UKS
Universitätsklinikum
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Aortic Root Repair - How to Start

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When to repair

reasonable

Root dilatation with tricuspid/bicuspid valve, prolapse of 1 or 2 cusps

Root dilatation with prolapse of all cusps, 1 to 2 fenestrations, unicuspid av

?

Root dilatation with retraction/calcium cusps

!

uncertain

Patient Selection:

Bicuspid or tricuspid aortic valve
Sinus diameter > 40 (45) mm
AV diameter < 28 mm (?)
Bicuspid av: orientation of commissures > 150°
Minimal or absent calcification

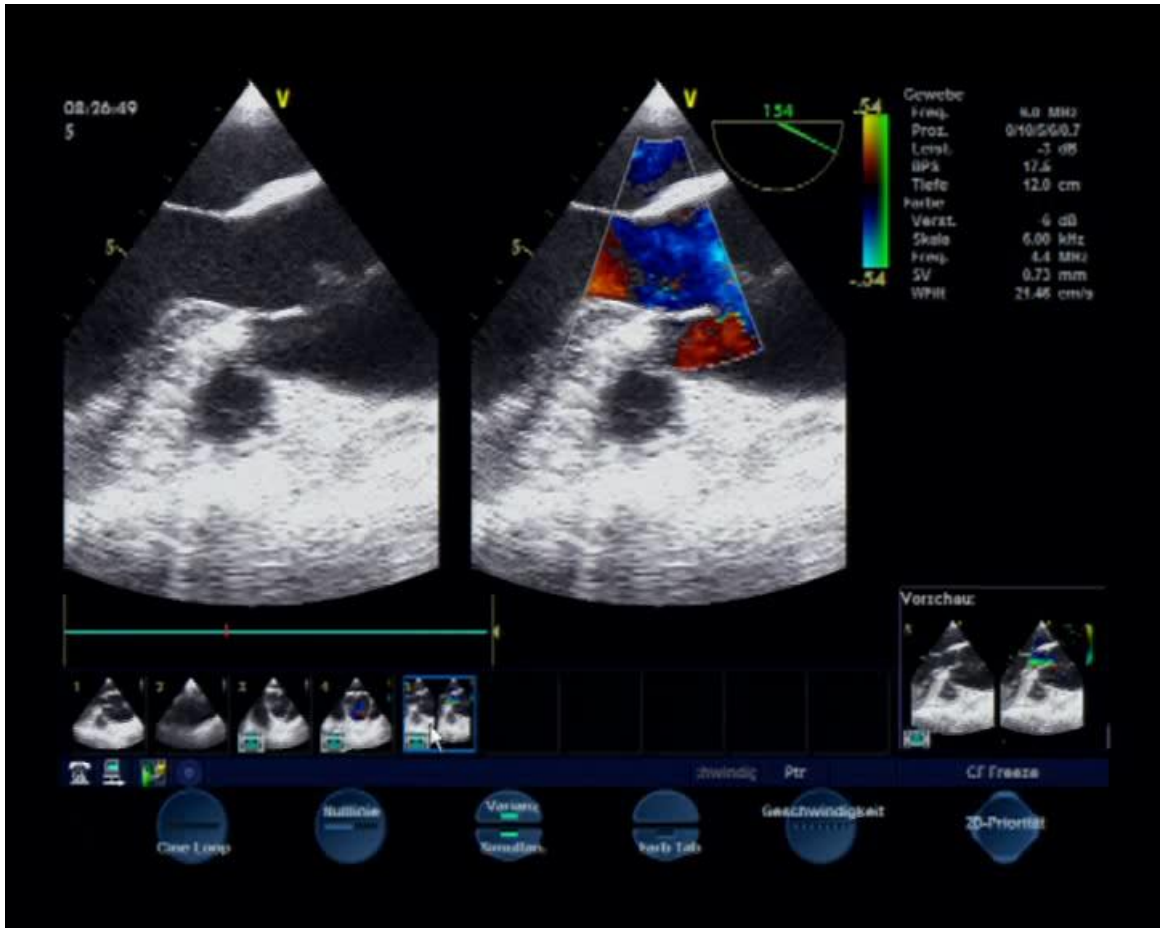
Root assessment:

TEE (short and long axis):
- AV diameter (?)
- ST diameter
- sinus diameter

Severity of AR, jet direction?

intraoperative:
- AV diameter

Root assessment:



