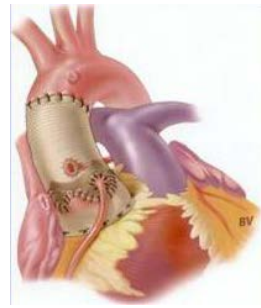


# 急性A型大動脈解離 中枢側の術式選択 Bentall vs. 自己弁温存(VSRR)

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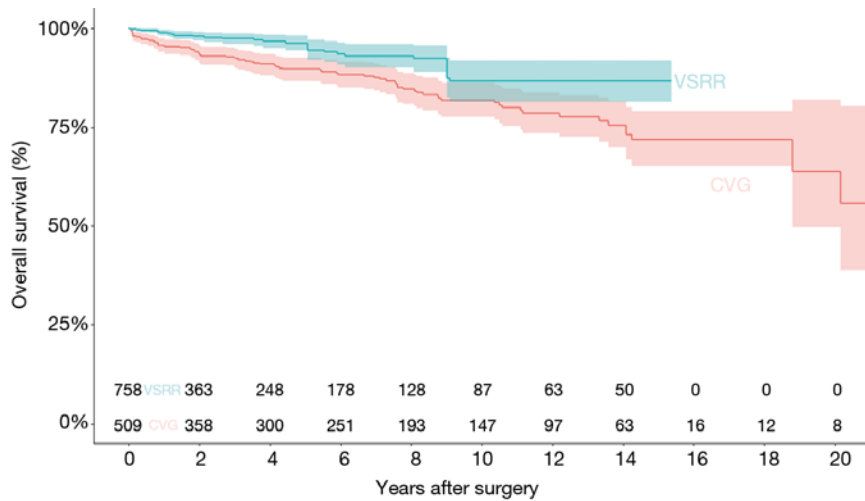
神戸大学・外科学教室・心臓血管外科学  
岡田健次

# Bentall vs. VSRR

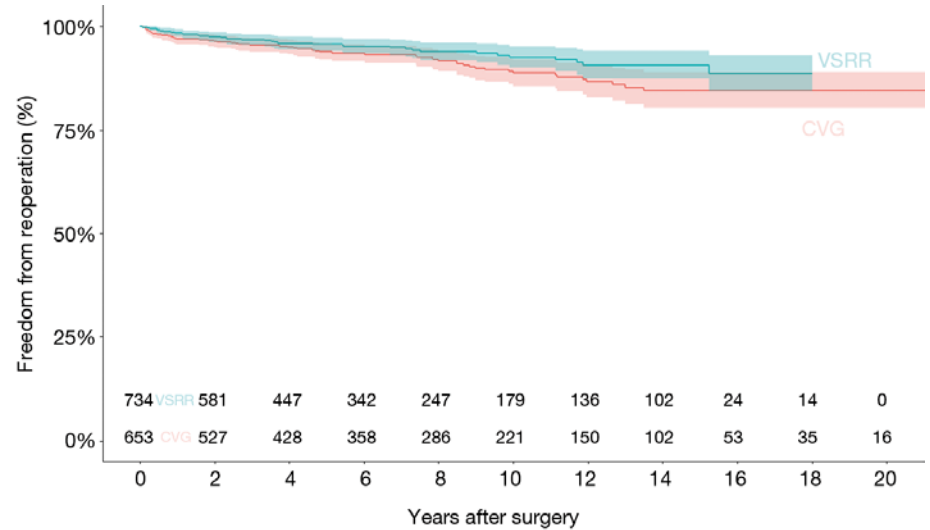
	<b>Bentall</b>	<b>VSRR</b>
<b>Technique</b>	Easier	More demanding
Long-term results	Well established	Not enough
Anticoagulation	Prerequisite in mech P.	Not necessary
Anticoag. relat. bleeding	Frequent	Less
Thromboemboplism	More	Less
Endocarditis	Yes	Less
SVD	Rare in mech p. Common in bio P.	-
Non-SVD	Yes	Yes
<b>Redo for AR</b>	Rare	Significant number
AVA	1.5 - 2.5 cm <sup>2</sup>	2.0 m <sup>2</sup> <

