

Pearls and Pitfalls: Aortic Valve Repair

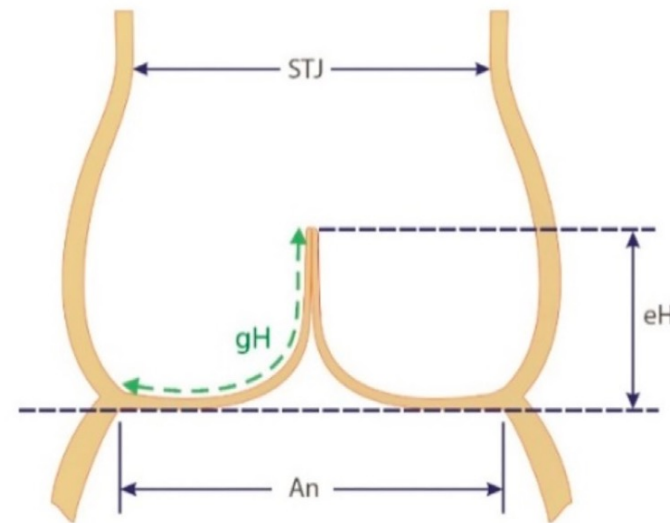
Marko T. Boskovski, MD MHS MPH
Assistant Professor of Surgery
Director of Ross and
Aortic Valve Preserving Surgery
Division of Cardiothoracic Surgery

Disclosures

- Edwards Lifesciences - consulting

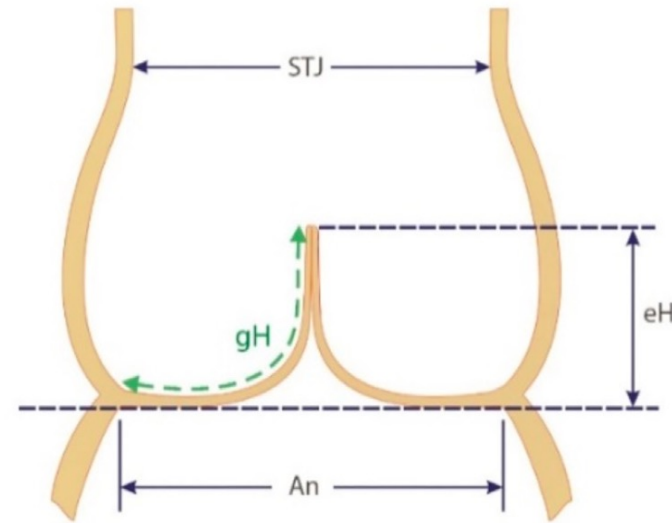
Aortic Valve Evaluation

- STJ
 - CTA
 - >35-40mm
- Annulus
 - CTA, TEE, intra-op
 - >28mm
- Geometric height
 - Intra-op
 - 17mm (TAV) and 20mm (BAV)
- Effective height
 - Intra-op
 - 9mm

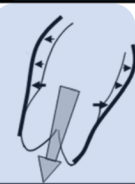
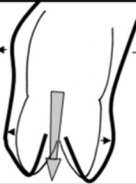
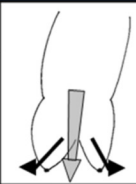
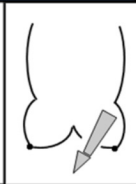
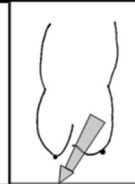
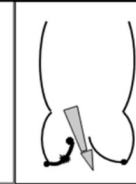


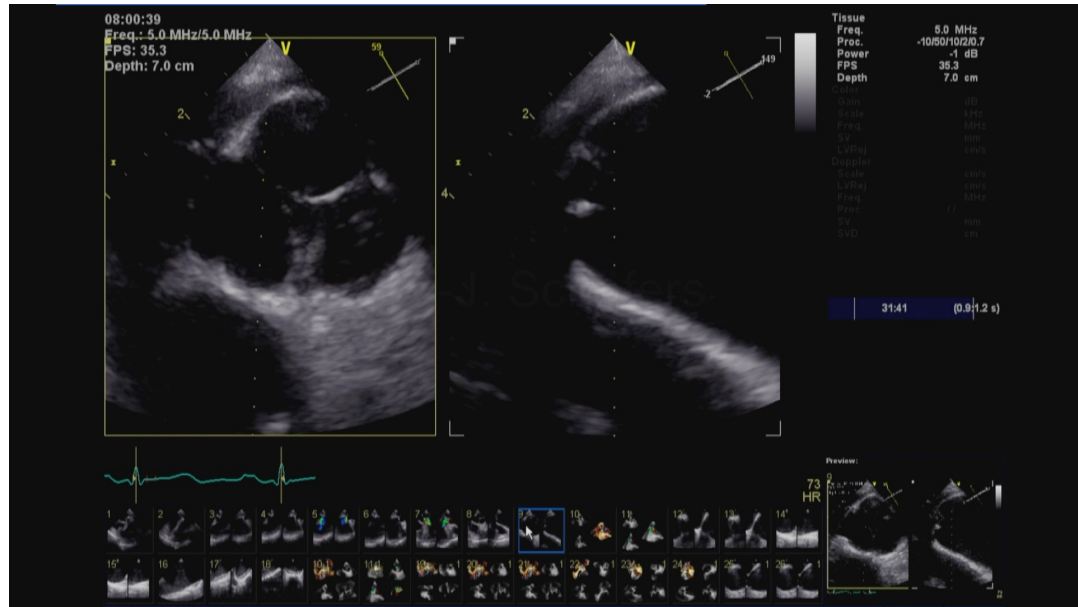
STJ dilation (ascending aortic aneurysm)

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	1a	1b	1c	1d		
Mechanism						
Repair Techniques (Primary)	STJ remodeling <i>Ascending aortic graft</i>	Aortic Valve sparing: <i>Reimplantation or Remodeling with SCA</i>	SCA	Patch Repair <i>Autologous or bovine pericardium</i>	Prolapse Repair <i>Plication Triangular resection Free margin Resuspension Patch</i>	Leaflet Repair <i>Shaving Decalcification Patch</i>
(Secondary)	SCA		STJ Annuloplasty	SCA	SCA	SCA



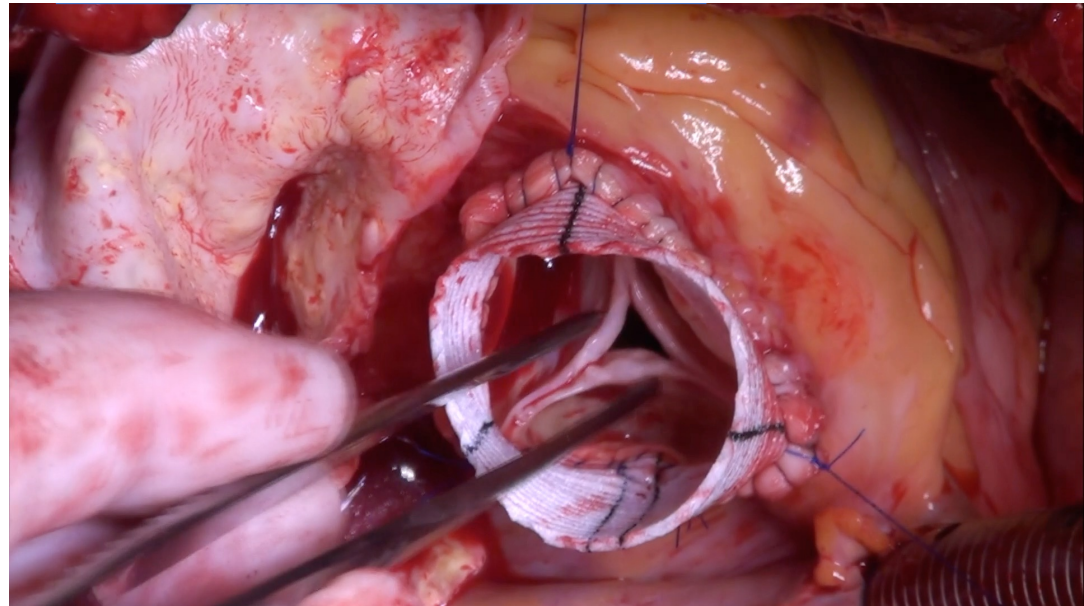
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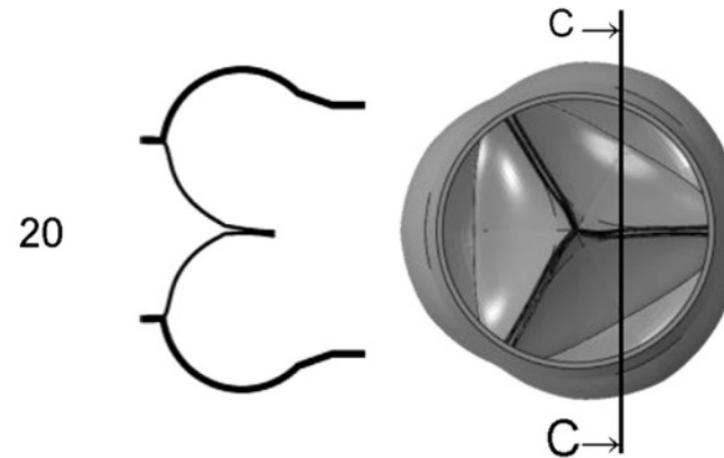
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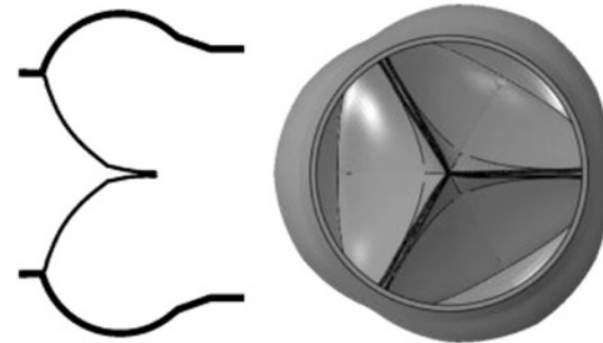
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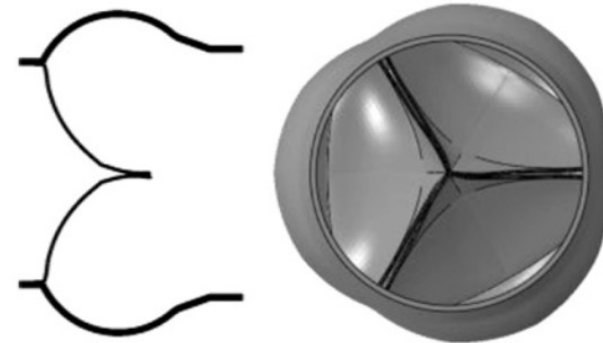