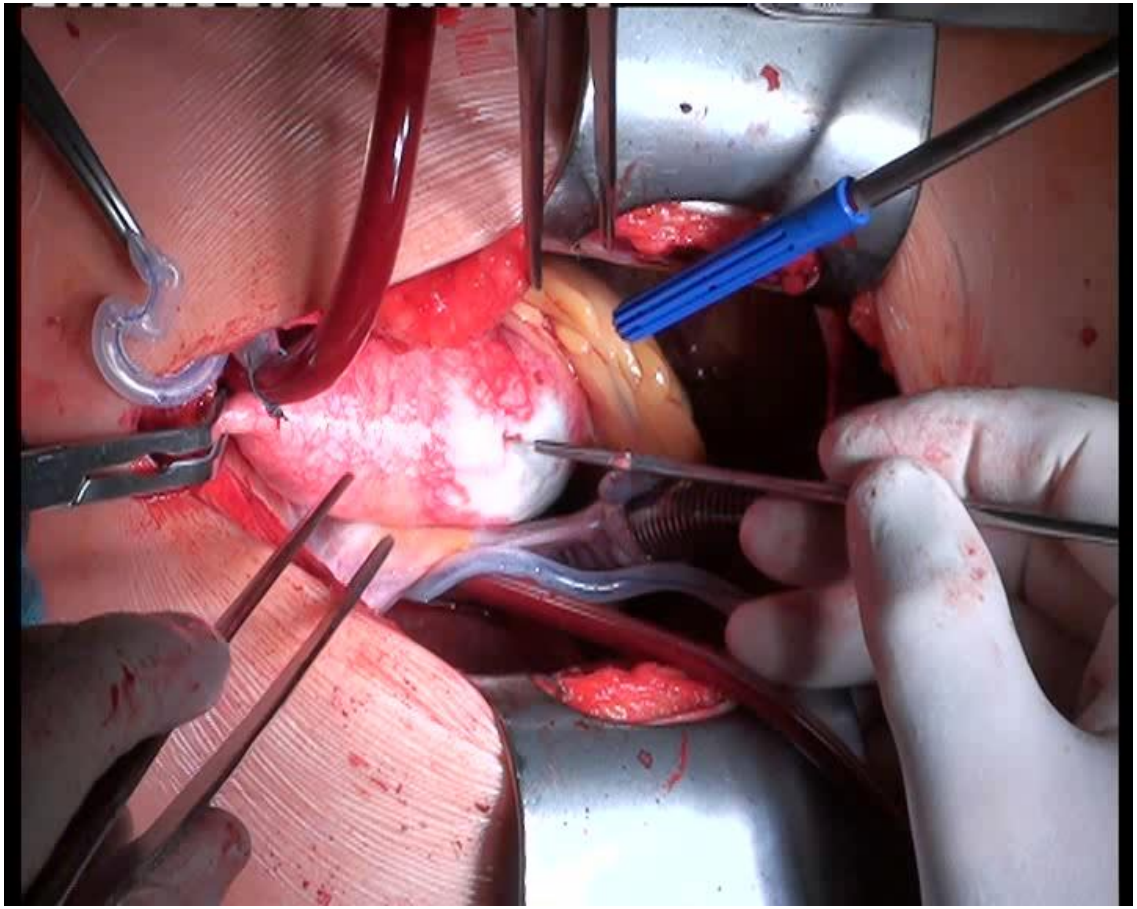
Operative Steps:

Exposure:

Standard cannulation
Longitudinal incision & cardioplegia
Transsection of aorta (5 – 10 mm above commissures)
Stay sutures above commissures

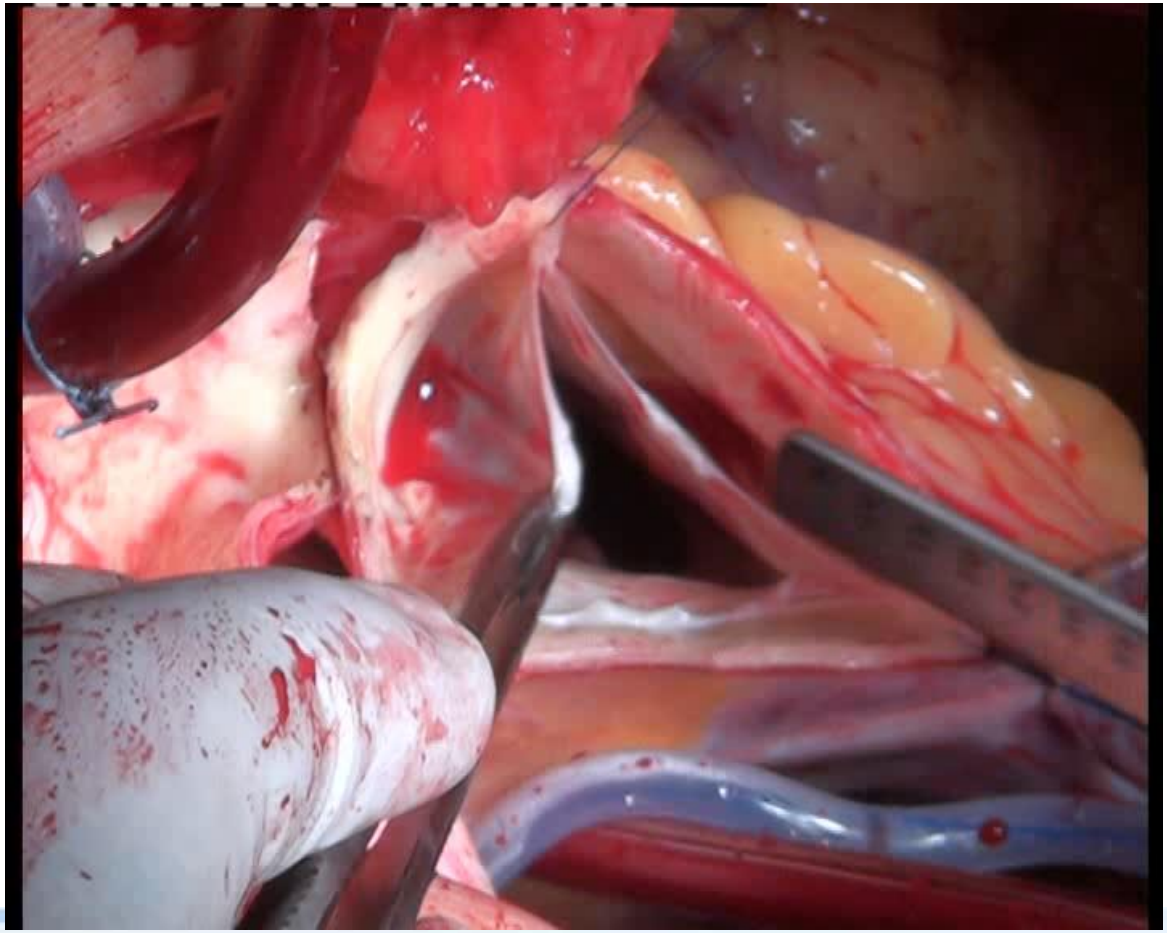
Operative Steps:

Exposure:



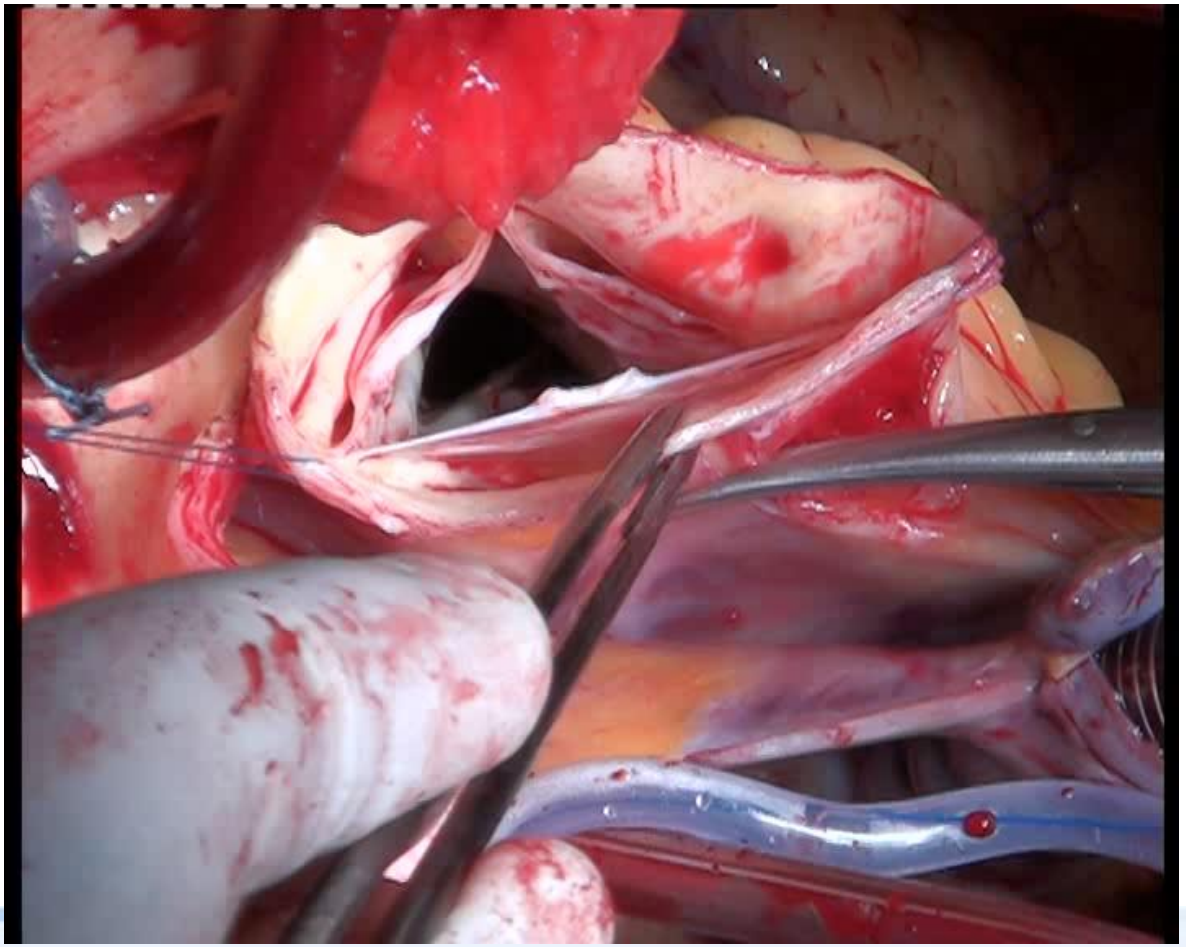
Operative Steps:

Assessment of the valve:



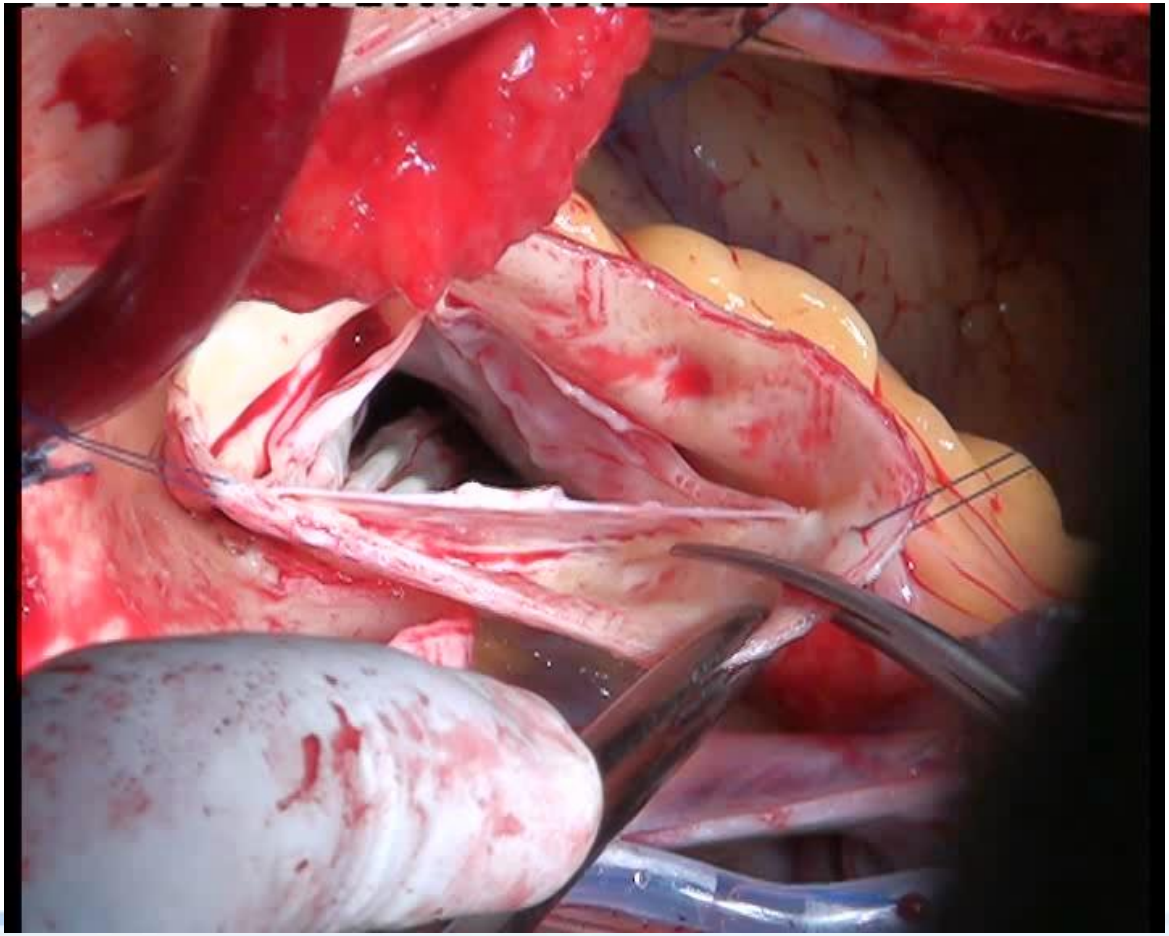
Operative Steps:

Mobilization of the Root:



Operative Steps:

Excision of the sinuses:



Operative Steps:

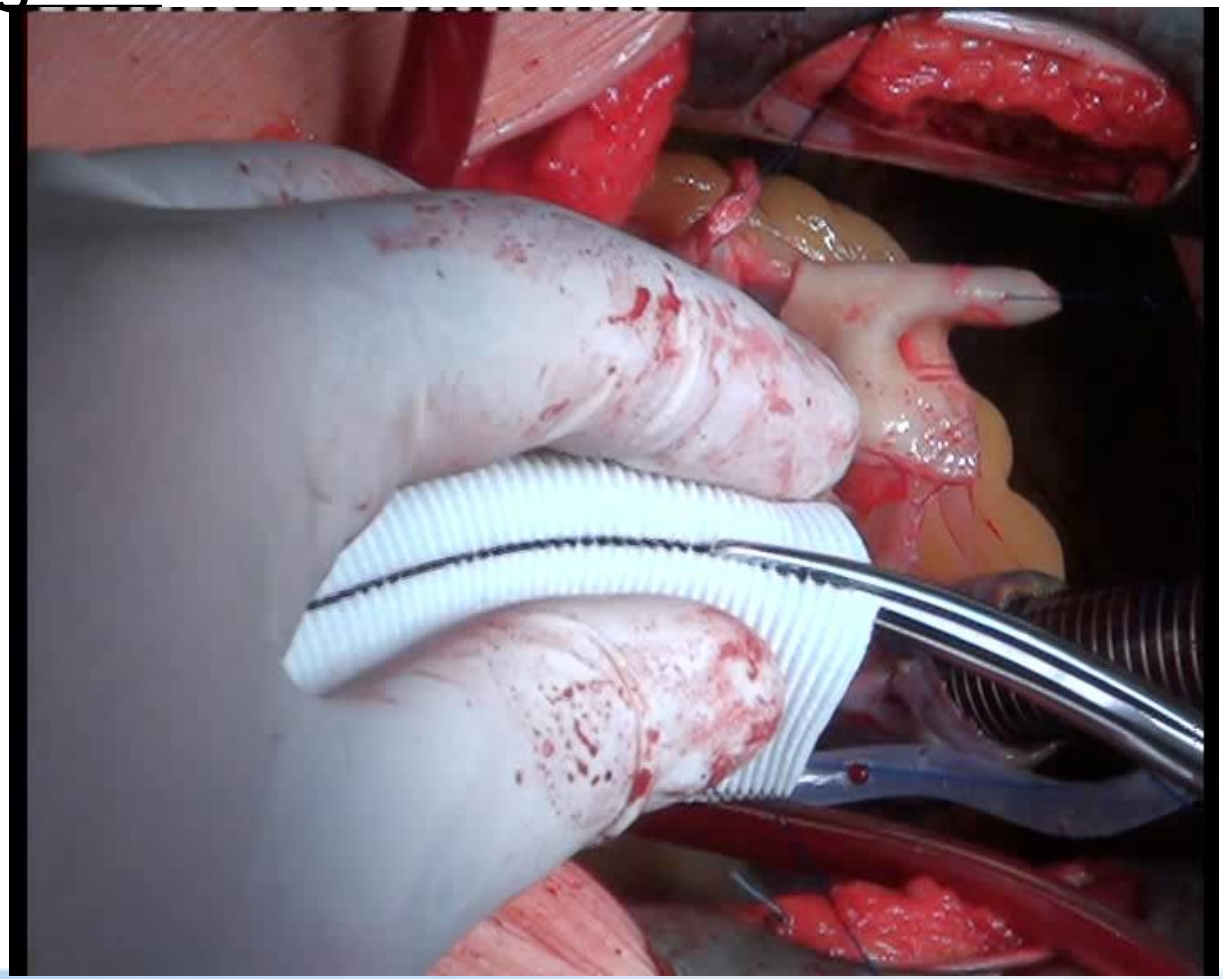
Tailoring of the graft:

Root remodeling: respect root symmetry (± 10-20%)
Incisions for commissures 20%
less than anticipated

(Reimplantation: triangular excision for
L/R commissure)