# Bentall vs. VSRR; meta analysis

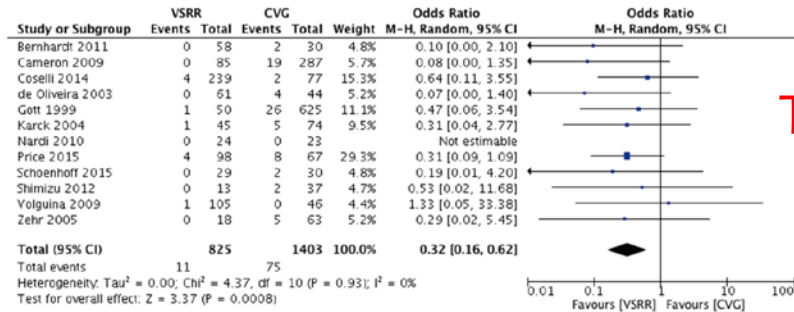
Survival



Redo freedom

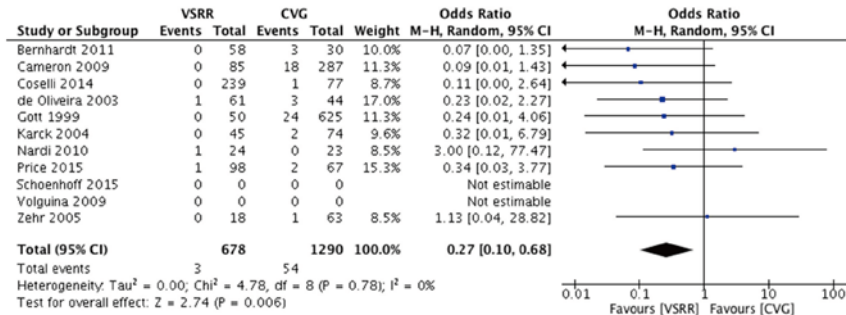
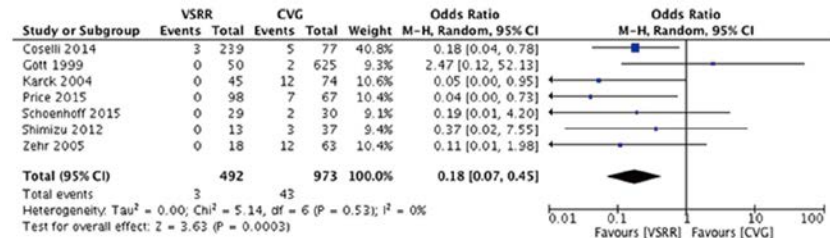