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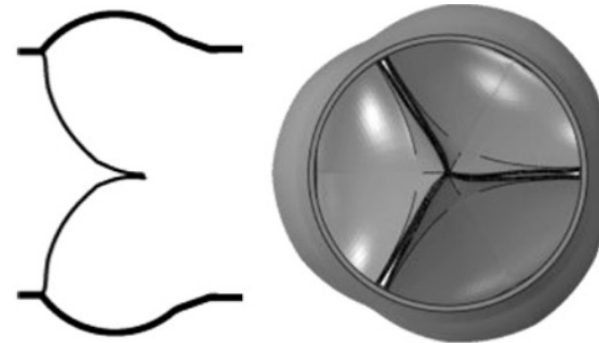


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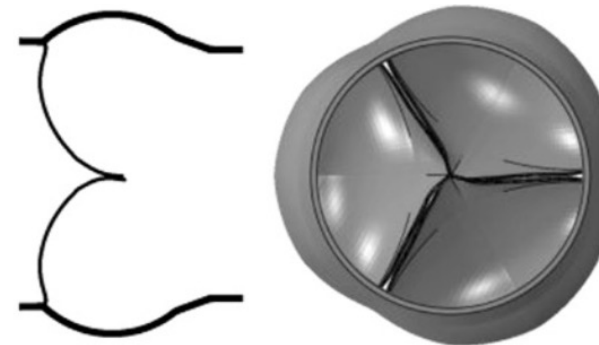


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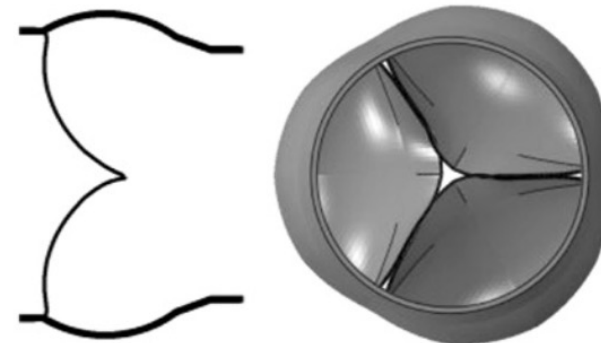


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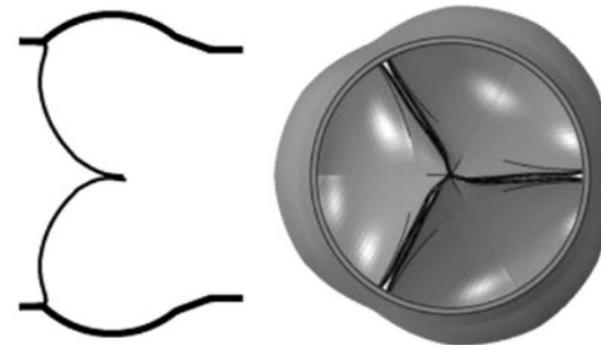


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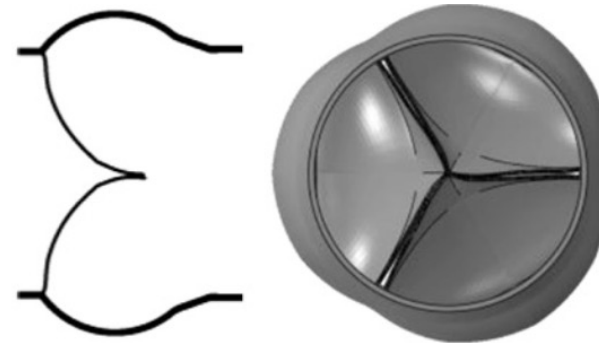


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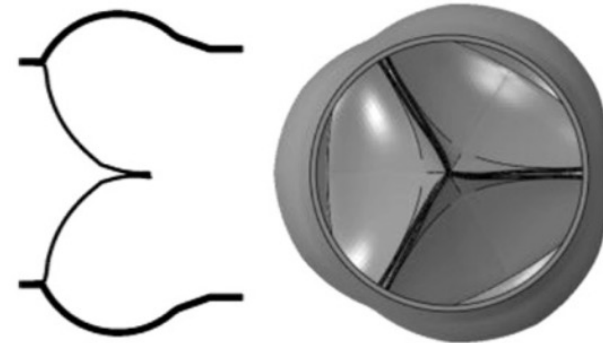


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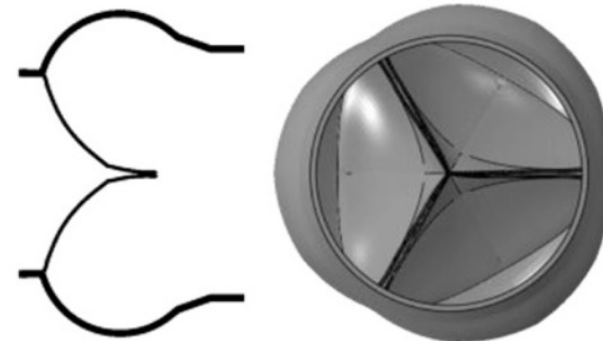


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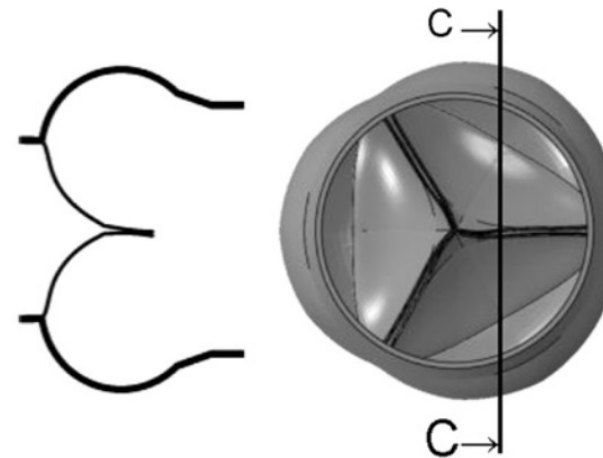


Annular dilation



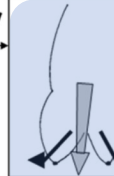


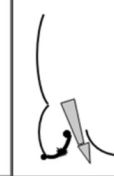
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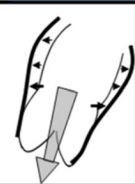
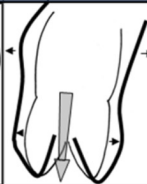
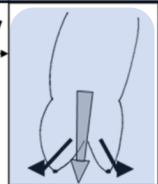
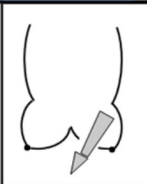
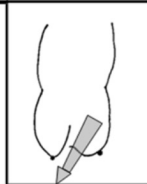
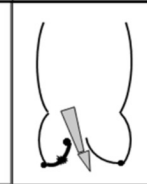


