

How to Start Root Repair

H.-J. Schäfers

Dept. of Thoracic and Cardiovascular Surgery

Saarland University Medical Center

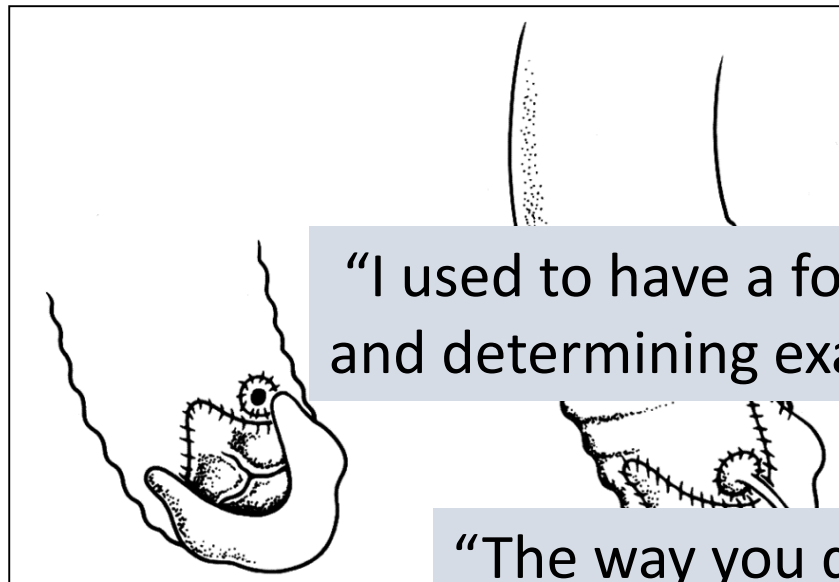
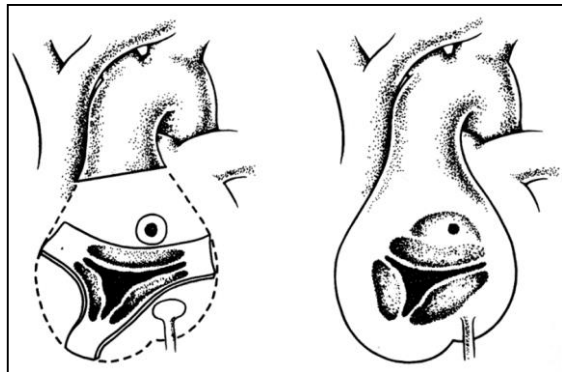
Homburg/Saar, Germany

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Remodeling of the aortic valve annulus

Isolated aortic valve regurgitation that results from disease that primarily affects the aortic wall can be repaired by remodeling of the aortic annulus to restore its normal geometry. This involves excision of the aortic wall to within 2 to 3 mm of the leaflet attachments, detachment of the coronary ostia, reshaping of the annulus with the aid of a Dacron graft, and then reimplantation of the coronary arteries. Increases in the surface area of the leaflet that are caused by root dilatation are often present and can be accommodated in the repair procedure. In this study we describe our experience with 10 patients with annuloaortic ectasia who underwent the remodeling procedure at the National Heart Hospital and the Royal Brompton Hospital from 1982 to 1990. (*J THORAC CARDIOVASC SURG* 1993;105:435-8)

Mazin A. I. Sarsam, FRCS, and Magdi Yacoub, FRCS,* *London, England*



“I used to have a formula for cutting the graft and determining exact dimensions.”

“The way you do it seems much simpler.”

Graft tailored, suturing from commissures to nadirs

When to repair

reasonable

Root dilatation with tricuspid/bicuspid valve, prolapse of 1 cusp

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

Root dilatation with retraction/calcium cusps

uncertain

?

!

Patient Selection:

Bicuspid or tricuspid aortic valve

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

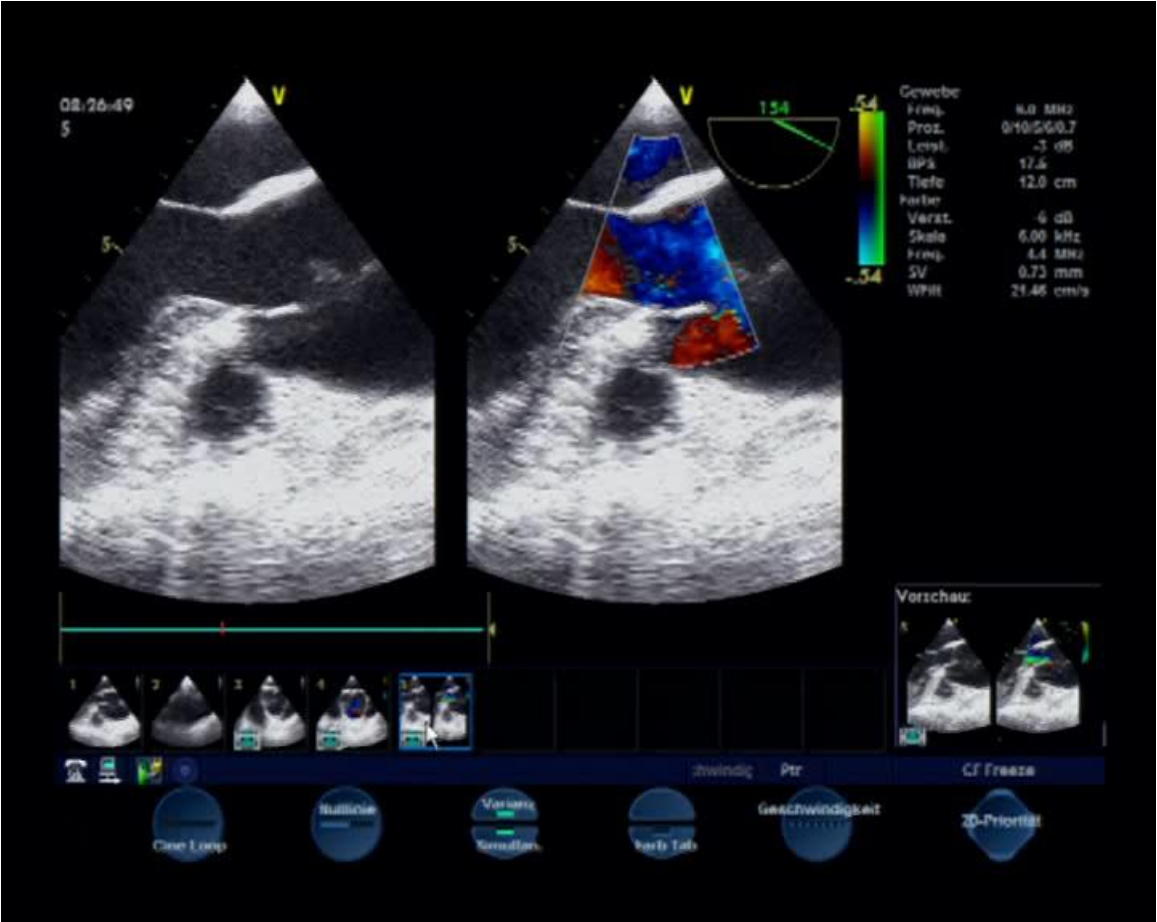
Sinus diameter

Severity of AR, jet direction?

intraoperative: AV diameter



Root assessment:



Exposure:

Standard cannulation

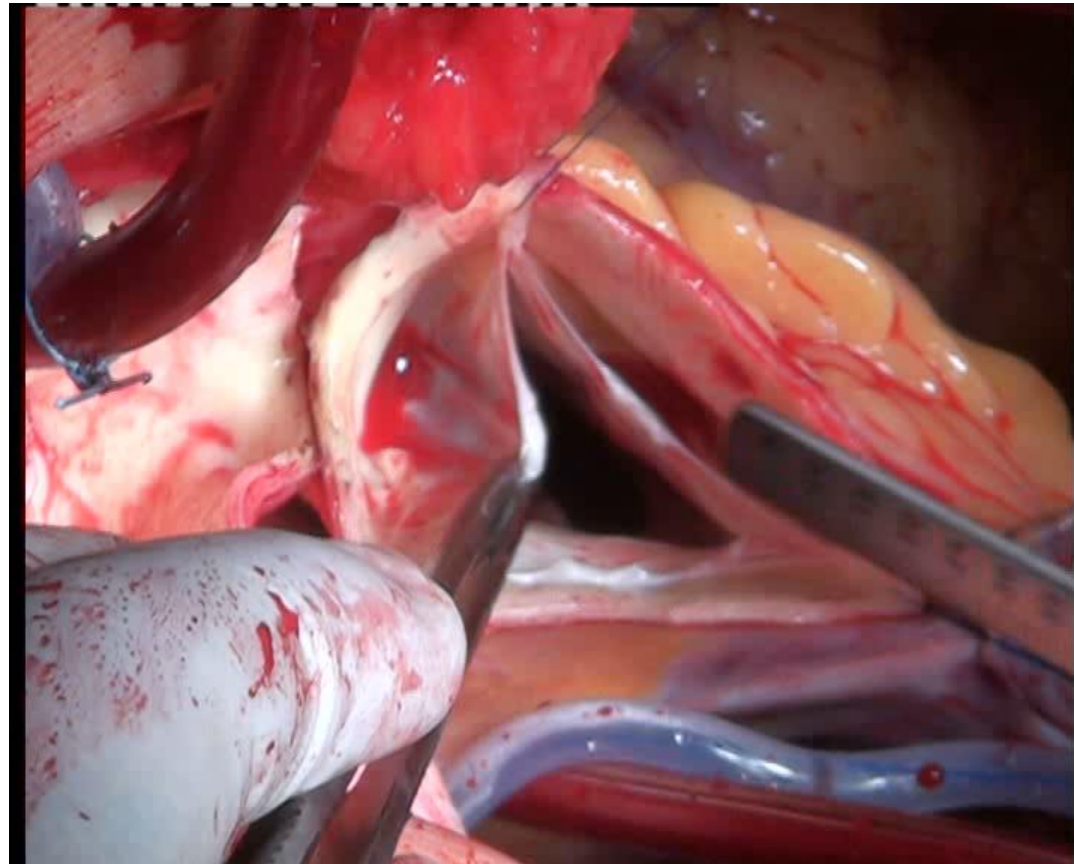
Longitudinal incision & cardioplegia

Transsection of aorta (5 – 10 mm
above commissures)