# Complications



Thromboembolism

Bleeding



Endocarditis

Flynn SD et al. Ann Cardiothorac Surg 2017;6:570-581

# 2017 ESC/EACTS Guidelines for the management of valvular heart disease

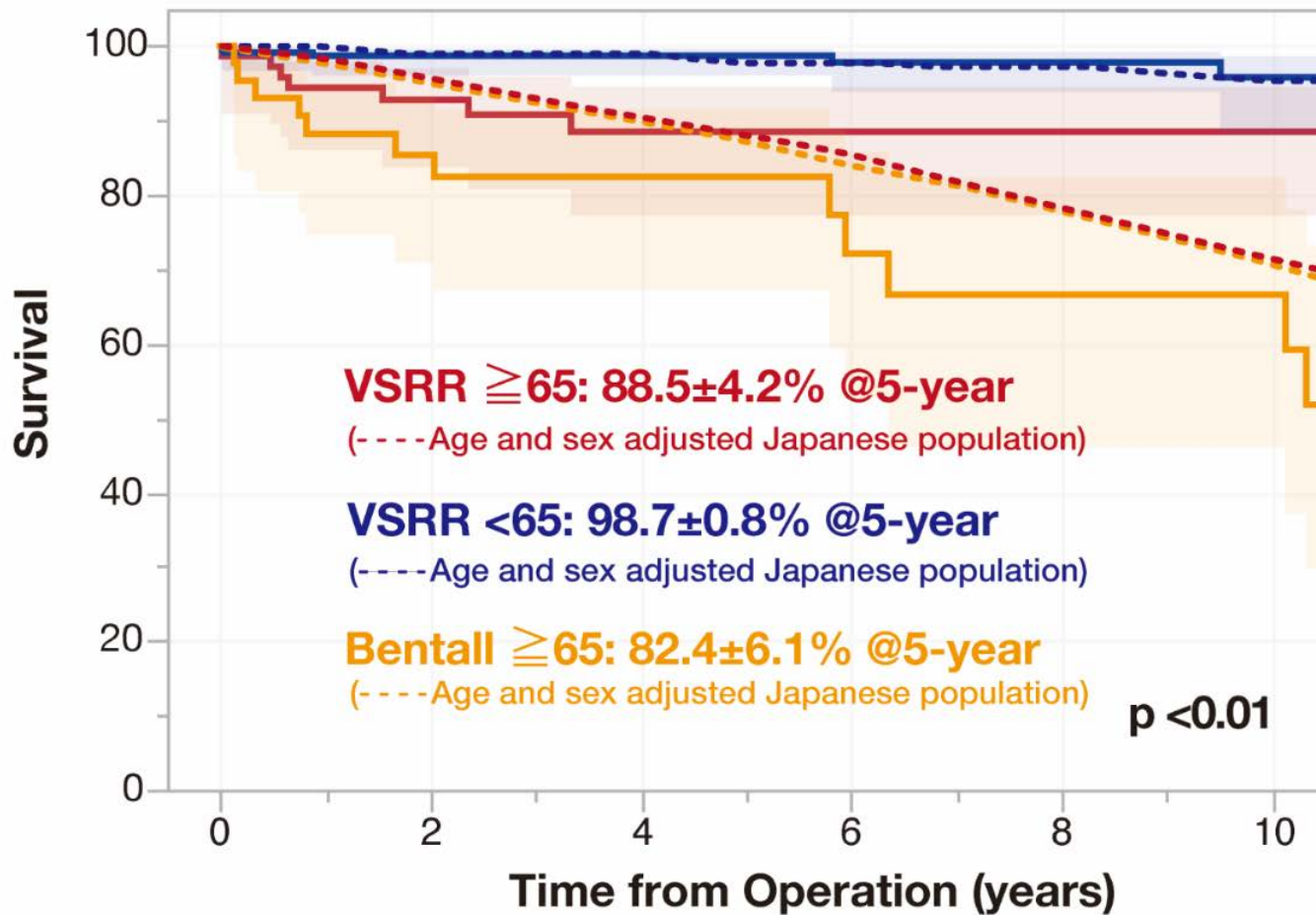
The Task Force for the Management of Valvular Heart Disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

## B. Aortic root or tubular ascending aortic aneurysm<sup>d</sup> (irrespective of the severity of aortic regurgitation)

Aortic valve repair, using the reimplantation or remodeling with aortic annuloplasty technique, is recommended in young patients with aortic root dilation and tricuspid aortic valves, when performed by experienced surgeons.

