Aortic Root Repair - How to Start

11.09.2014

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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):
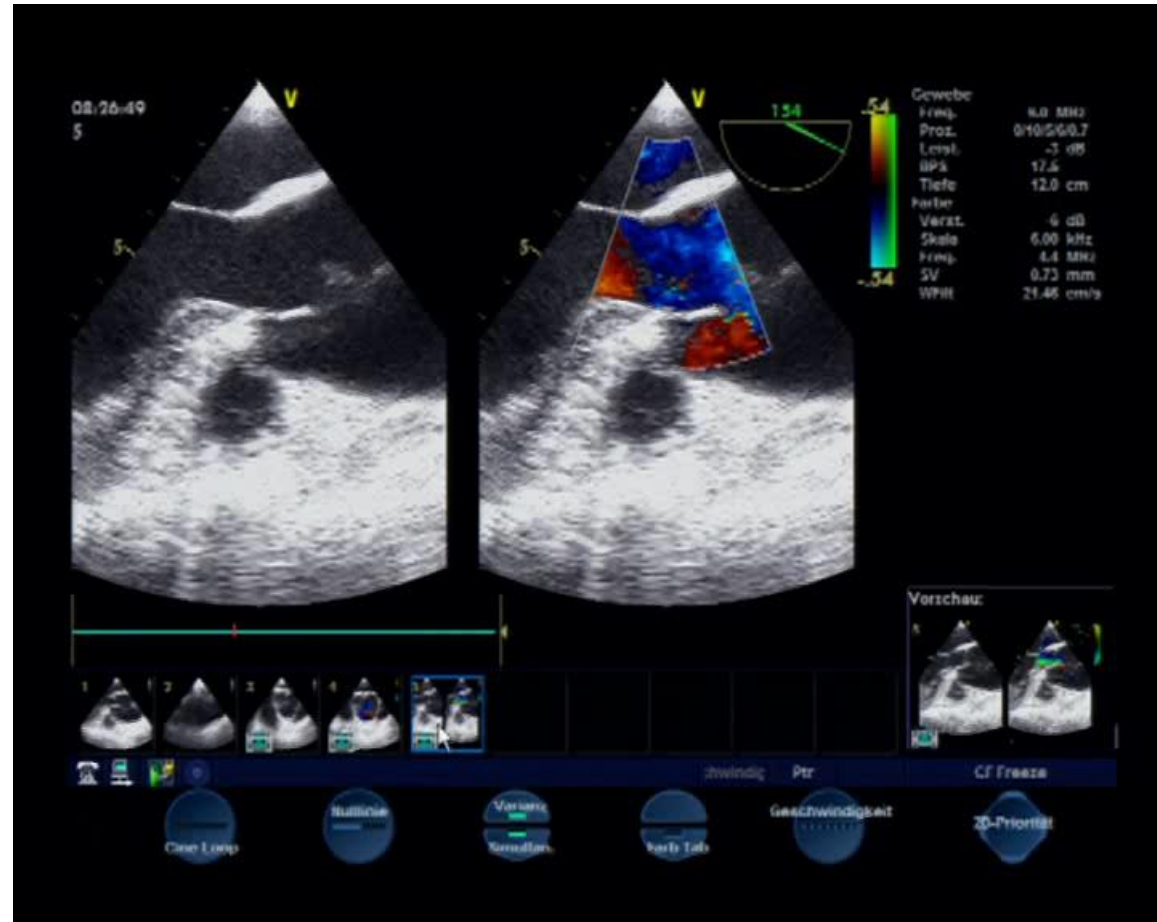   AV diameter (?)
        ST diameter
        sinus diameter

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:
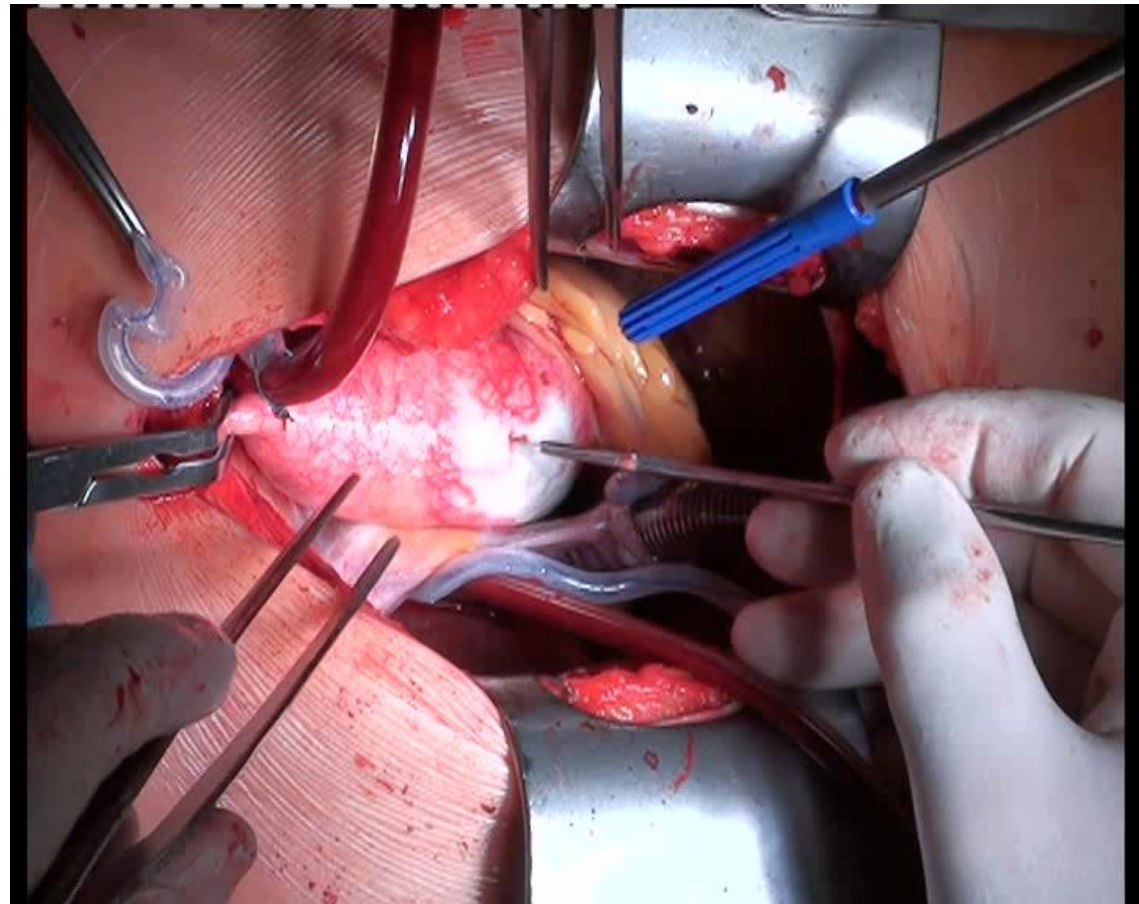
Operative Steps:

Assessment of the valve:
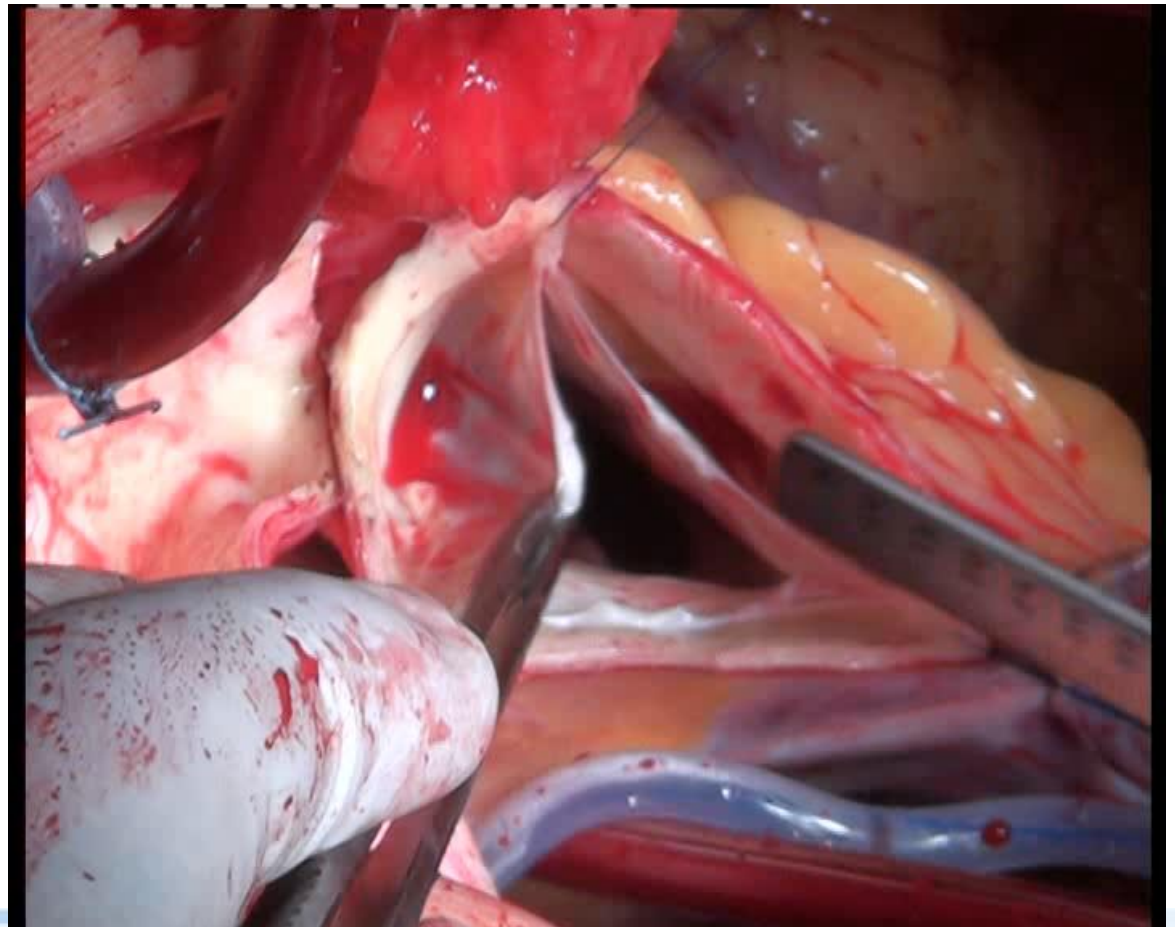
Operative Steps:

Mobilization of the Root:
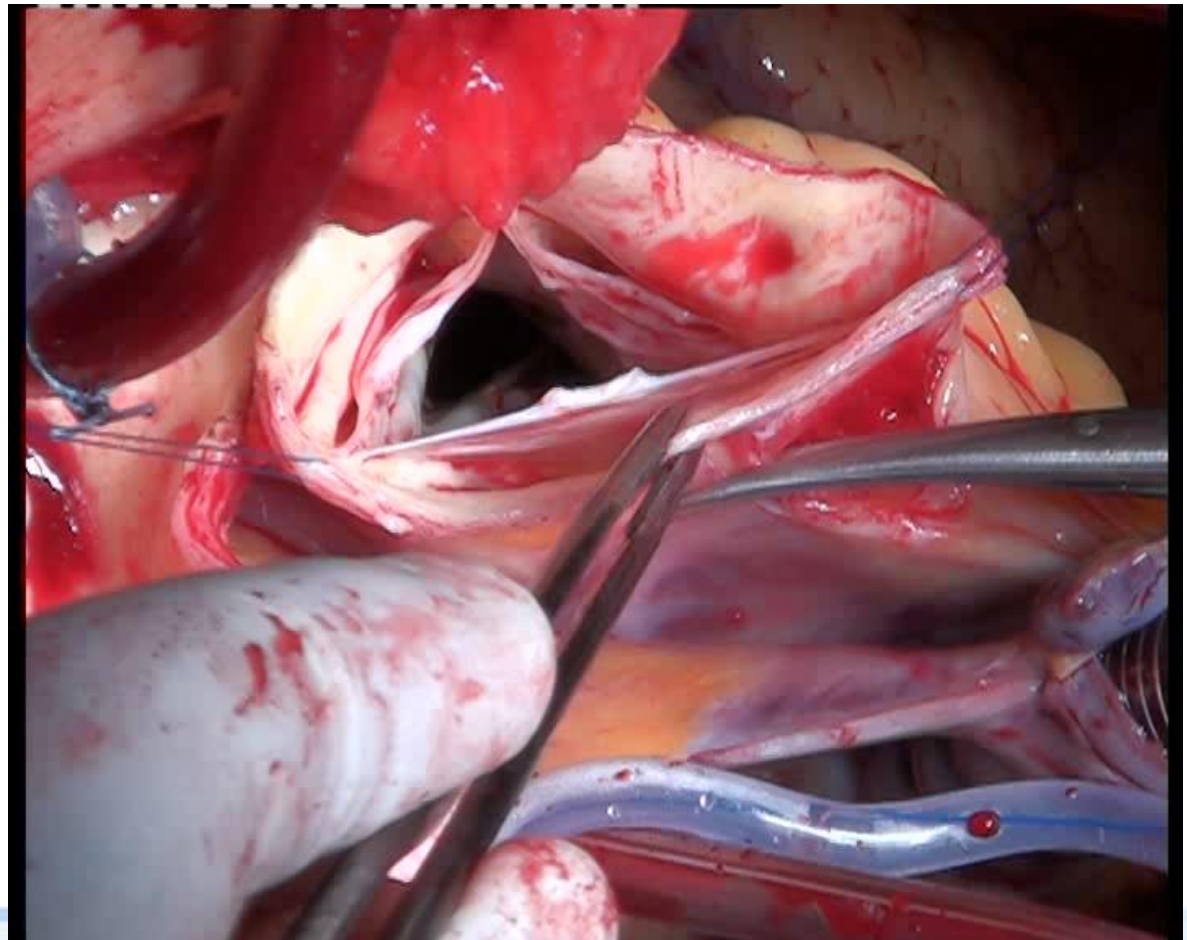
Operative Steps:

Excision of the sinuses:
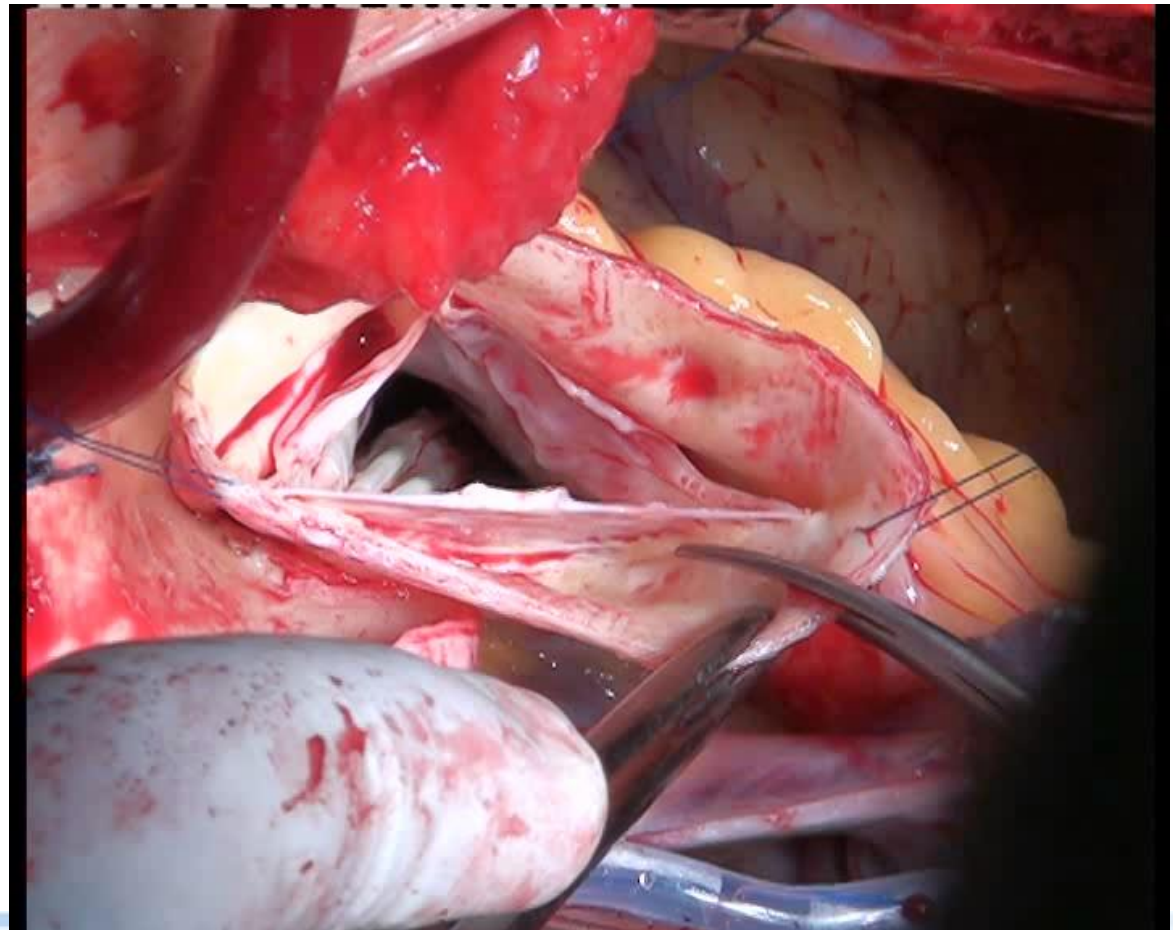
Operative Steps:
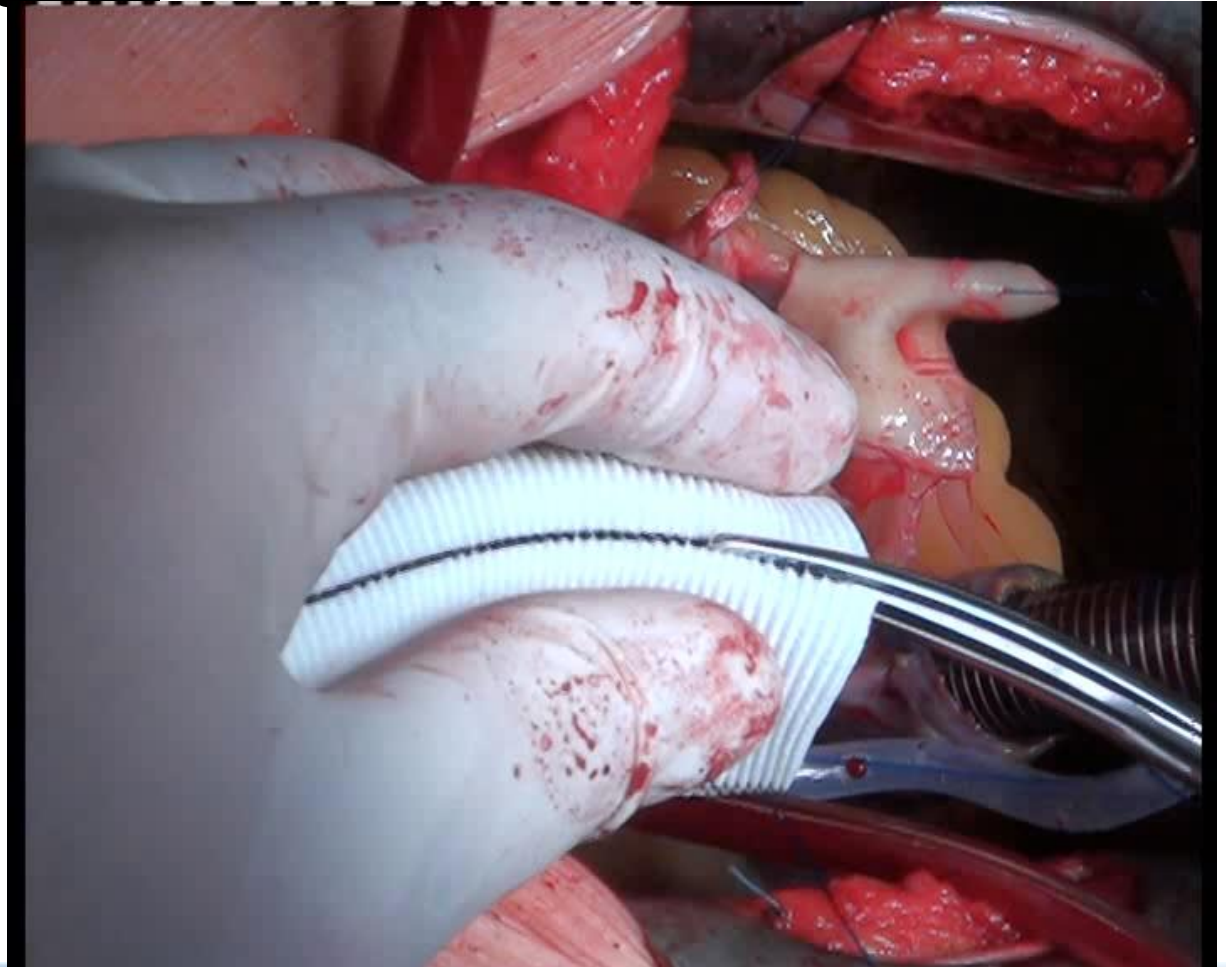
Tailoring of the graft:

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:
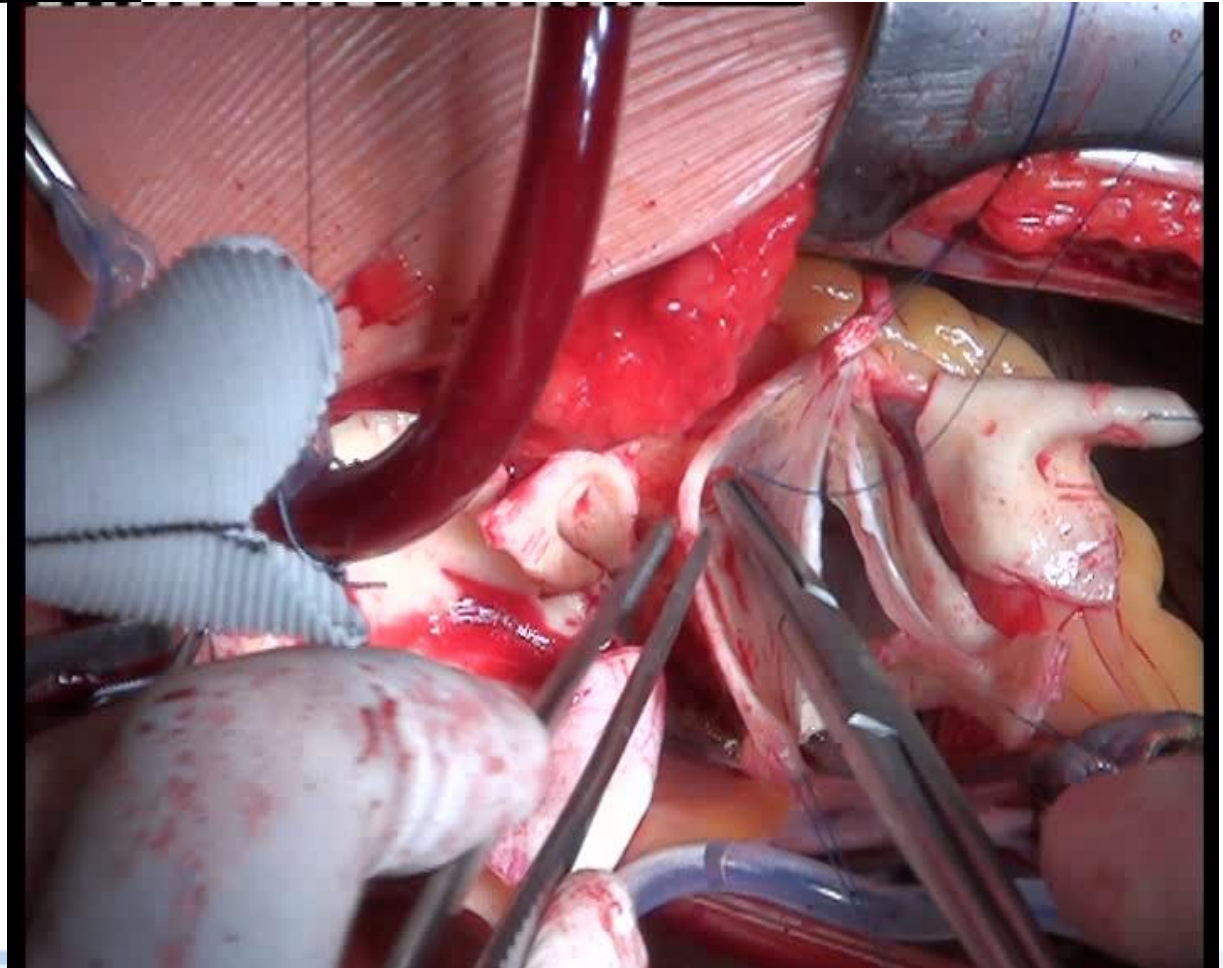
Operative Steps:

Assess cusp configuration:

Effective height?

Position of free margins relative to
each other?
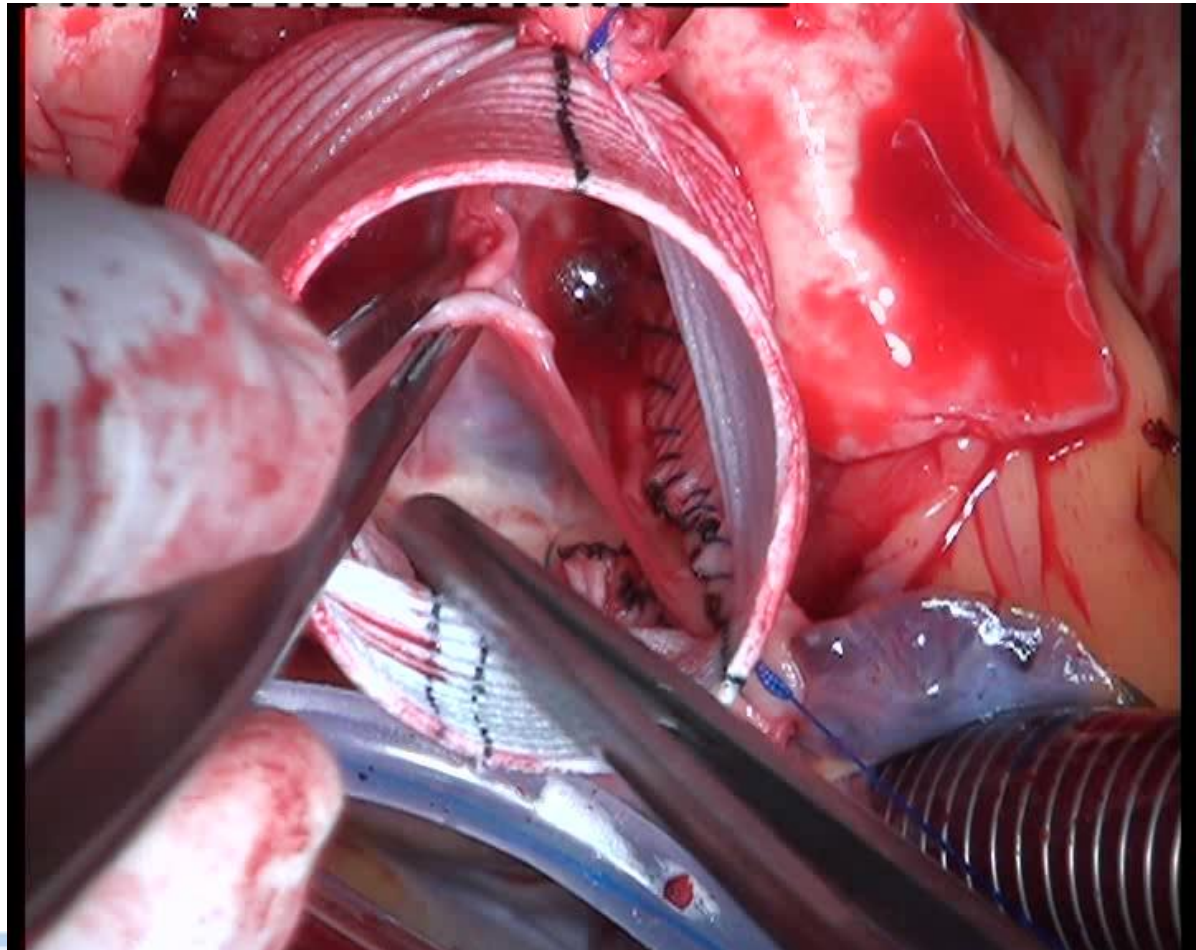
Operative Steps:

Assess cusp configuration:

Operative Steps:

Correct cusp configuration:

Central plication of free margin
extension into cusp??