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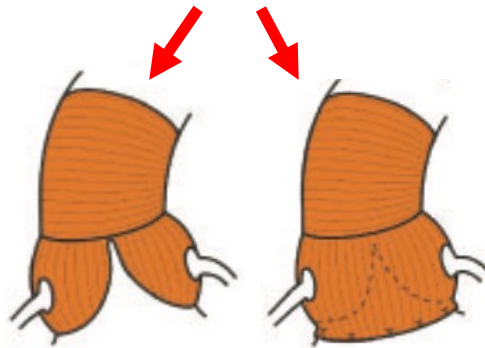


Sir Magdi Yacoub



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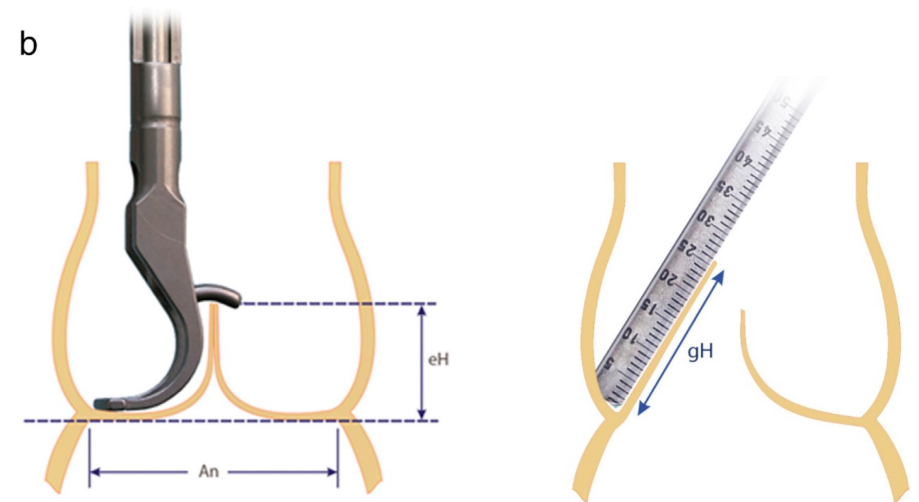
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Tirone David

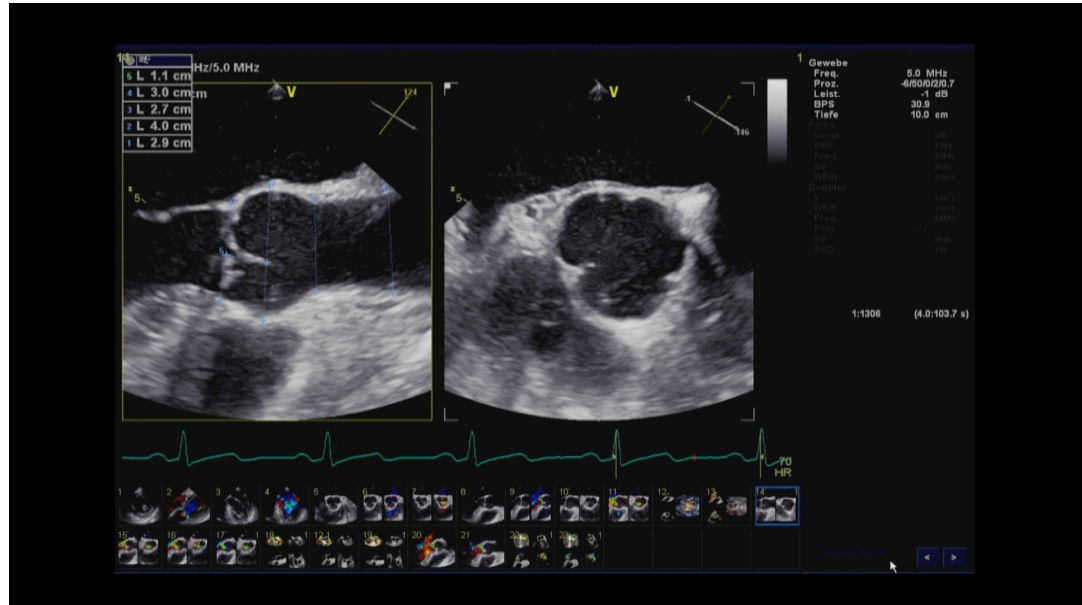
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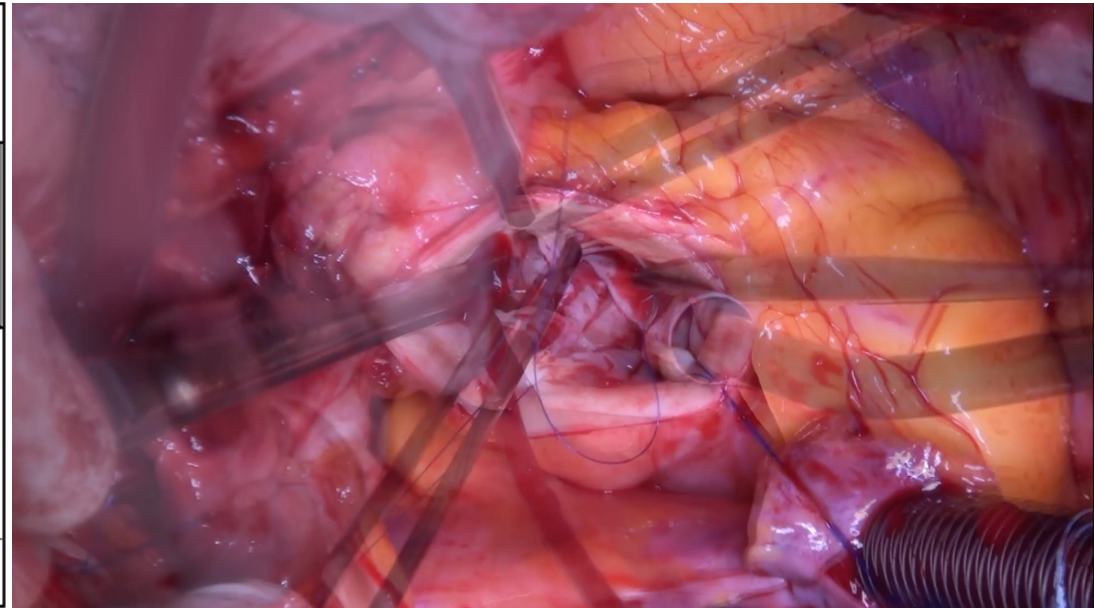
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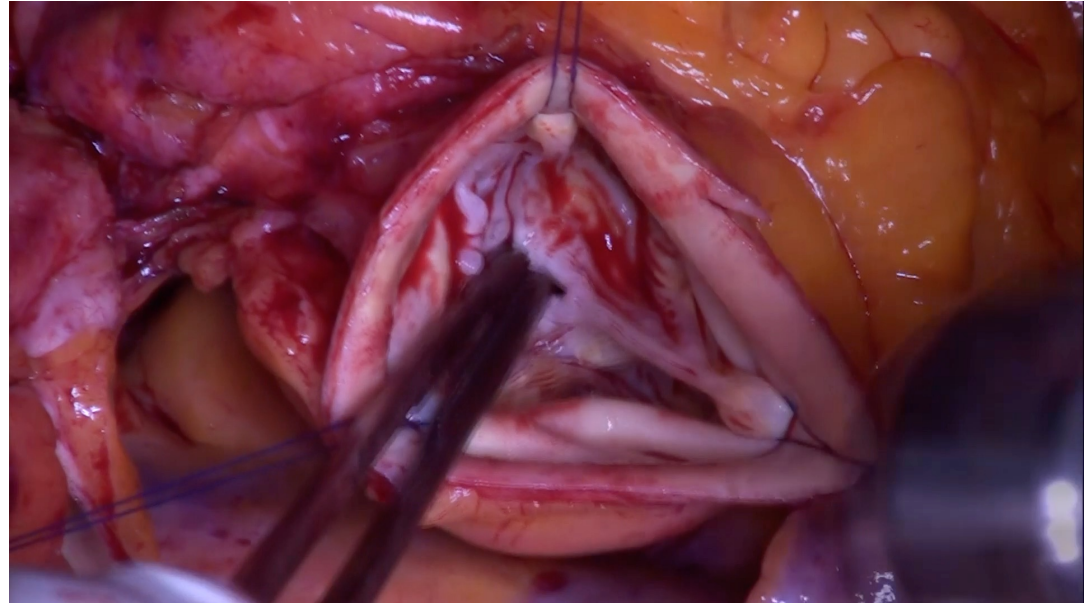
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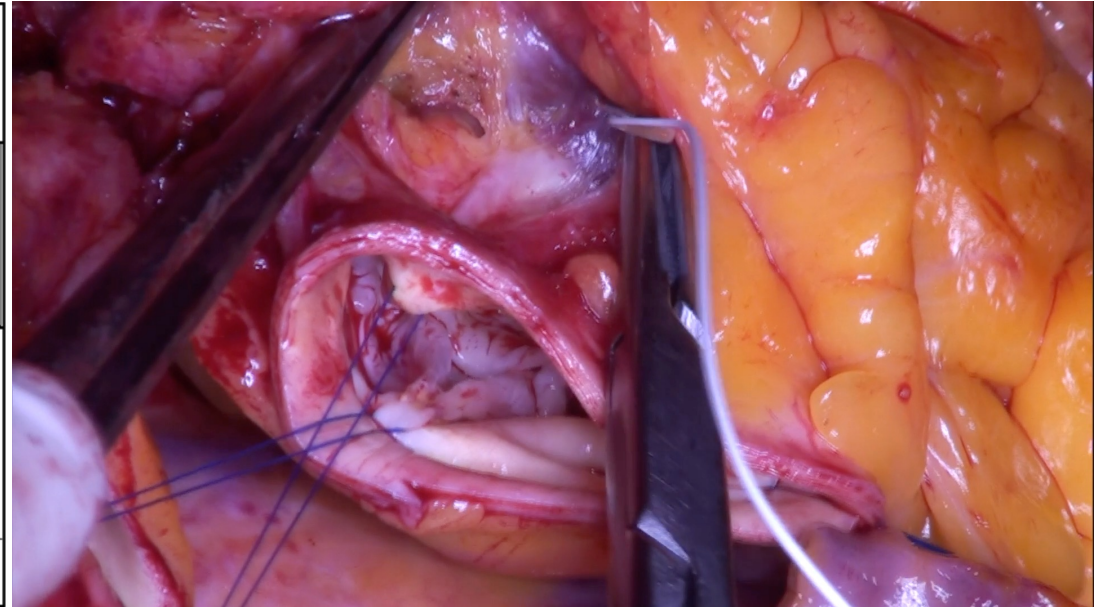
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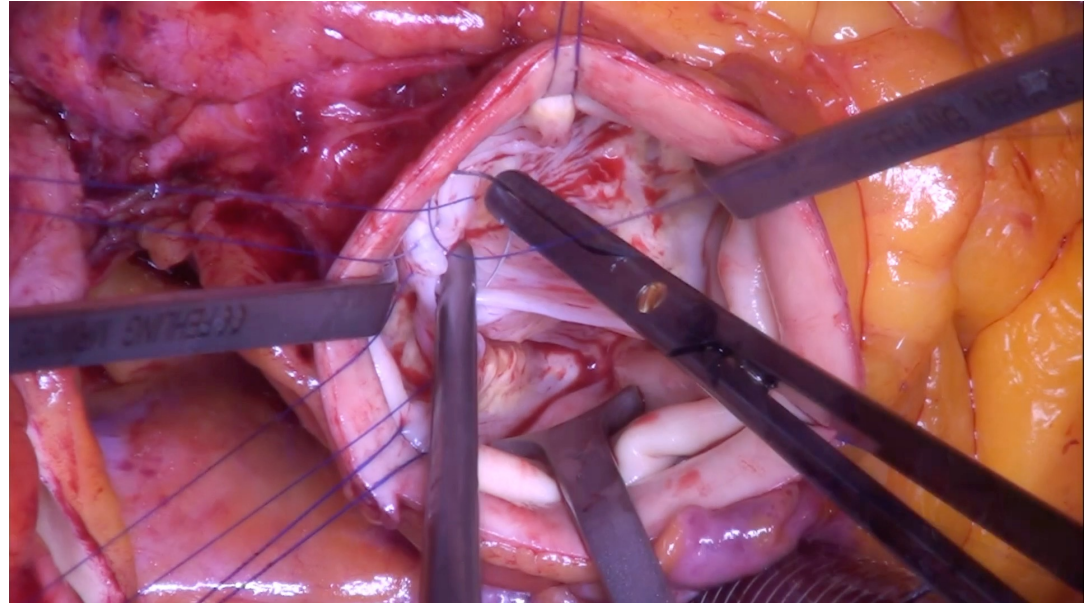
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Repair Techniques (Primary)	STJ remodeling <i>Ascending aortic graft</i>	Aortic Valve sparing: <i>Reimplantation or Remodeling with SCA</i>	SCA	Patch Repair <i>Autologous or bovine pericardium</i>	Prolapse Repair <i>Plication Triangular resection Free margin Resuspension Patch</i>	Leaflet Repair <i>Shaving Decalcification Patch</i>
(Secondary)	SCA		STJ Annuloplasty	SCA	SCA	SCA