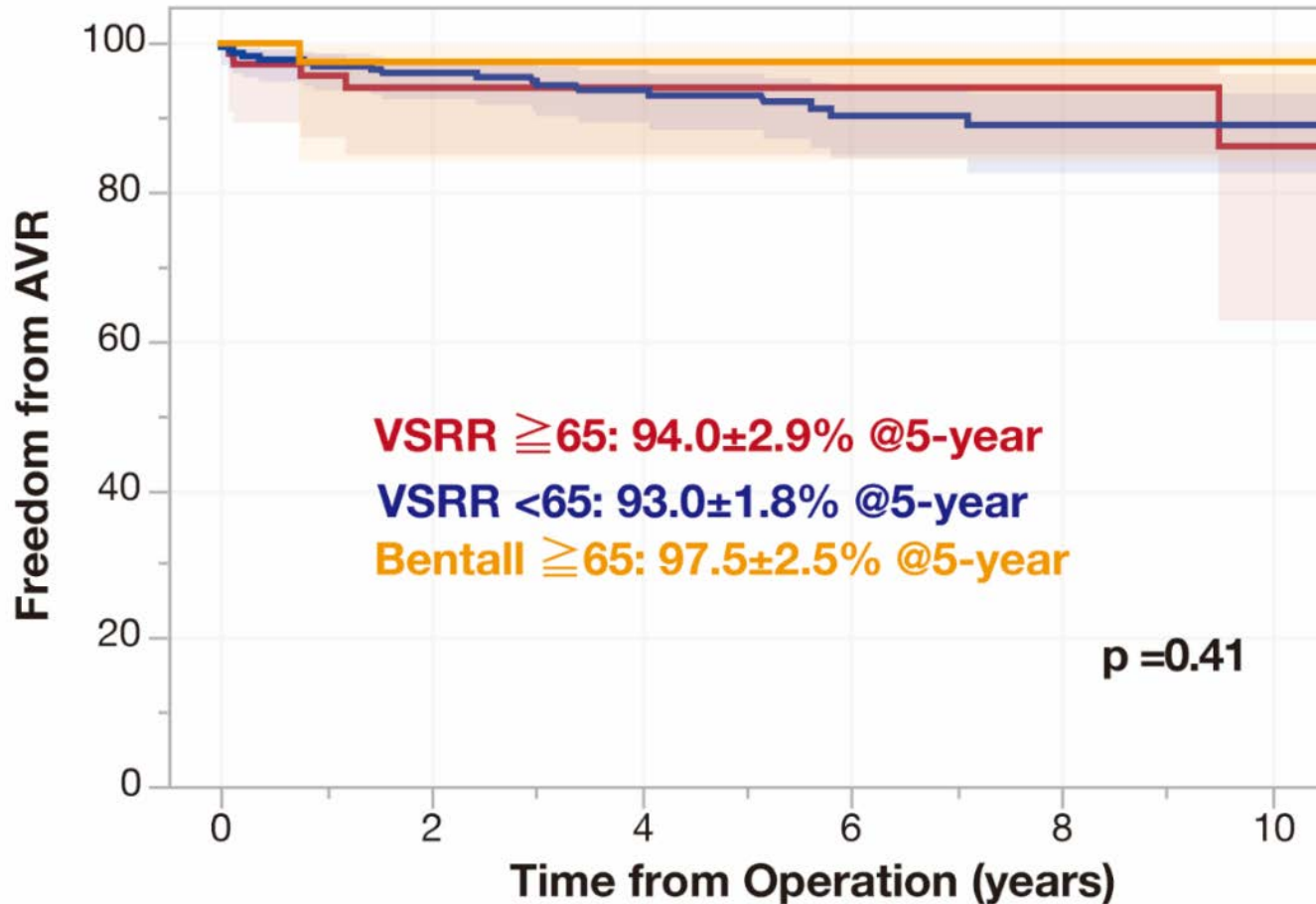
I

C



Number at risk

VSRR $\geq 65$ :	73	51	36	25	19	12
VSRR < 65:	232	201	147	106	70	44
Bentall $\geq 65$ :	45	30	24	15	12	10