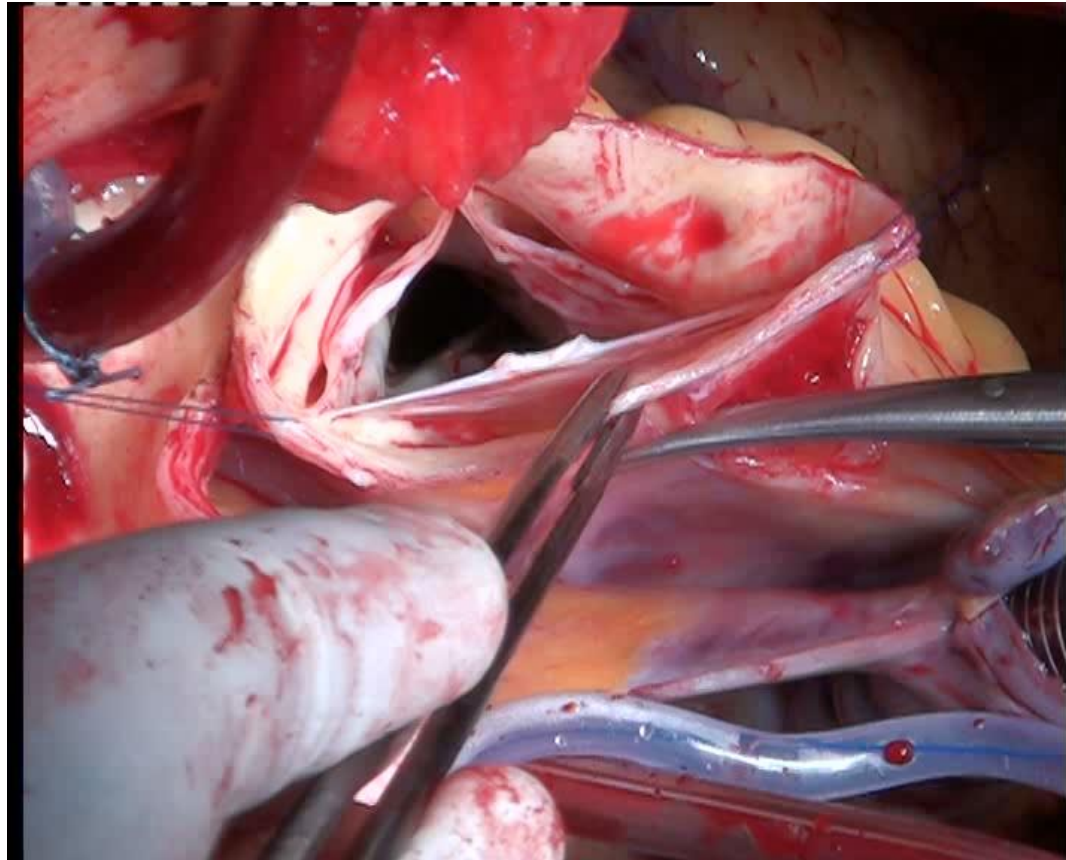
Stay sutures above commissures



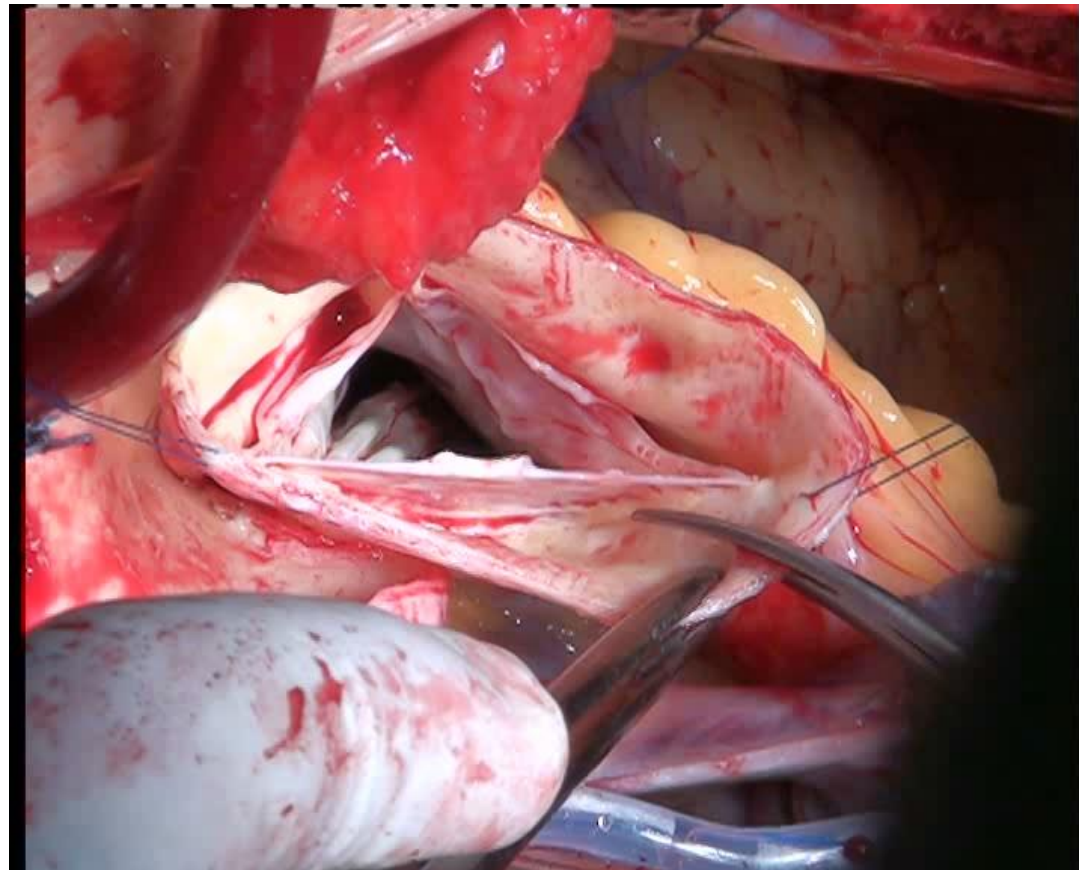
Assessment of the valve:



Mobilization of the Root:



Excision of the sinuses:



Root Remodeling: Graft Sizing

Measure gH and proceed with VPS if gH \geq 18 mm

Take graft according to patient size

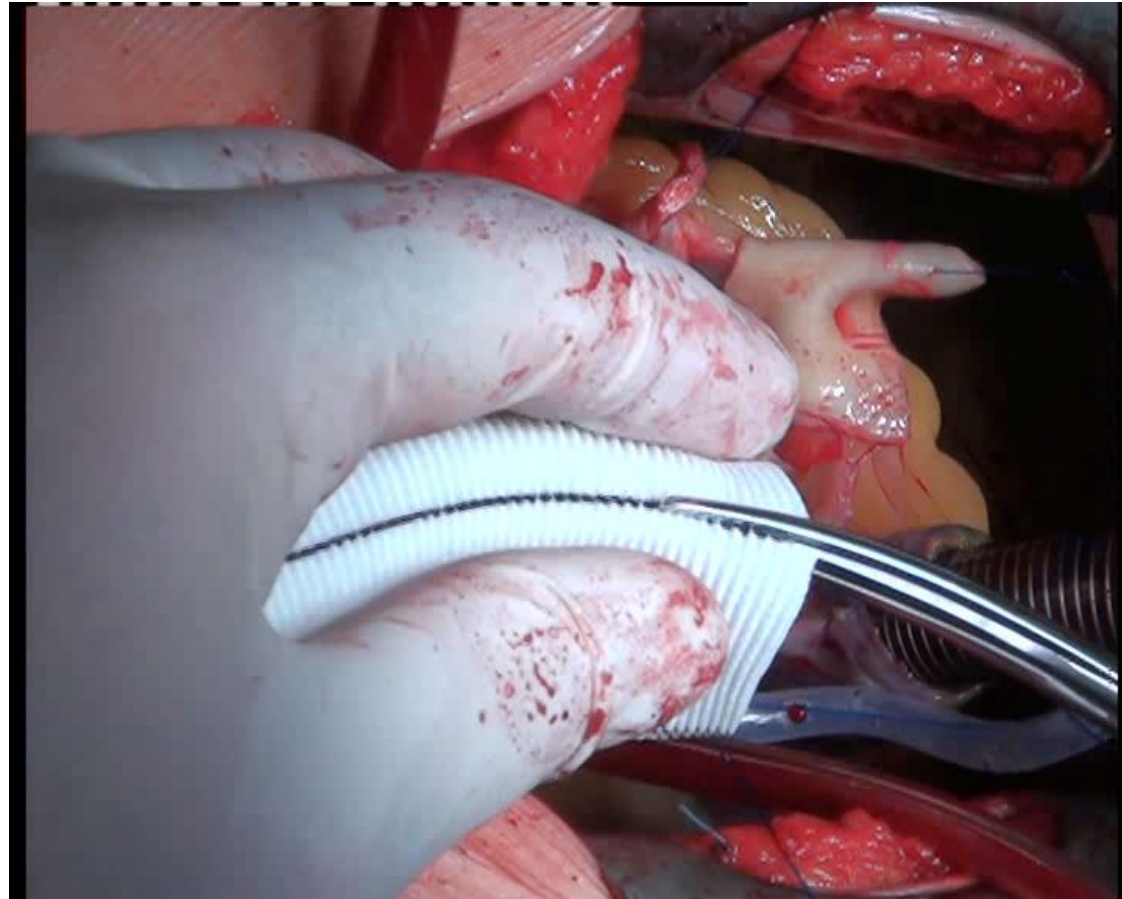
BSA	< 1.8 m ²	24 mm
	1.8 to 2.2 m ²	26 mm *
	>2.2 m ²	28 mm (?)

if gH < 20 mm graft size 2 mm less

* A 26 mm graft accomodates >90% of my patients



Tailoring of the graft:

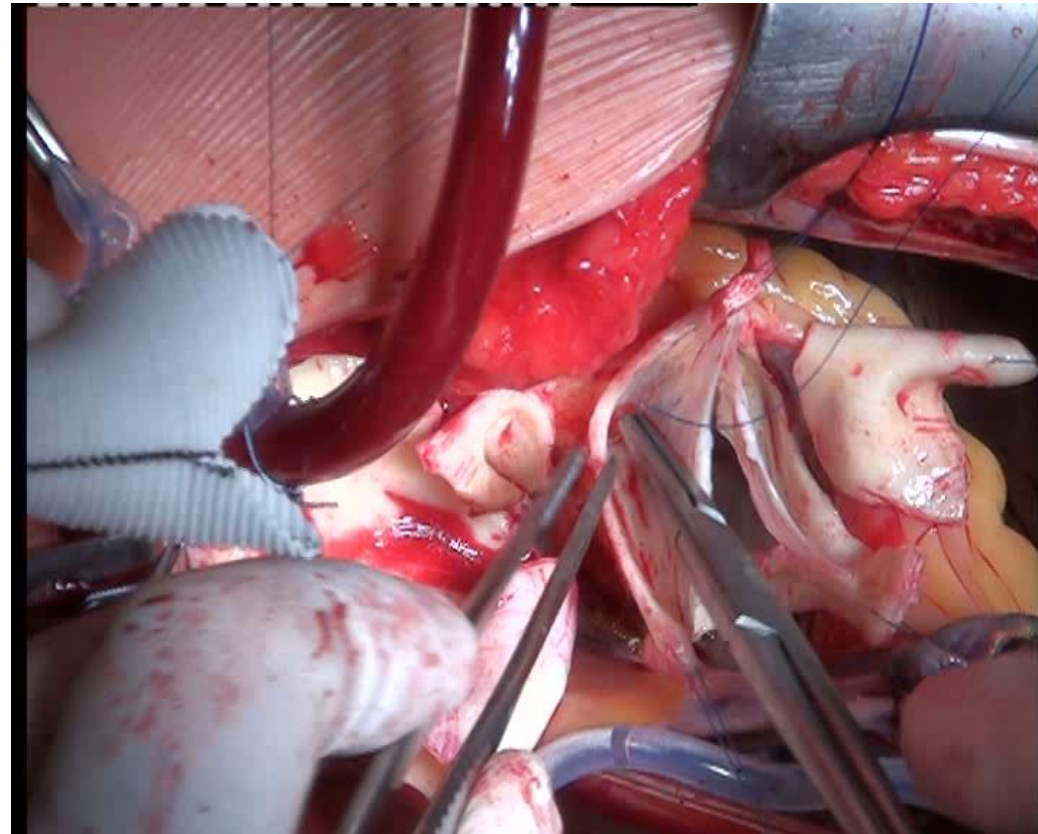
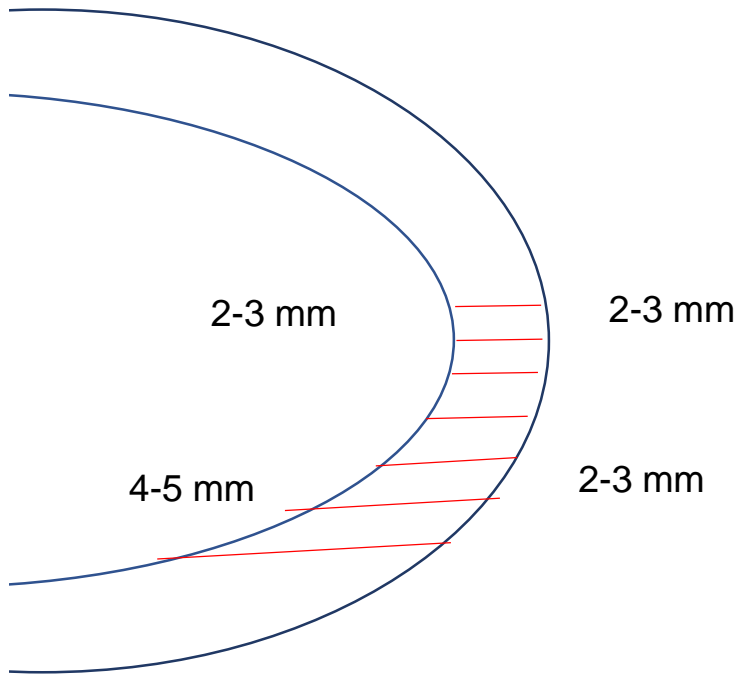