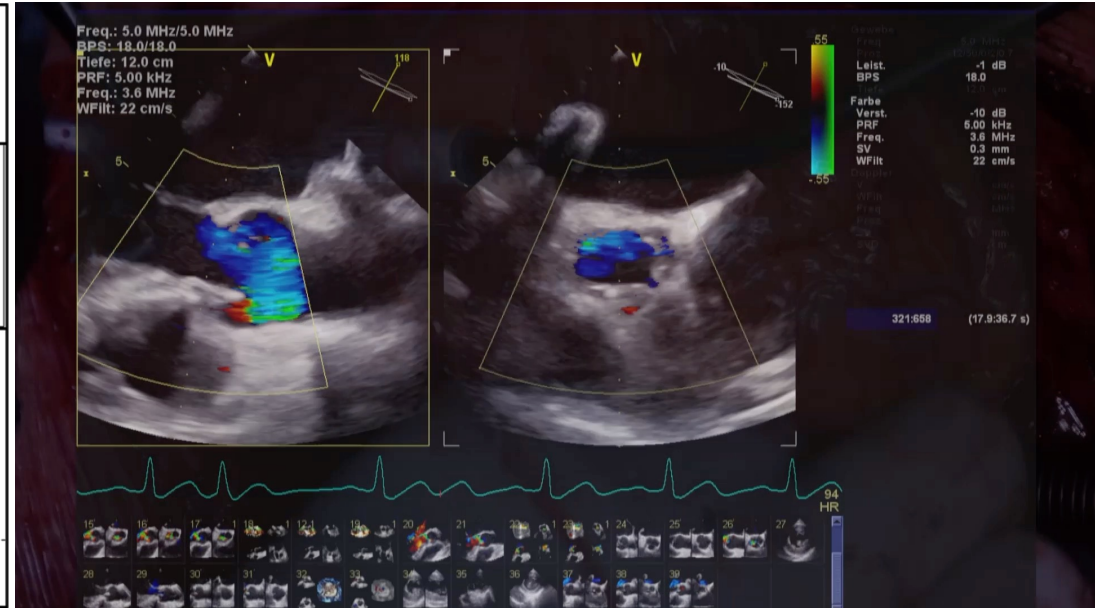
Mechanisms of AI

AI Class	Type I Normal cusp motion with FAA dilatation or cusp perforation				Type II Cusp Prolapse	Type III Cusp Restriction
	1a	1b	1c	1d		
Mechanism						
Repair Techniques (Primary)	STJ remodeling <i>Ascending aortic graft</i>	Aortic Valve sparing: <i>Reimplantation or Remodeling with SCA</i>	SCA	Patch Repair <i>Autologous or bovine pericardium</i>	Prolapse Repair <i>Plication Triangular resection Free margin Resuspension Patch</i>	Leaflet Repair <i>Shaving Decalcification Patch</i>
(Secondary)	SCA		STJ Annuloplasty	SCA	SCA	SCA



Mechanisms of AI

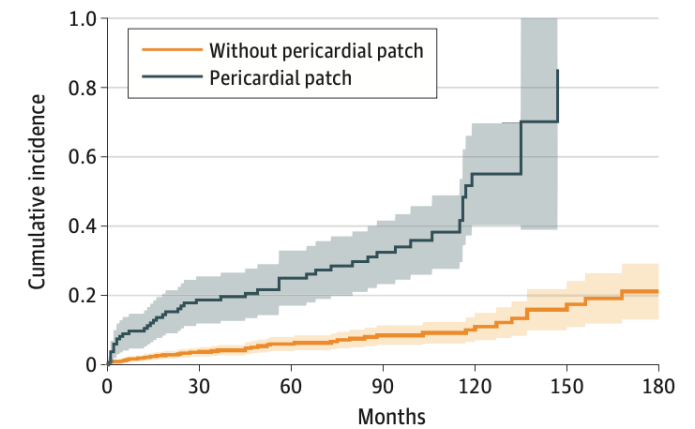
AI Class	Type I Normal cusp motion with FAA dilatation or cusp perforation				Type II Cusp Prolapse	Type III Cusp Restriction
	1a	1b	1c	1d		
Mechanism						
Repair Techniques (Primary)	STJ remodeling <i>Ascending aortic graft</i>	Aortic Valve sparing: <i>Reimplantation or Remodeling with SCA</i>	SCA	Patch Repair <i>Autologous or bovine pericardium</i>	Prolapse Repair <i>Plication Triangular resection Free margin Resuspension Patch</i>	Leaflet Repair <i>Shaving Decalcification Patch</i>
(Secondary)	SCA		STJ Annuloplasty	SCA	SCA	SCA