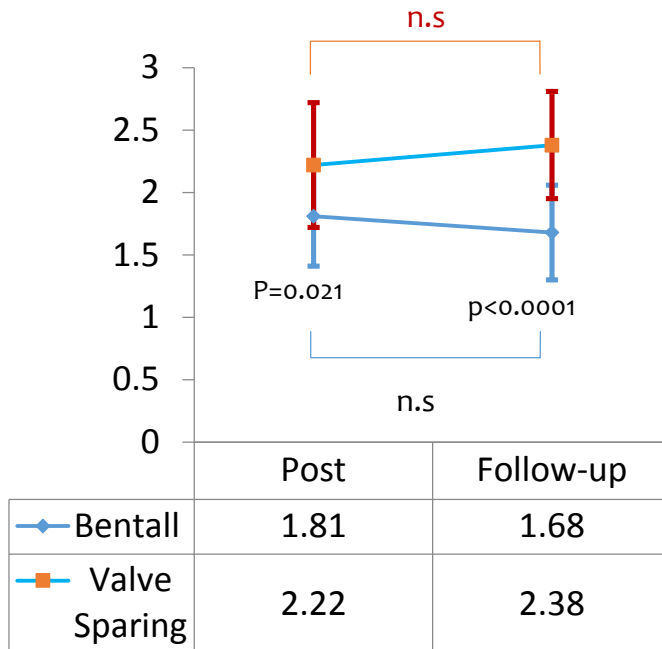


Number at risk

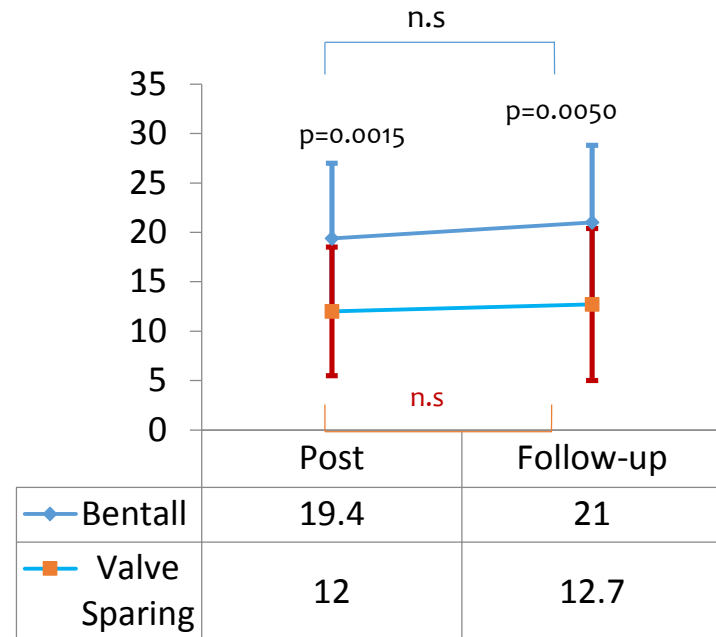
VSRR $\geq 65$ :	73	48	34	24	19	10
VSRR < 65:	232	192	135	94	61	34
Bentall $\geq 65$ :	45	31	27	16	12	10