Suture Graft to Root:

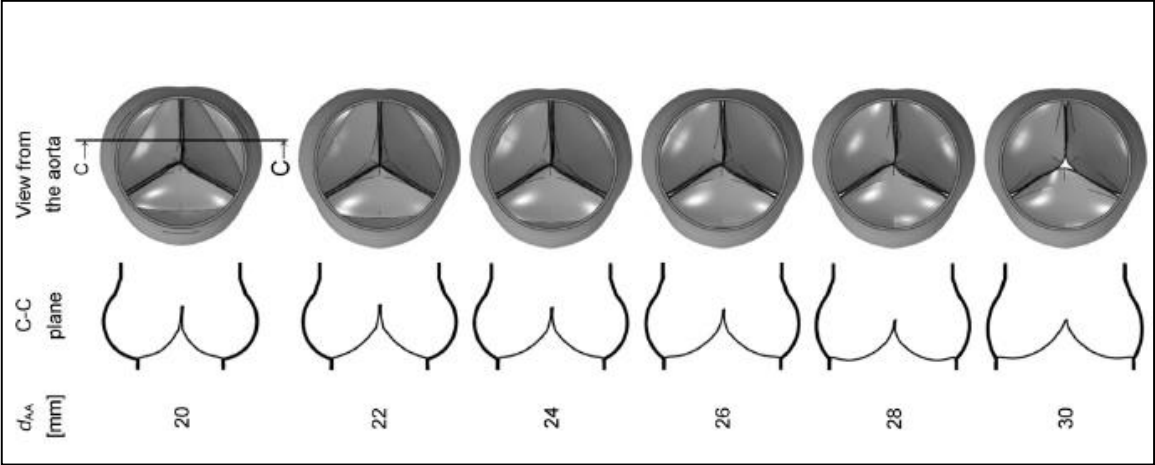
- Hemostatic suture line (tension on suture)
AND
- Avoid commissural restriction at all cost



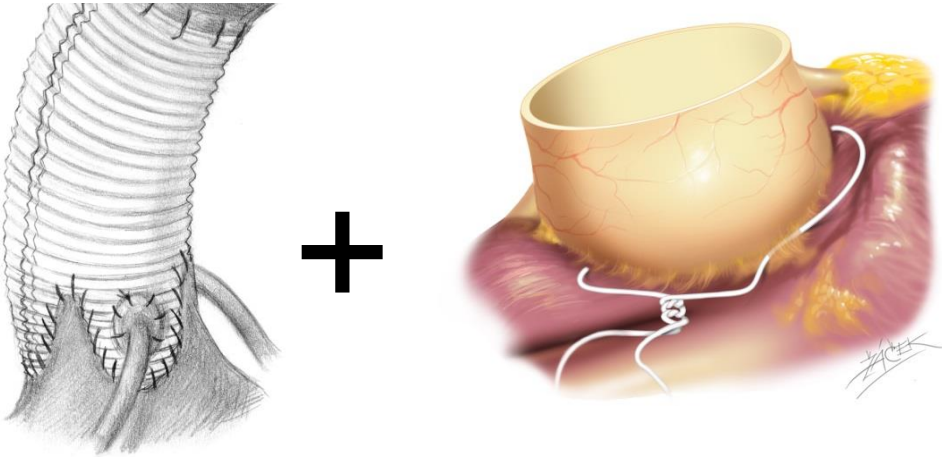
„Cheating“: vary distance between stitches, bringing more graft into the sinus and thus avoiding commissural restriction



Annuloplasty



Suture Annuloplasty
(AVJ > 27mm)