-Adequate effective height
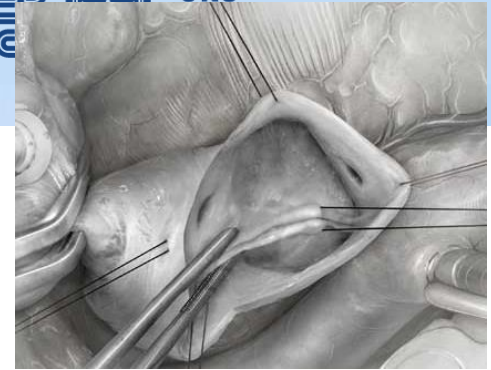-All margins at identical level

Operative Steps:

Correct cusp configuration:
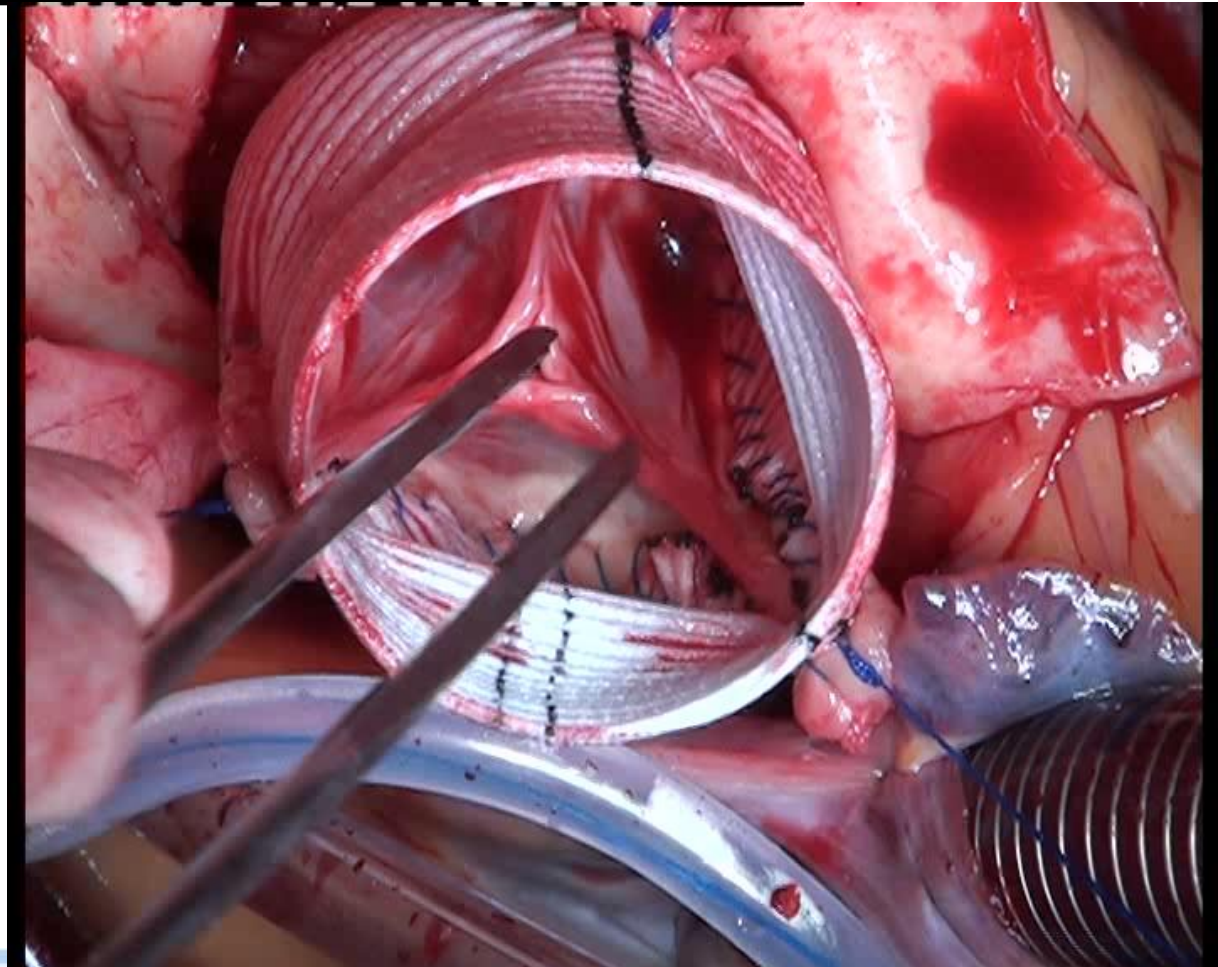
Operative Steps:

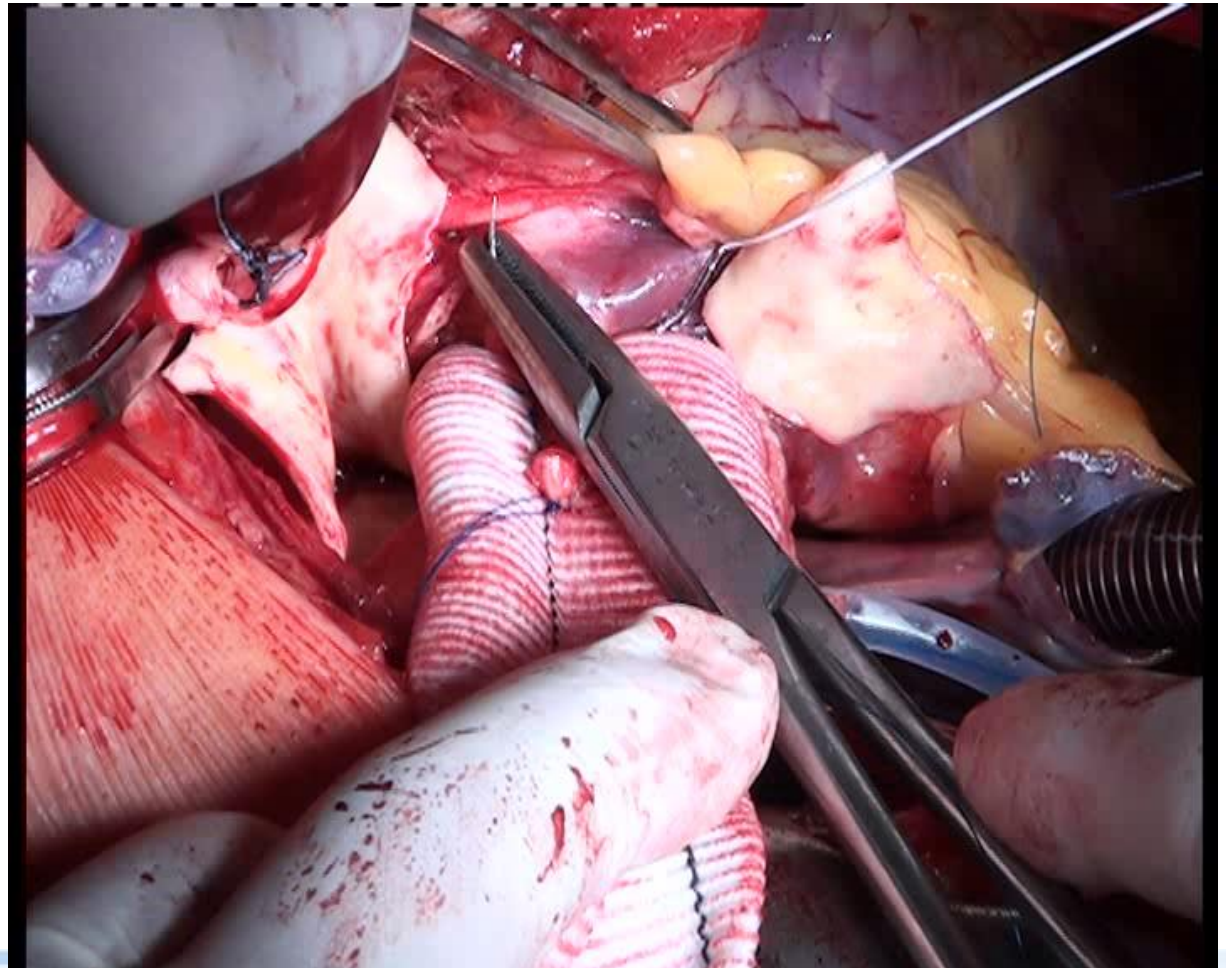### Reassessment of cusp configuration:
   (tension on commissural stay sutures)

   - effective height (> 8/9 mm)

   - free margins at identical height?

Operative Steps:

Annular reduction

Operative Steps:

Coronary anastomosis etc.:
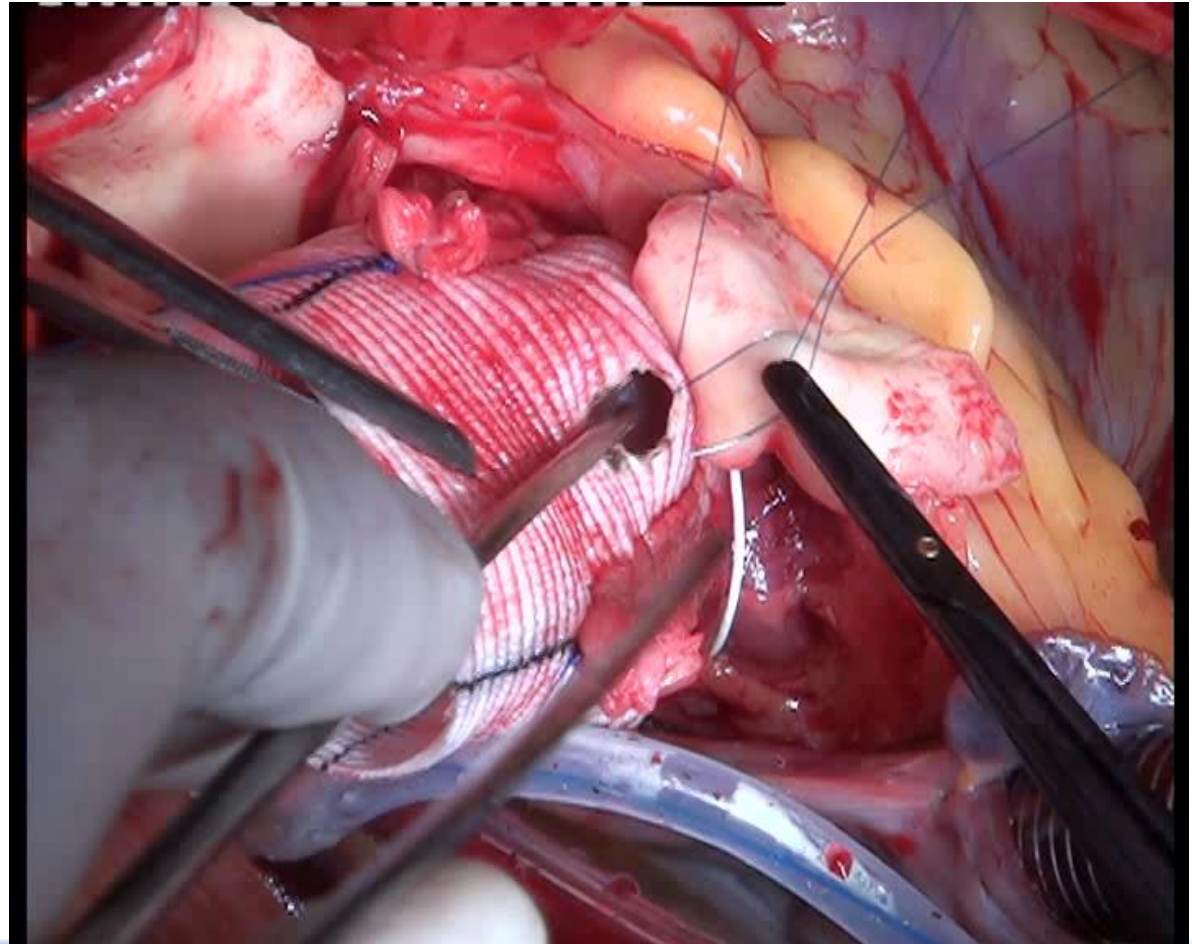
Operative Steps:

11. Final check:

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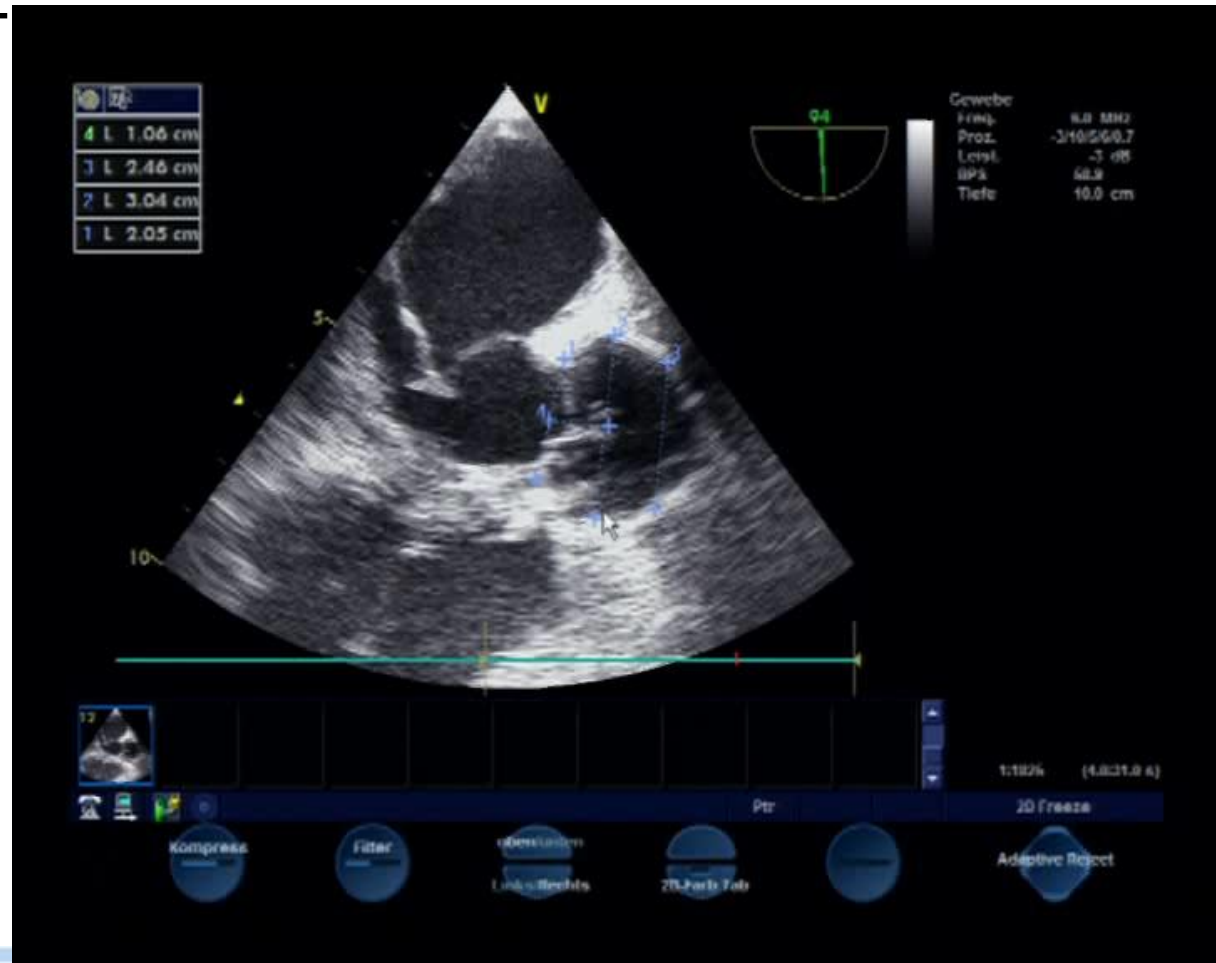> (effective height)

Operative Steps:

Final check:

The way to start

Wetlab:

- transsect aorta above commissures

- cut graft (symmetry! Length of incisions!!)

- suture graft to root

- stay sutures to commissures and assess cusps

- observe interaction of pull on commissural

sutures on effective height

- plicate free margin, assess by eH

- add annular suture