# Postoperative echocardiographic data

## EOA (cm<sup>2</sup>)

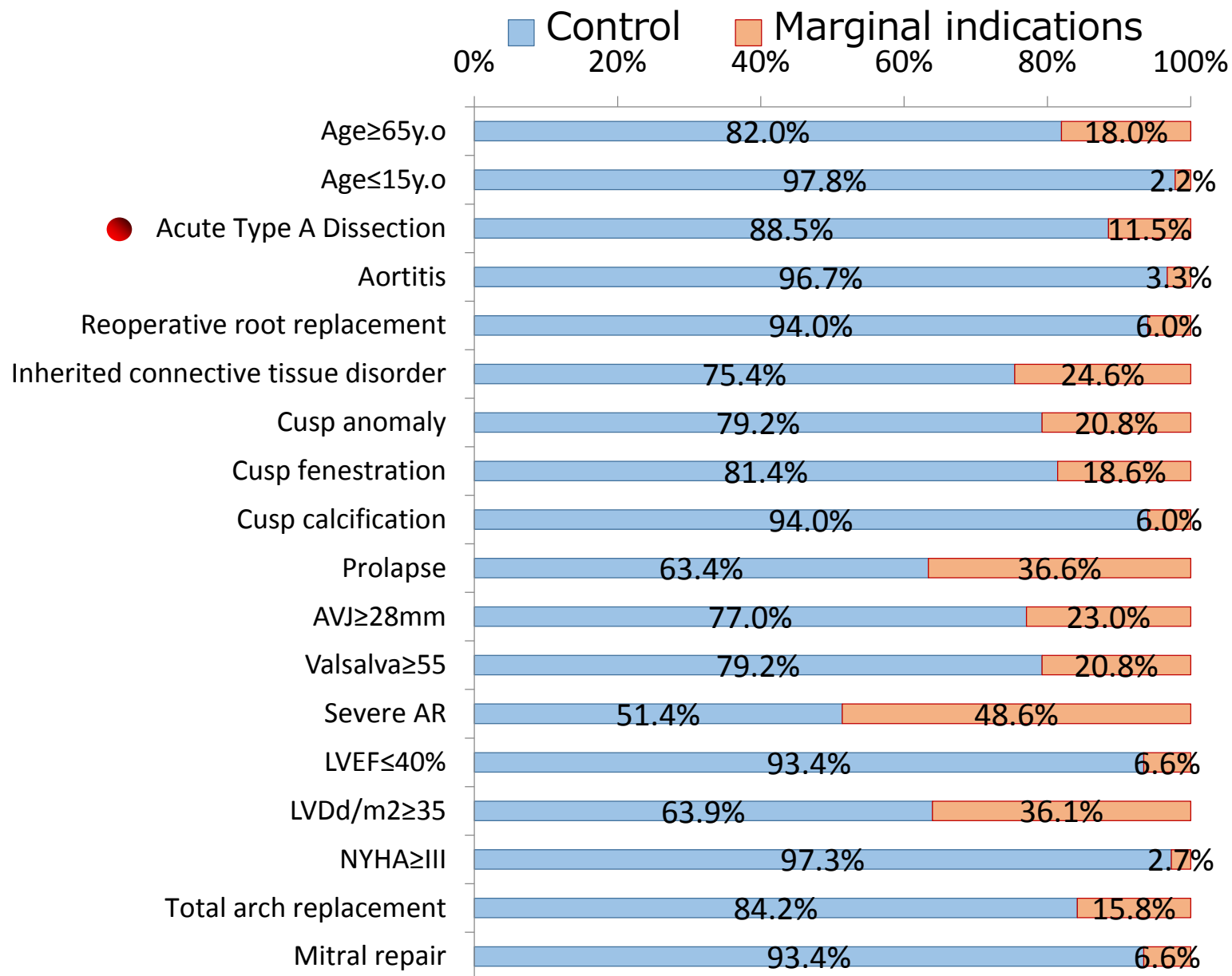


## PG/peak (mmHg)





# Marginal indications



# Durability and safety of David V valve-sparing root replacement in acute type A aortic dissection



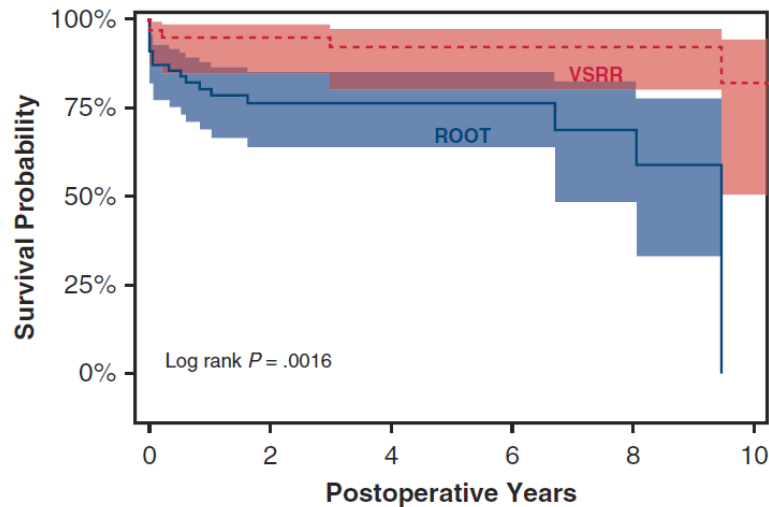
J Thorac Cardiovasc Surg 2019;157:14-23

Joshua M. Rosenblum, MD, PhD,<sup>a</sup> Bradley G. Leshnowar, MD,<sup>a</sup> Rena C. Moon, MPH,<sup>b</sup>  
 Yi Lasanajak, PhD,<sup>b</sup> Jose Binongo, PhD,<sup>b</sup> LaRonica McPherson, RN,<sup>a</sup> and Edward P. Chen, MD<sup>a</sup>

