coronary reimplantation and distal anastomosis
AV Reimplantation: Anatomic Considerations
Root Preparation
Graft Sizing Methods
Graft Sizing: Optimal STJ Sizing Method

Optimal STJ Size + 4 to 5 mm = Graft Size
Graft Sizing: Commissural Height Technique
Graft Sizing Implications

• Undersizing
  – Prolapse of all cusps
    • May require correction and can be difficult to correct due to cusp restriction
  – AV gradient / stenosis – theoretic concern

• Oversizing
  – Flexible graft
  – Can typically accommodate to native valve size during the implantation

• Size Range: 26 – 34mm, most common: 28 – 32 mm

“Oversized is better than Undersized”
2. Contour of proximal suture line

- Tricuspid
- Bicuspid Type 0
- Bicuspid Type 1
Graft Preparation

N/L commissure

R/N commissure

Height of external limitation

LA roof
Graft Preparation
Case

• 26 y.o. male with Marfan Syndrome
Case

• 26 y.o. male with Marfan Syndrome
AV Reimplantation
Post Repair TEE
Post Repair TEE
Reimplantation

- VAJ remodeling and support
- STJ reduction and support
- Symmetric and Asymmetric
- Alter valve orientation in BAVs (180/180, 210/150)
- Internal and external support
- Facilitates cusp repair
- Preferred option in many subpopulations (e.g. Connective tissue disease, BAVs, Younger patients, etc.)
What is the ‘cost’ of reimplantation?

- Increased technical complexity
- Increased cardiac ischemia
  - 15 min increase in reimplantation over remodelling in experienced hands (117 vs. 102 mins)
- Aortic valve physiology and Sinuses of Valsalva
5 years post AV Reimplantation
Coupe dans la commissure

commissure

Coupe au bord de la commissure

commissure

Coupe au-dessus de la commissure
Summary

- Aortic valve reimplantation has evolved from a procedure for a dilated aortic root to a robust annuloplasty of the aortic valve.

- It permits remodelling, reduction, and stabilization of all elements of the functional aortic annulus and can facilitate cusp repair.

- It has been shown to be the preferred method of valve sparing root replacement in a variety of subpopulations.
THANK YOU!