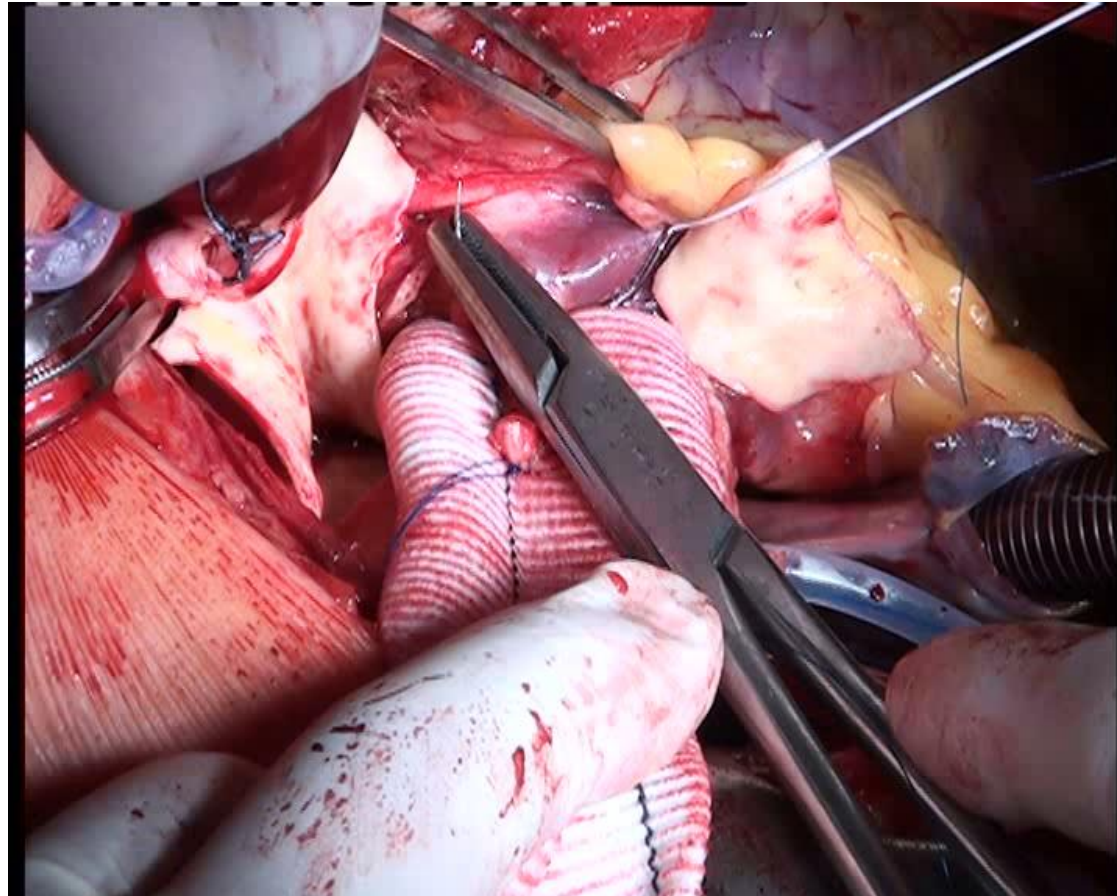
Aortic root numeric model: Annulus diameter prediction of effective height and coaptation in post-aortic valve repair

Gil Marom, MSc,^a Rami Haj-Ali, PhD,^a Moshe Rosenfeld, DSc,^a Hans Joachim Schäfers, MD,^b and Ehud Raanani, MD^c

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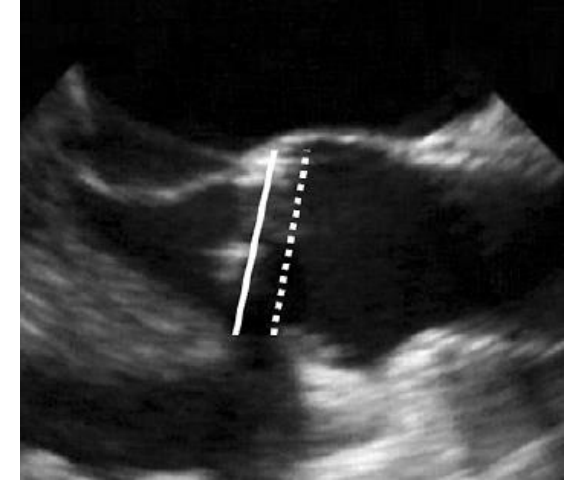
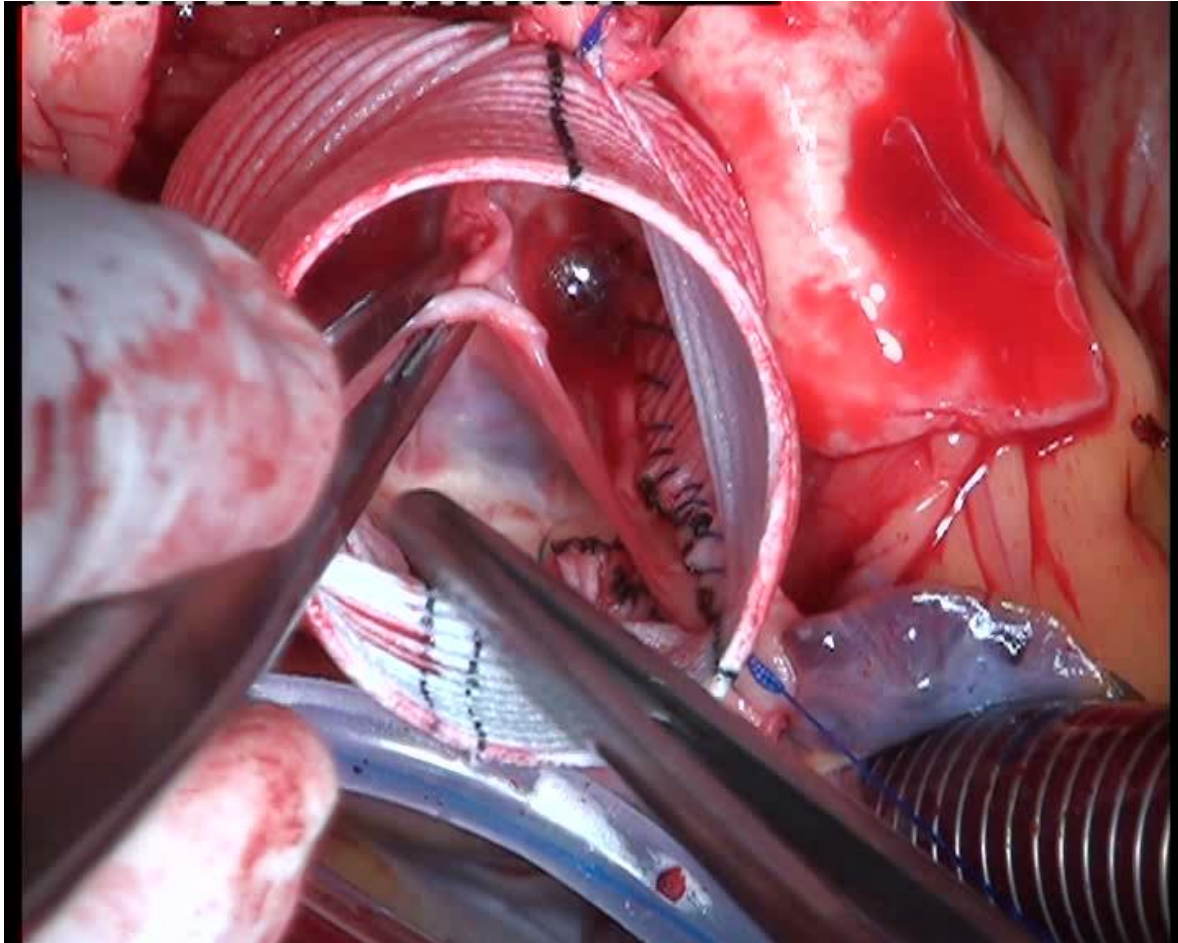
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Annuloplasty