Mechanisms of AI

AI Class	Type I Normal cusp motion with FAA dilatation or cusp perforation				Type II Cusp Prolapse	Type III Cusp Restriction
	Ia	Ib	Ic	I _d		
Mechanism						
Repair Techniques (Primary)	STJ remodeling <i>Ascending aortic graft</i>	Aortic Valve sparing: <i>Reimplantation or Remodeling with SCA</i>	SCA	Patch Repair <i>Autologous or bovine pericardium</i>	Prolapse Repair <i>Plication Triangular resection Free margin Resuspension Patch</i>	Leaflet Repair <i>Shaving Decalcification Patch</i>
(Secondary)	SCA		STJ Annuloplasty	SCA	SCA	SCA

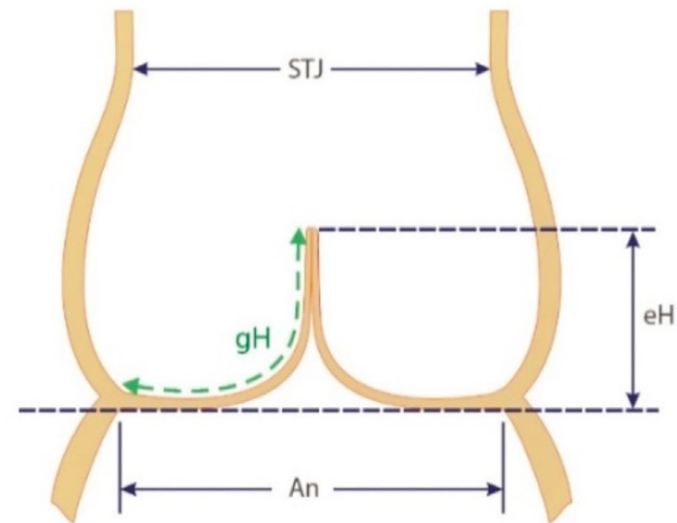
B Cumulative incidence of reoperation by use of pericardial patch



No. at risk	0	30	60	90	120	150	180
Without pericardial patch	884	437	293	187	112	69	52
Pericardial patch	138	94	68	50	21	12	

Summary

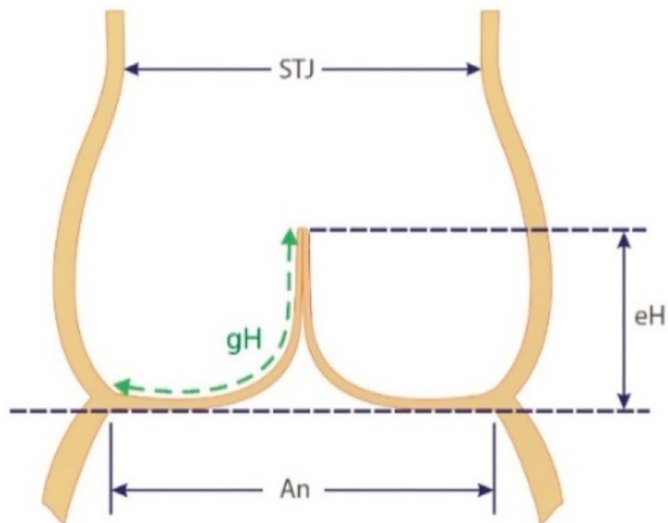
- Normalize
 - STJ
 - >35-40mm
- Annulus
 - CTA, TEE, intra-op
 - >28mm
- Geometric height
 - Intra-op
 - 17mm (TAV) and 20mm (BAV)
- Effective height
 - Intra-op
 - 9mm



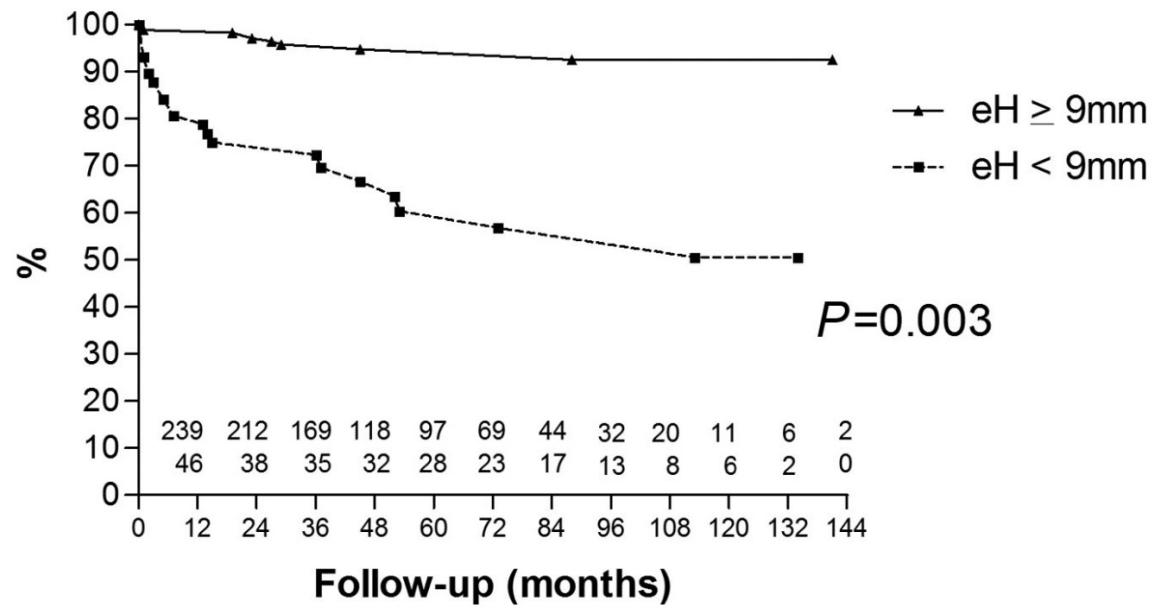


Thank you!

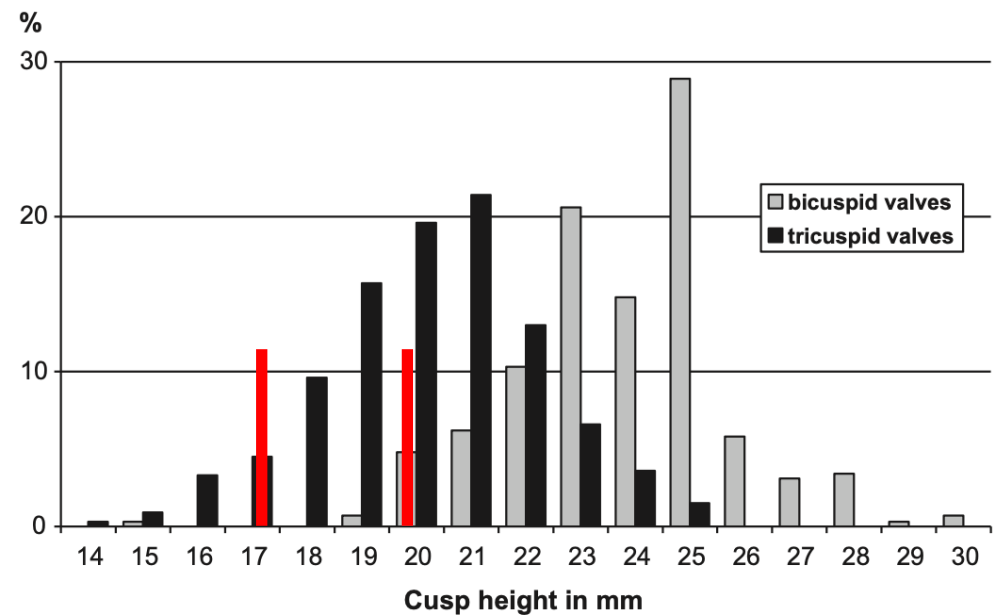
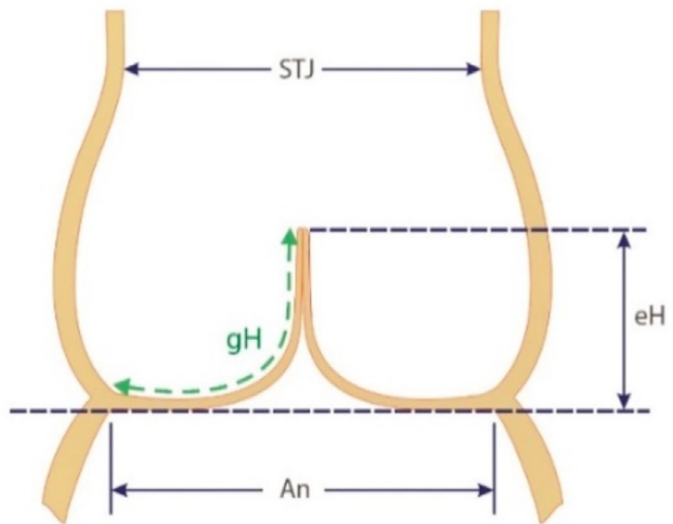
Principles of BAV Repair