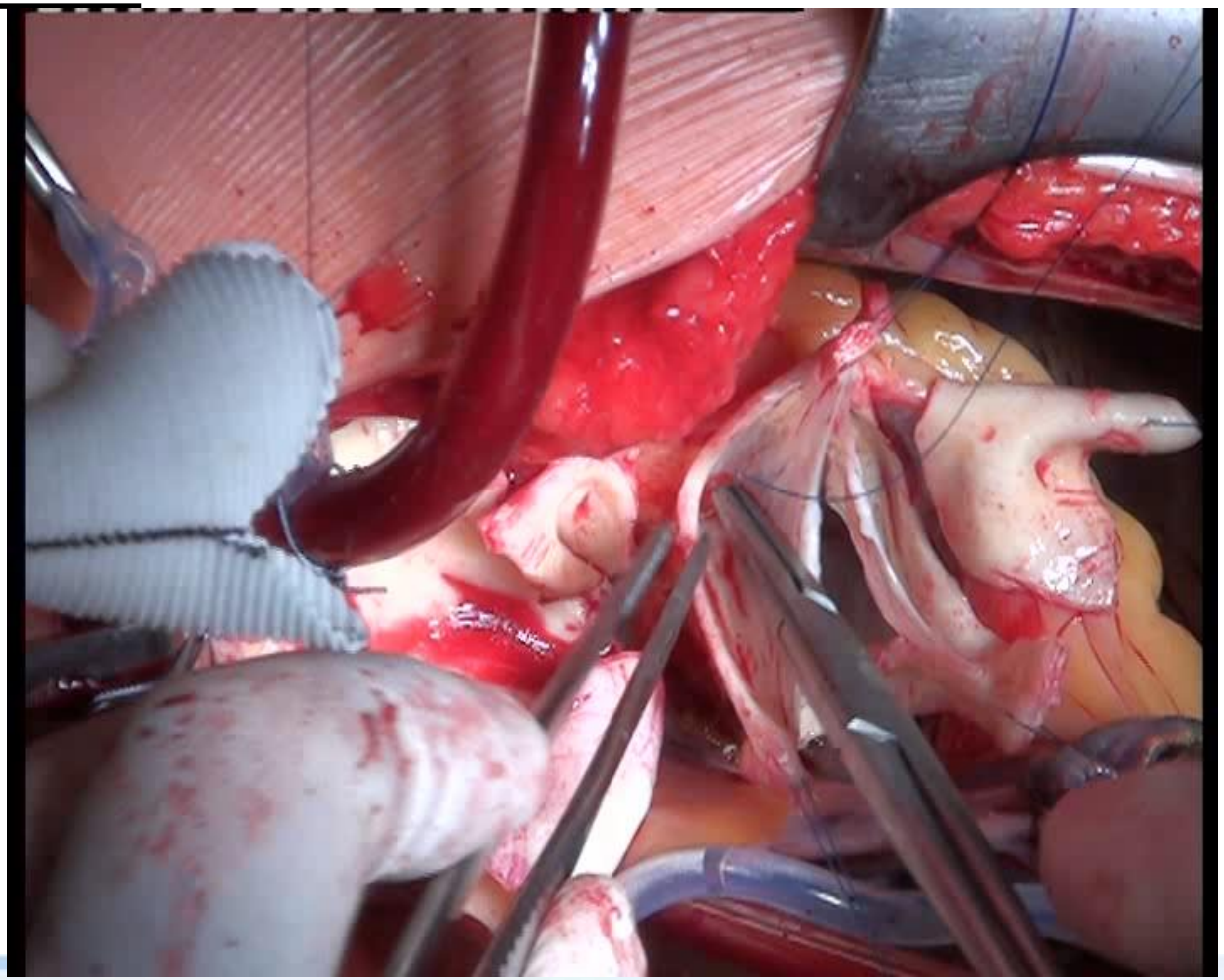
Operative Steps:

Tailoring of the graft:



Operative Steps:

Suture Graft to Root:



Operative Steps:

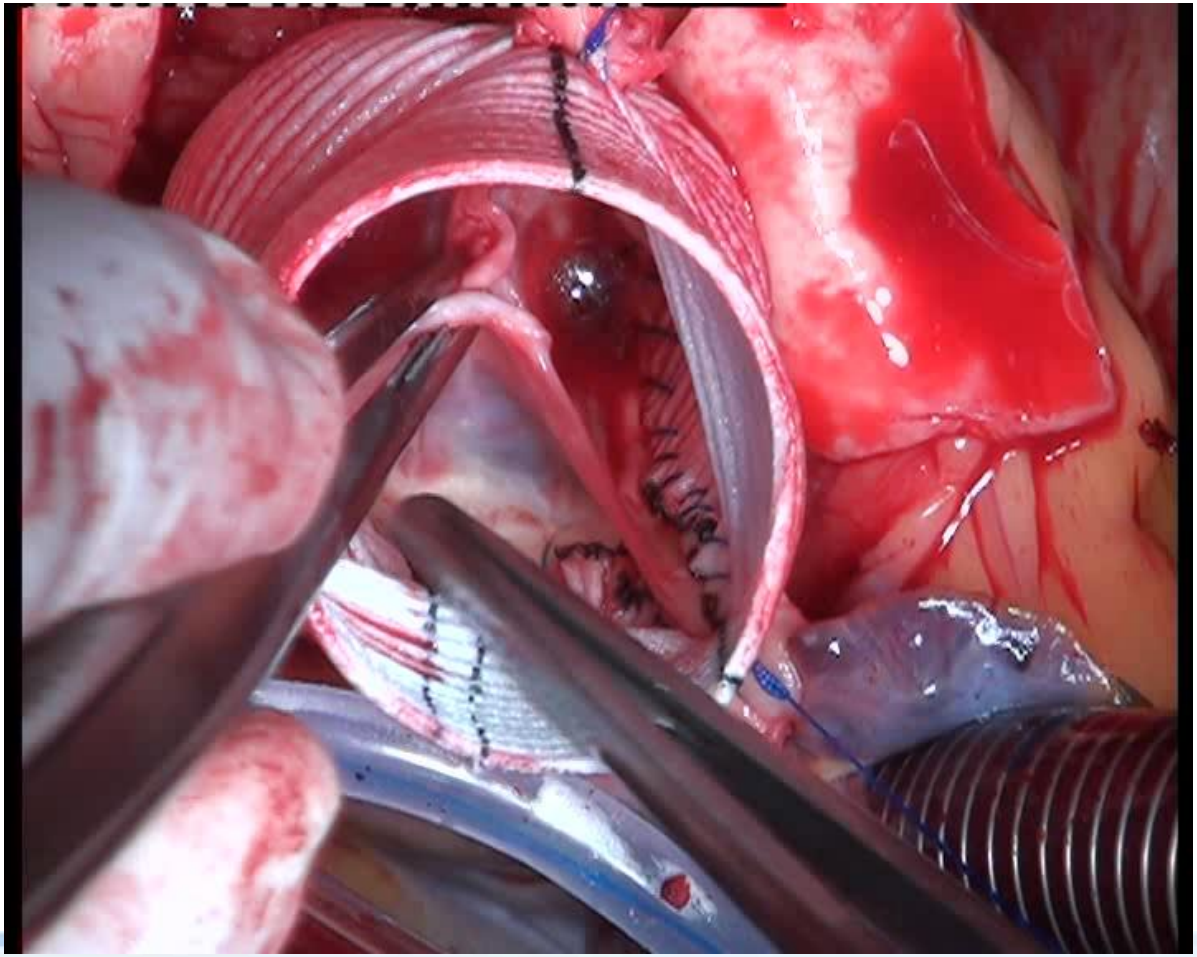
Assess cusp configuration:

Effective height?

Position of free margins relative to each other?

Operative Steps:

Assess cusp configuration:



Operative Steps:

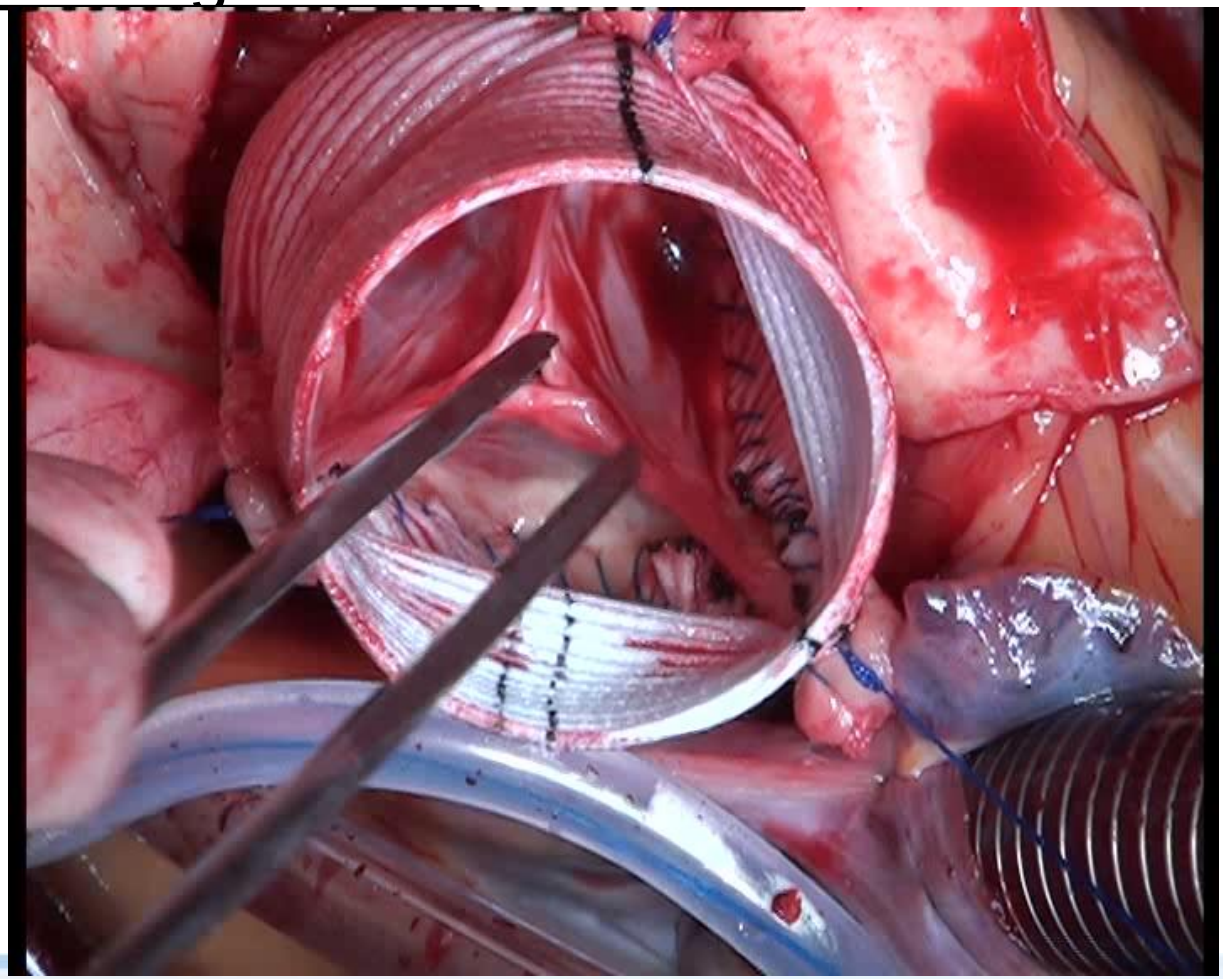
Correct cusp configuration:

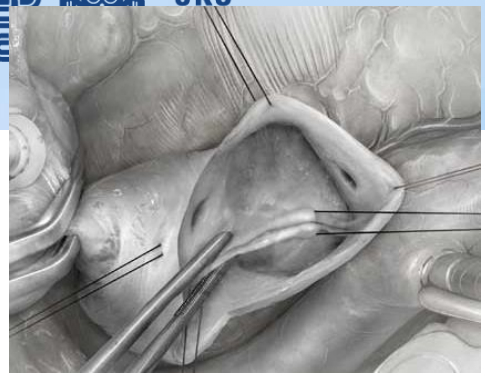
Central plication of free margin extension into cusp??