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Assess cusp configuration:



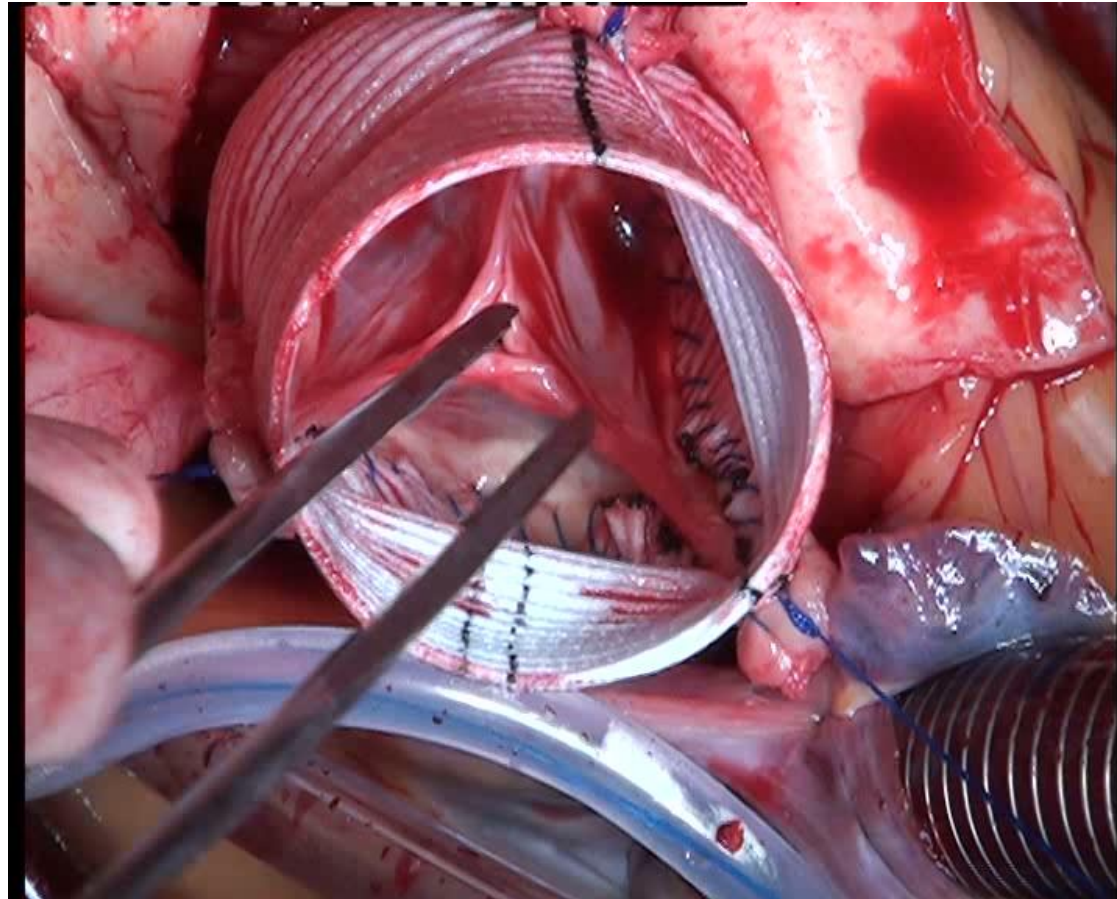
1. Visual inspection: all margins at identical height?

Current case: NC higher than LC and RC.
Restriction of NC or Prolapse of LC and RC?