Normal eH of fused cusp = 9-10mm

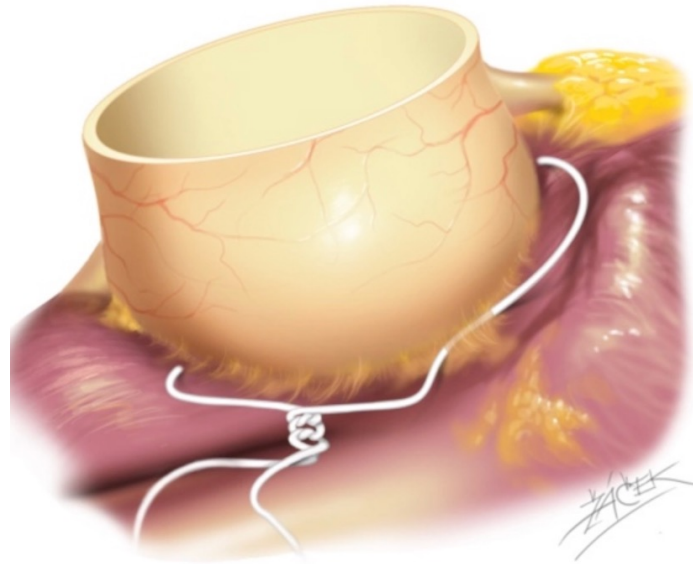


Principles of BAV Repair



Principles of BAV Repair

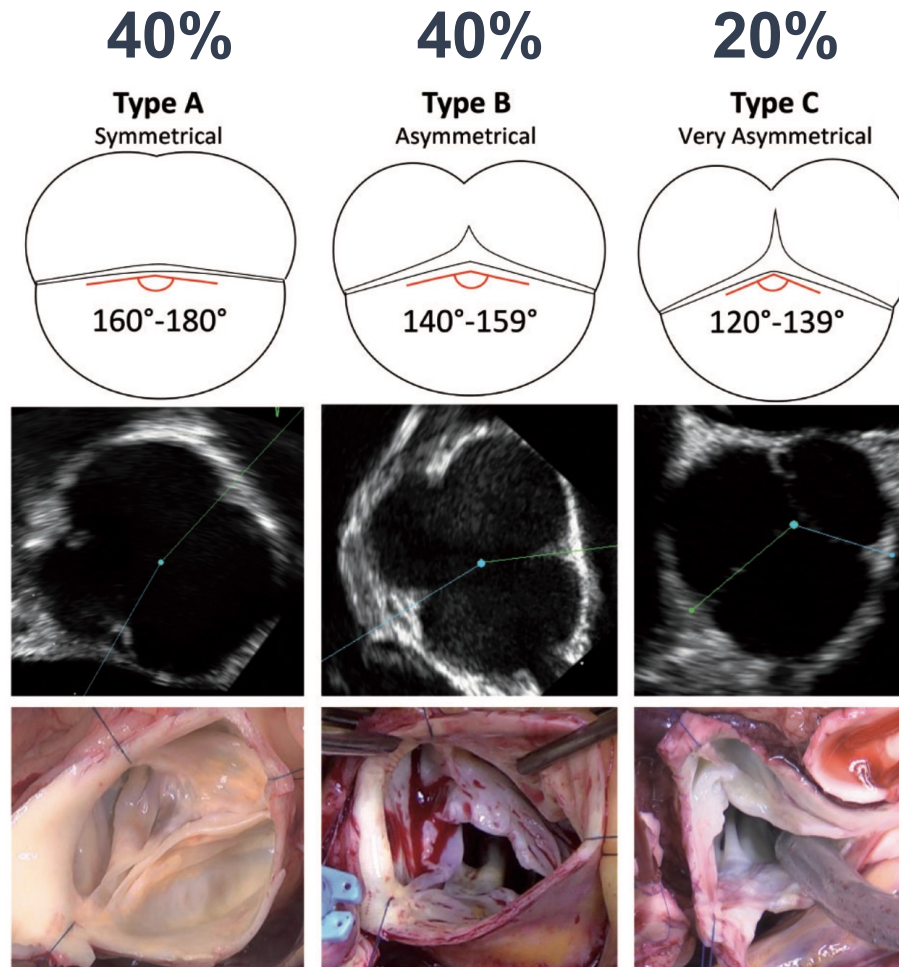
Aortic Annuloplasty
(AVJ > 25-27mm)



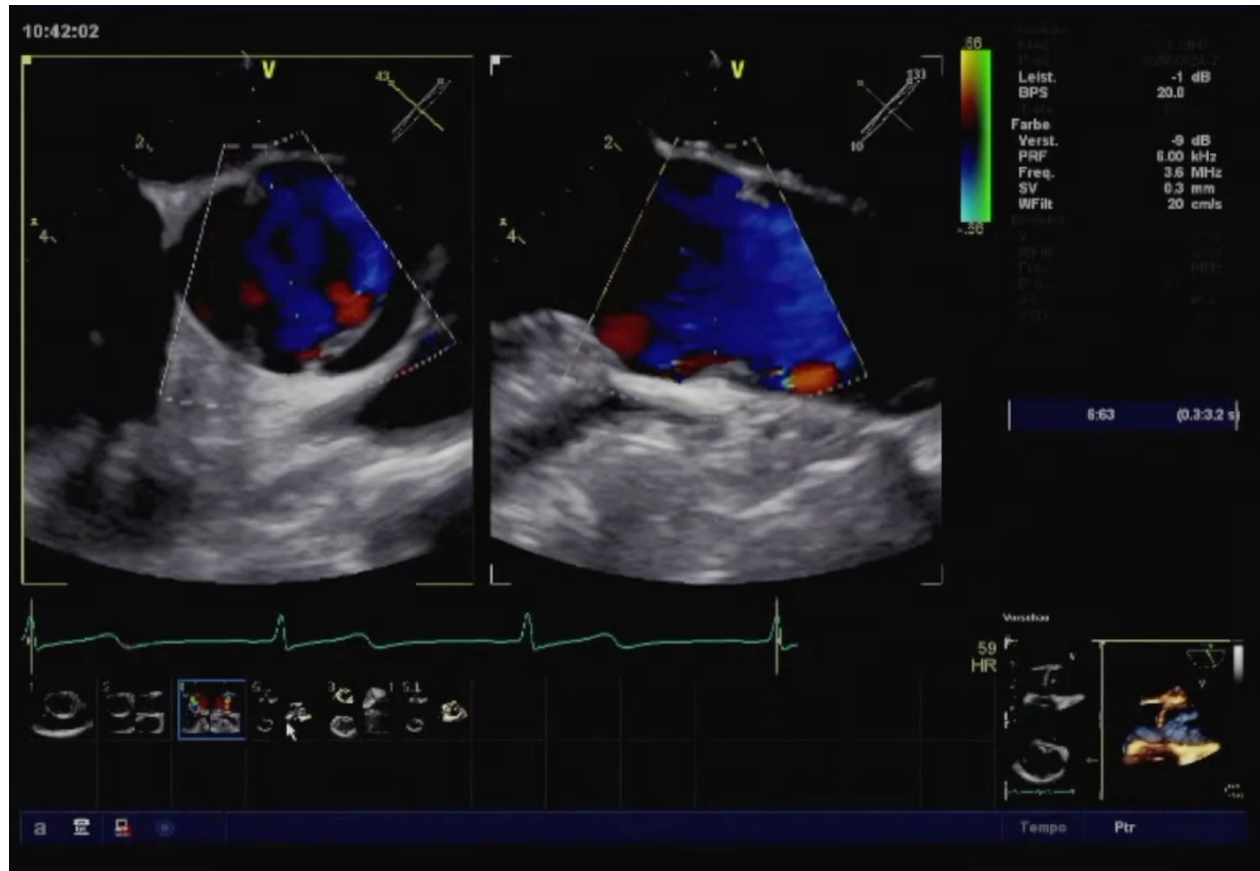
Vojacek J et al. Aortic Regurgitation
Springer Publ. 2017