-Adequate effective height
-All margins at identical level

Operative Steps:

Correct cusp configuration:





Operative Steps:

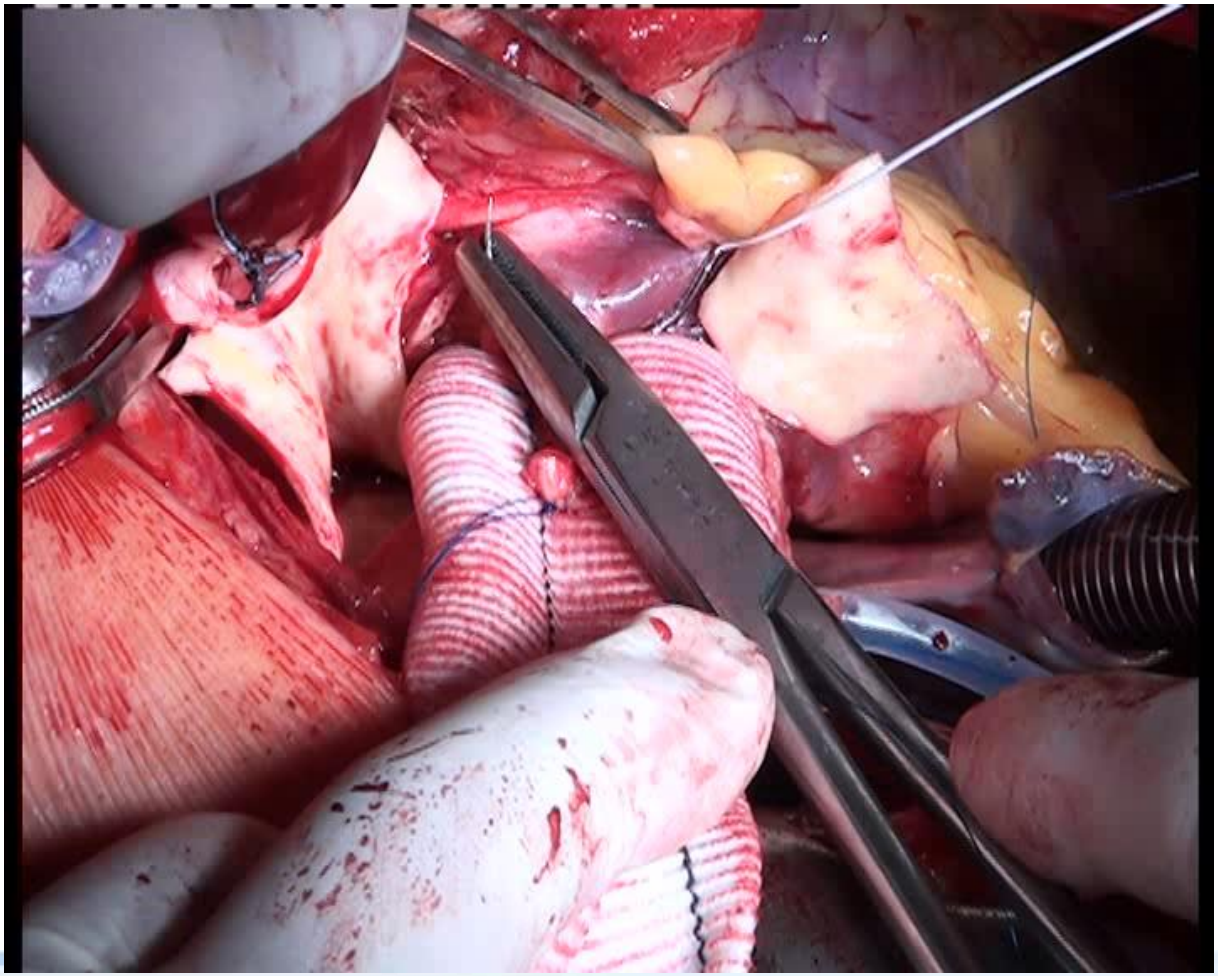
<u>Reassessment of cusp configuration:</u>
(tension on commissural stay sutures)

- effective height (> 8/9 mm)

- free margins at identical height?

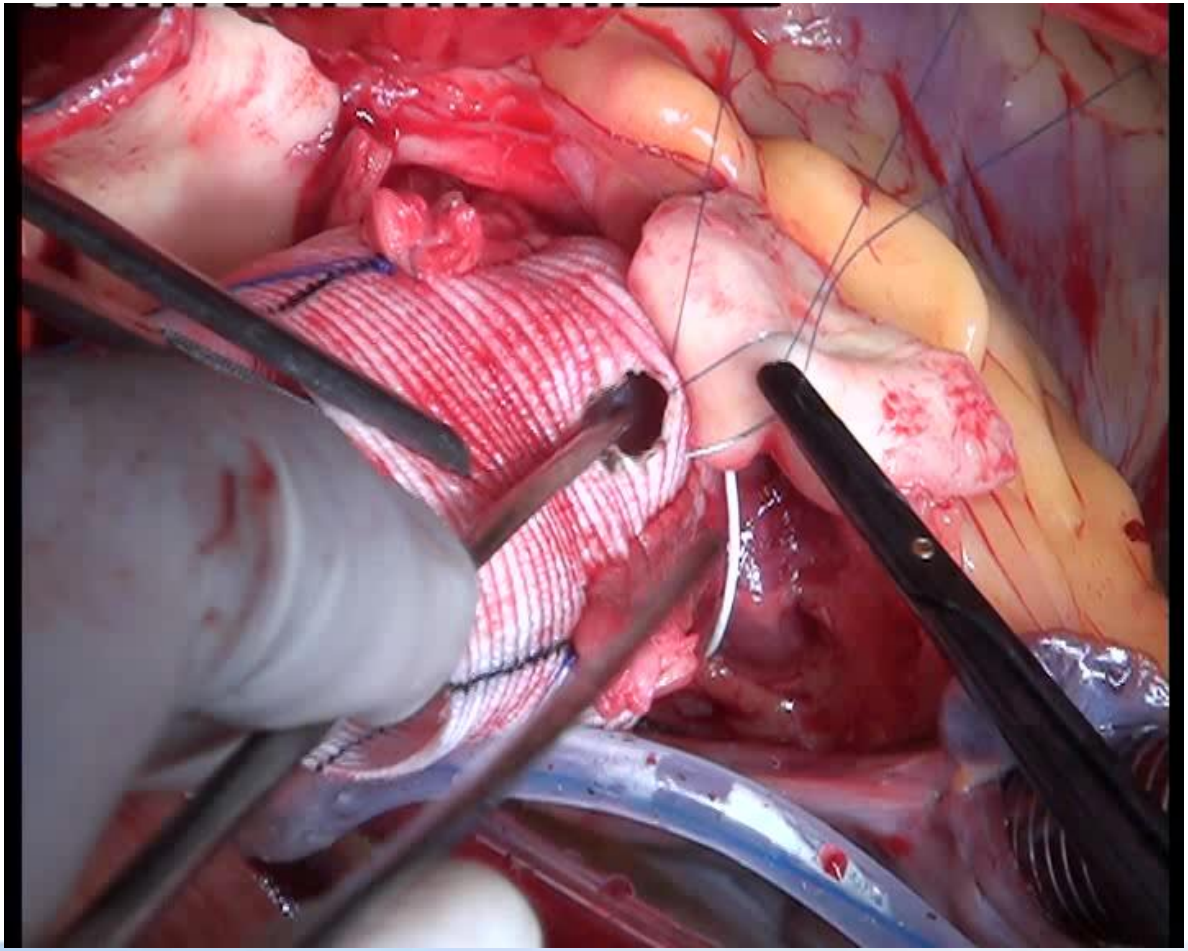
Operative Steps:

Annular reduction



Operative Steps:

Coronary anastomosis etc.:



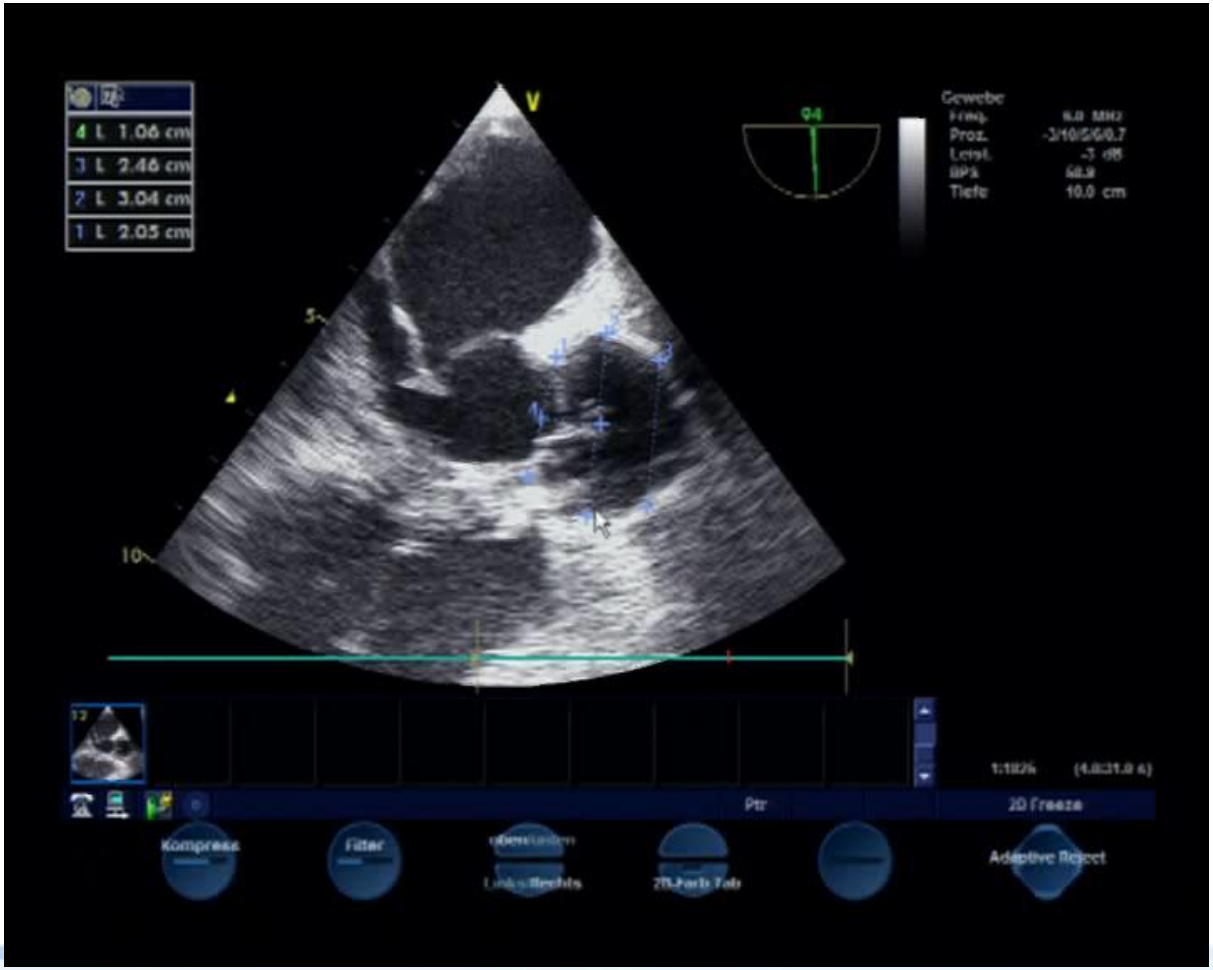
Operative Steps:

11. Final check:

TEE:
- AI?
  (central, eccentric, degree)
-Configuration of AV
  (effective height)

Operative Steps:

Final check:



Wetlab:

- transsect aorta above commissures, resect sinuses
- cut graft (symmetry! length of incisions!!)
- suture graft to root
- stay sutures to commissures (upward & outward!!)
- assess cusps
- observe interaction of tension on commissural sutures on effective height
- plicate free margin, assess by eH
- add annular suture