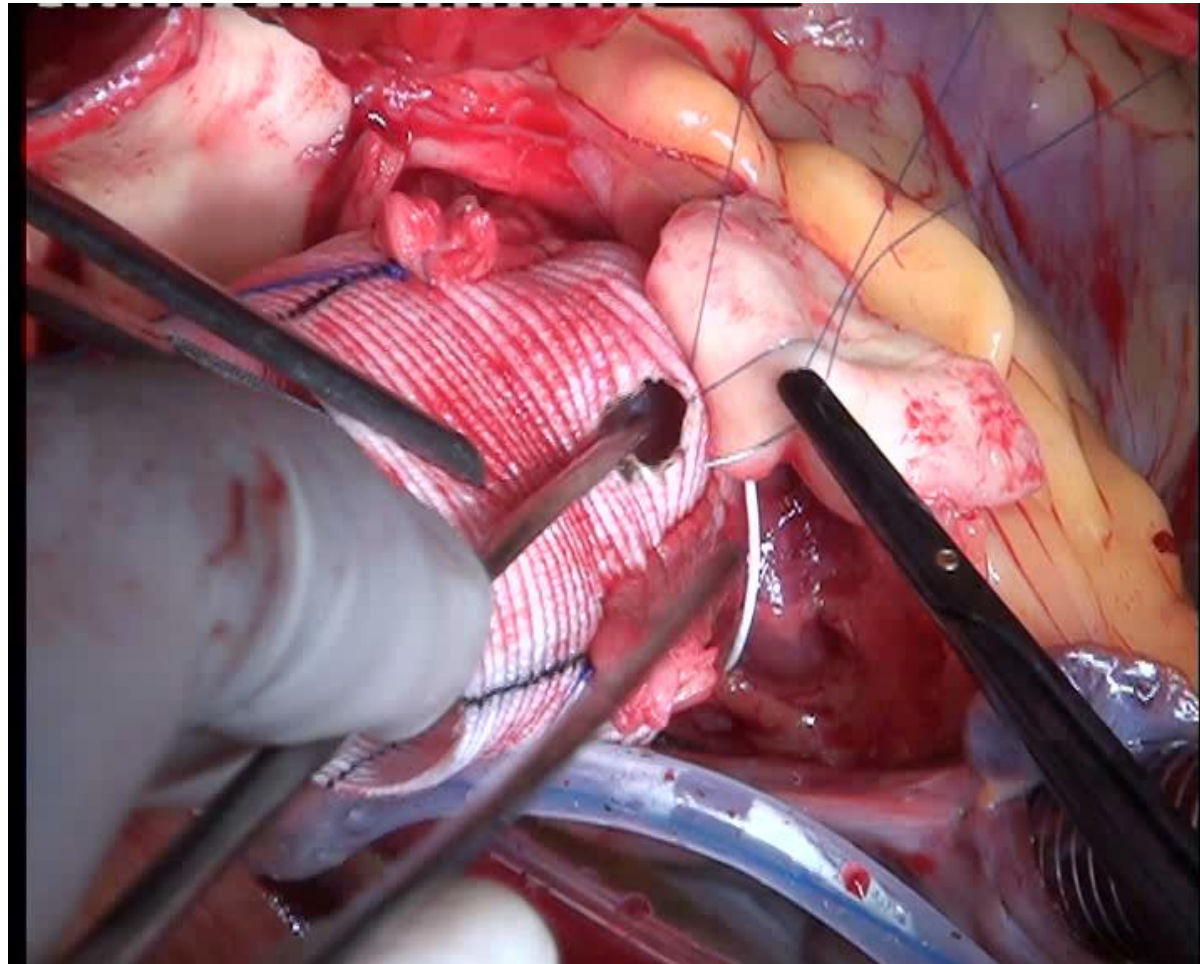
2. Measurement of effective height for
differentiation between restriction vs. prolapse

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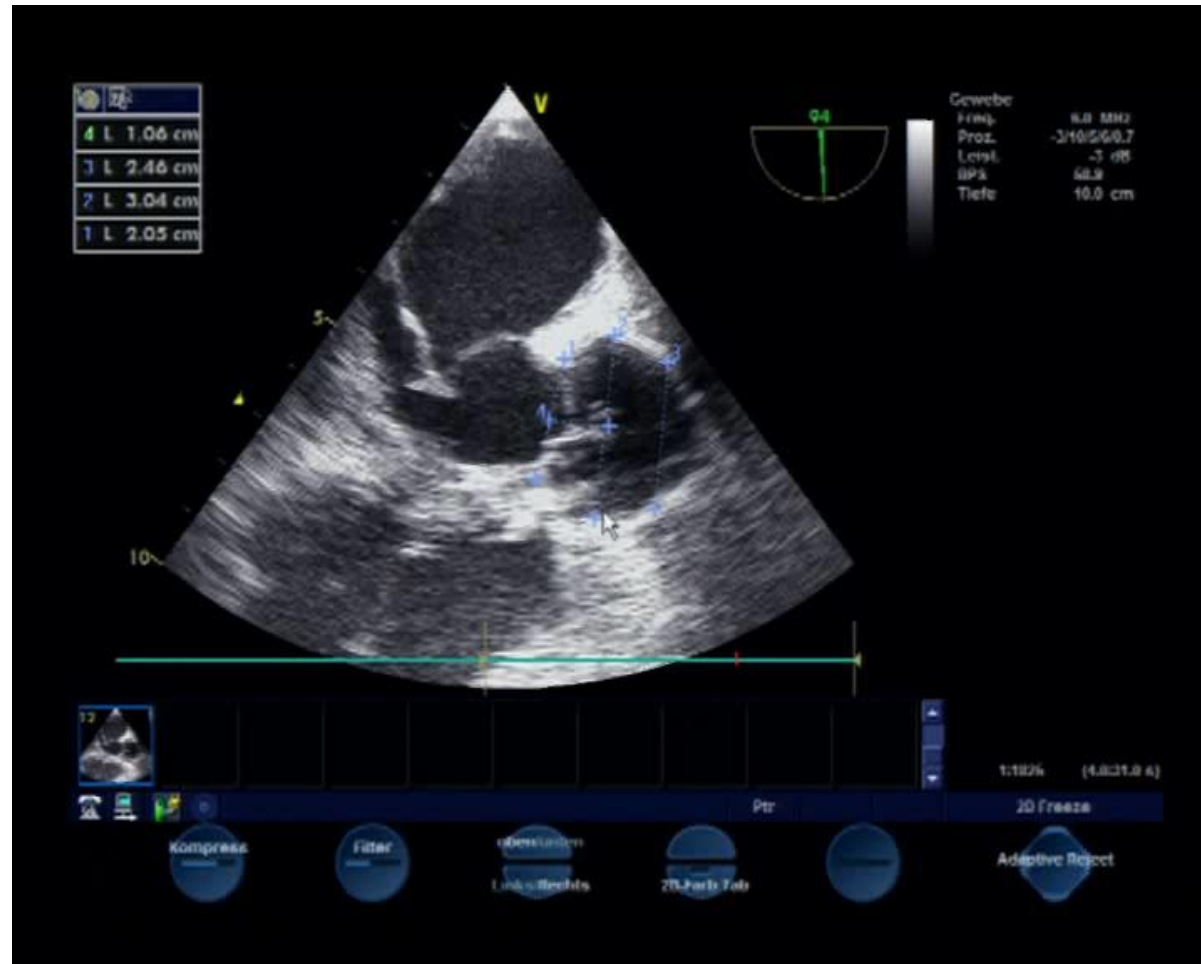
Correct cusp configuration:



Remaining Anastomoses:



Final check:



Wetlab:

- transect 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