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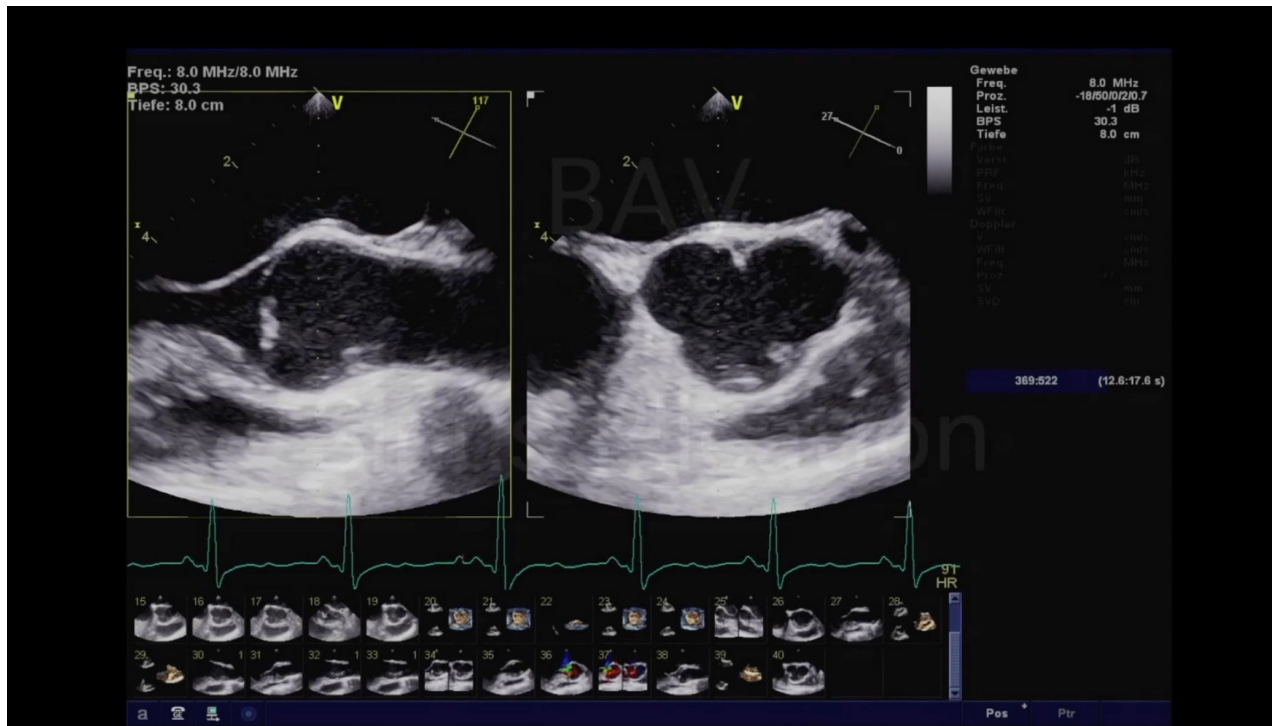
Principles of BAV Repair



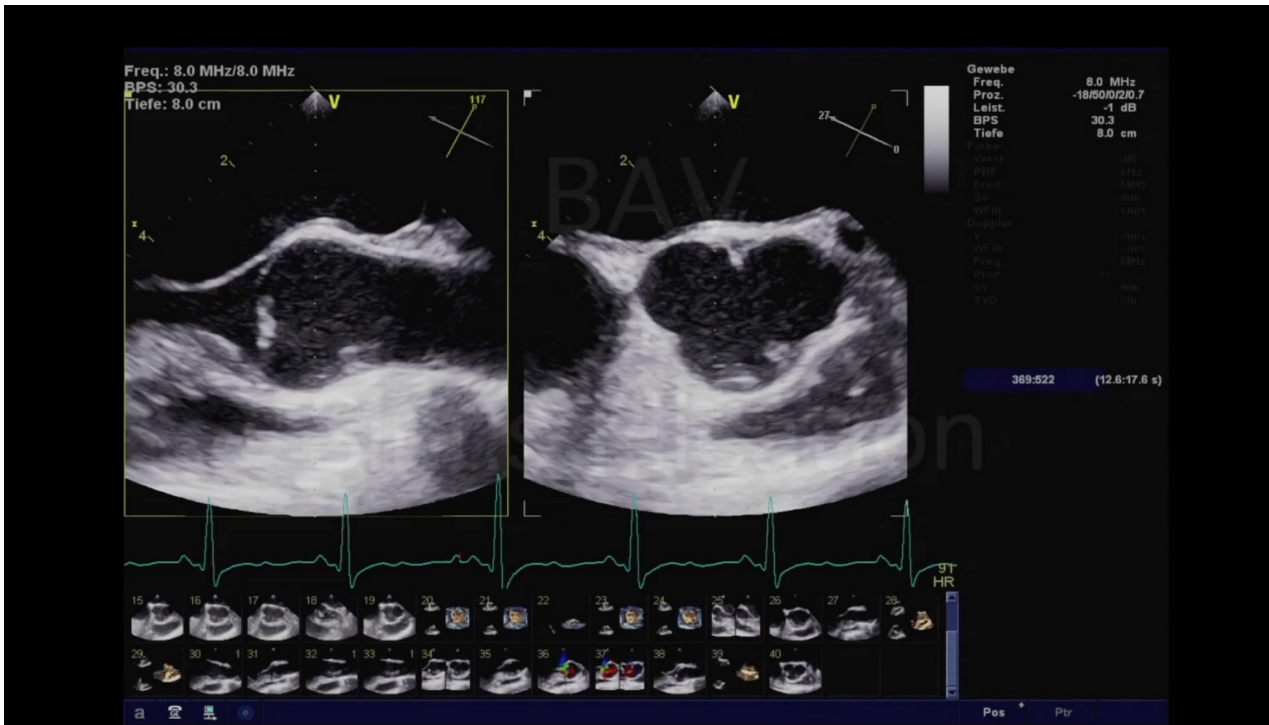
Symmetric BAV Repair



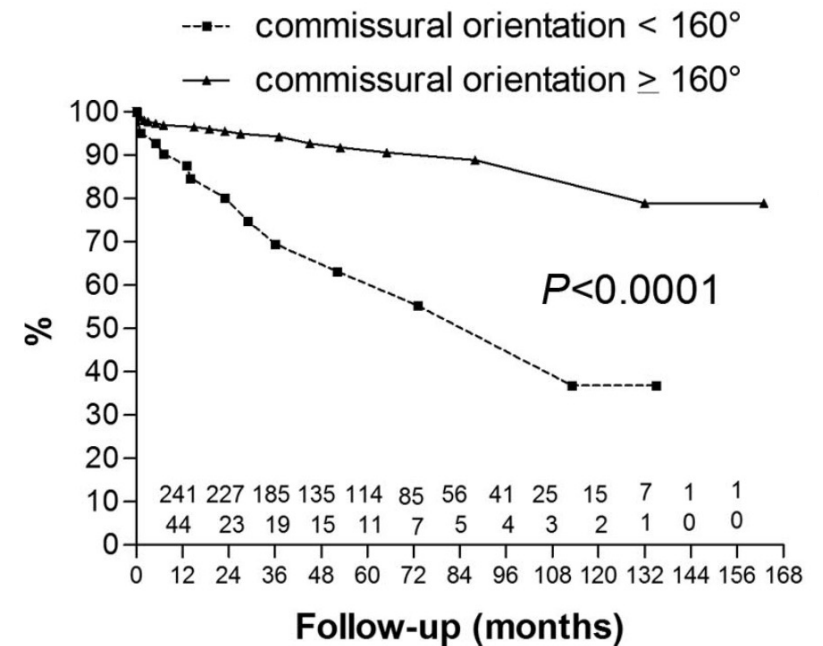
Asymmetric BAV Repair



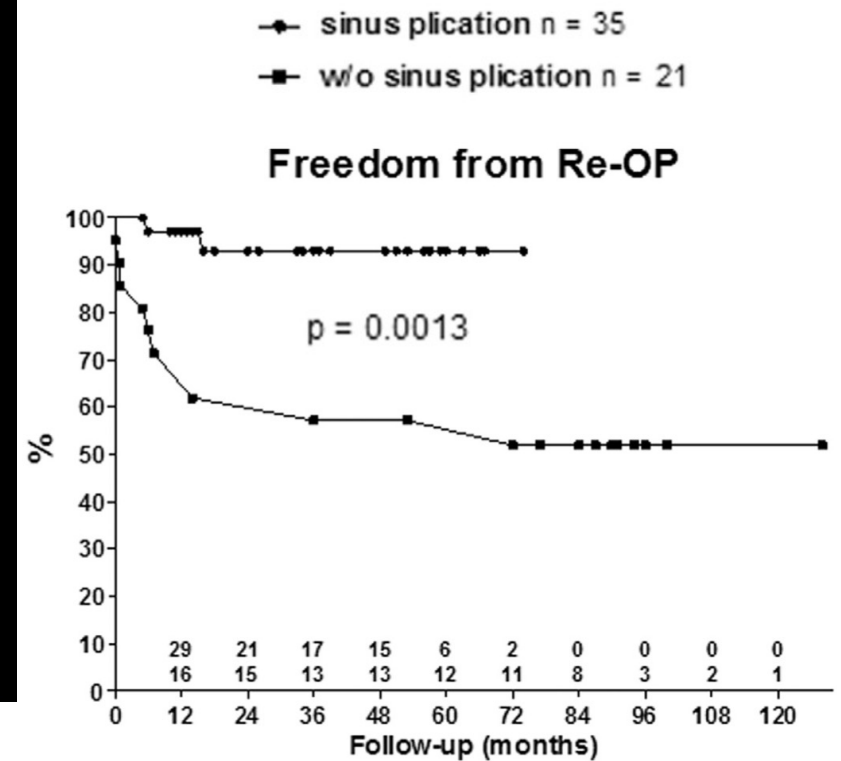
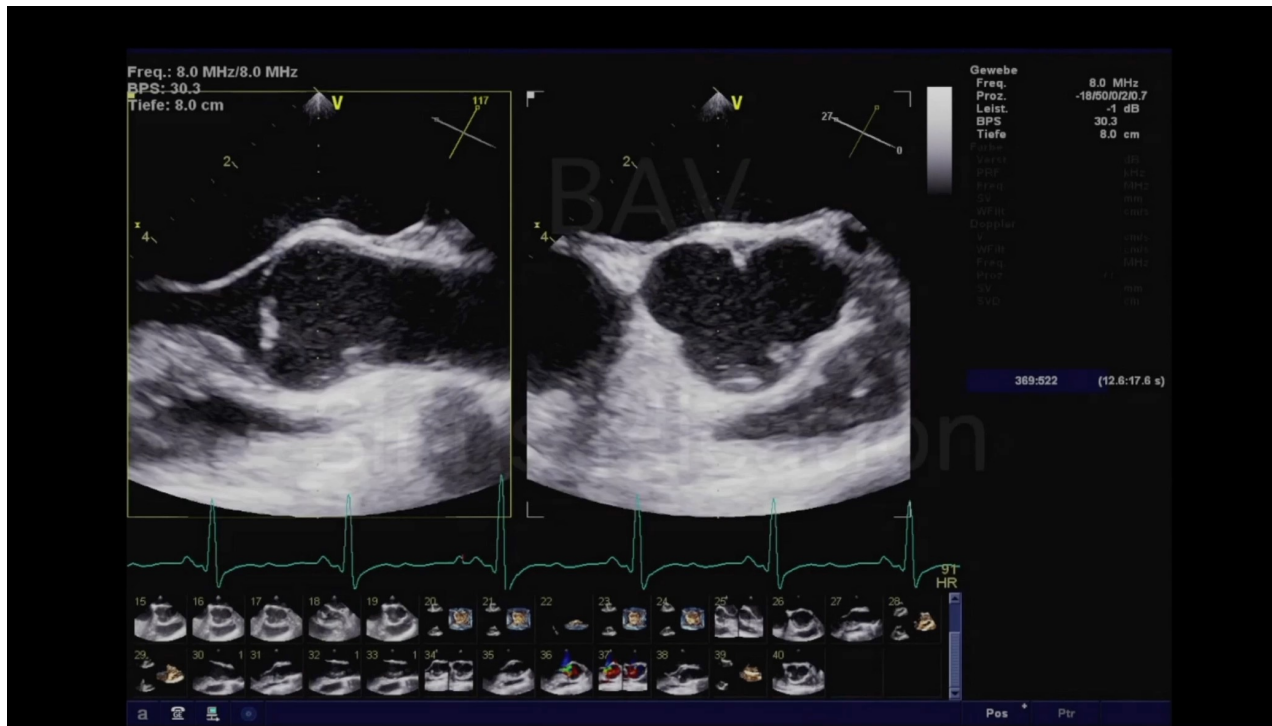
Asymmetric BAV Repair



Reoperation



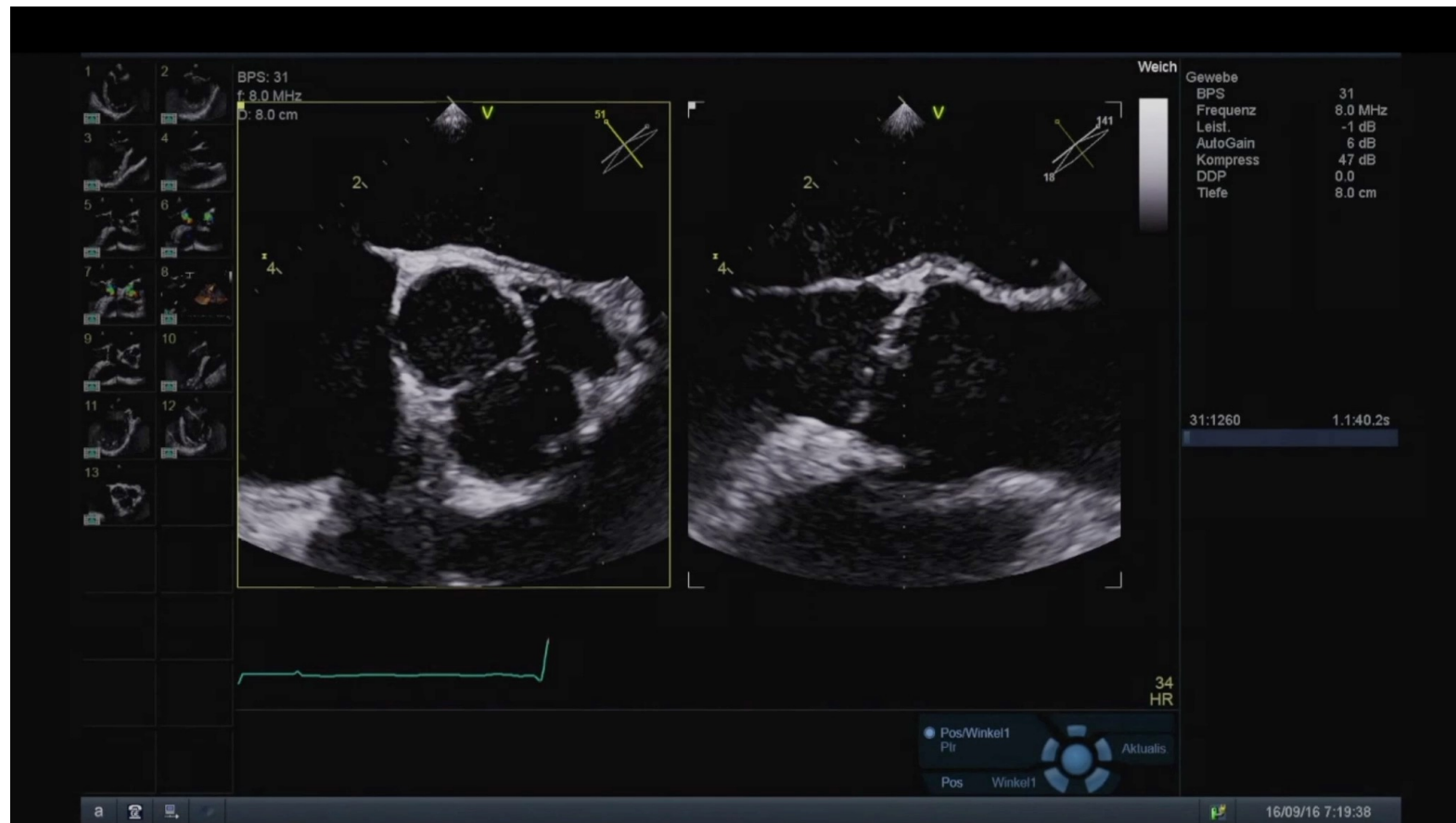
Asymmetric BAV Repair



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Schneider et al. *Ann Thorac Surg.* 2017 Feb;103(2):580-585.

Very Asymmetric BAV Repair



Department of Surgery

Courtesy of HJ Schäfers