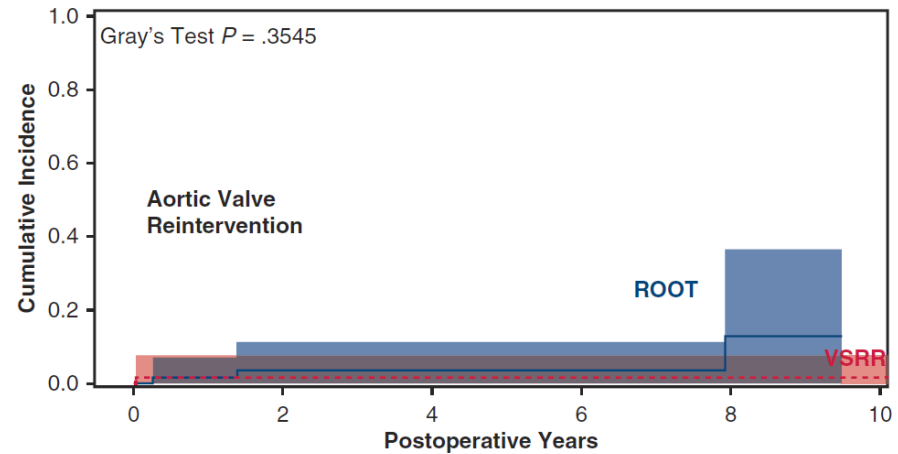
## VSRR exclusion criteria

In general, VSRR was not undertaken for patients older than 65 years, those with severe or irreversible malperfusion, hemodynamic instability or shock, and those with significant preexisting medical conditions.

## Bentall (n=77) vs. VSRR (n=55) at Emory University



ROOT	77	30	17	8	0
VSRR	59	38	27	13	5



ROOT	76	30	17	13	6	0
VSRR	59	38	30	18	12	5

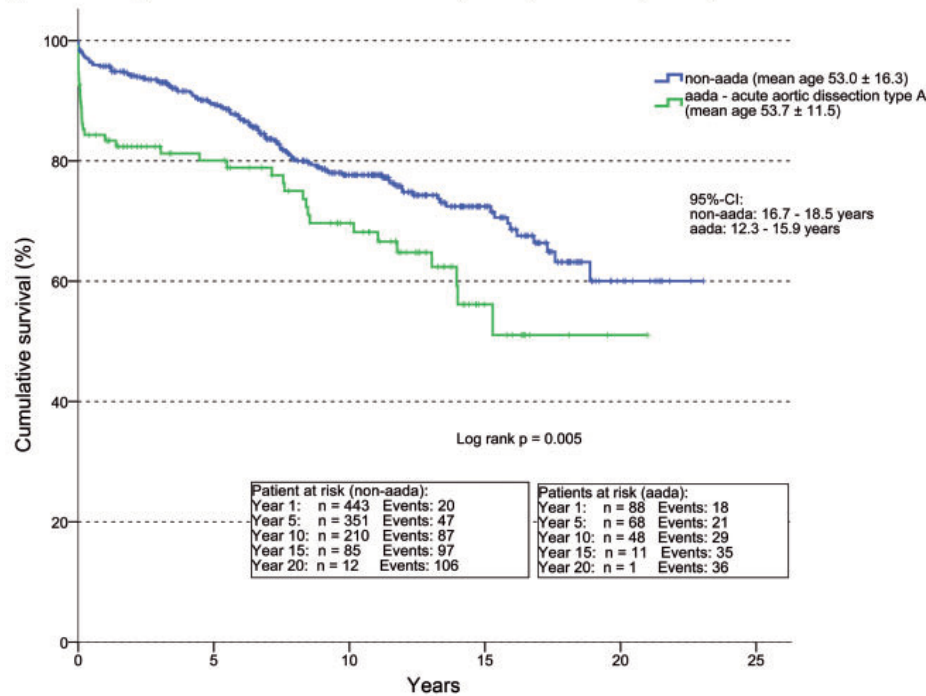
# Valve-sparing David I procedure in acute aortic type A dissection: a 20-year experience with more than 100 patients<sup>†</sup>

Erik Beckmann, Andreas Martens, Jana Pertz, Tim Kaufeld, Julia Umminger, Jasmin S. Hanke, Jan D. Schmitto, Serghei Cebotari, Axel Haverich and Malakh Lal Shrestha\*

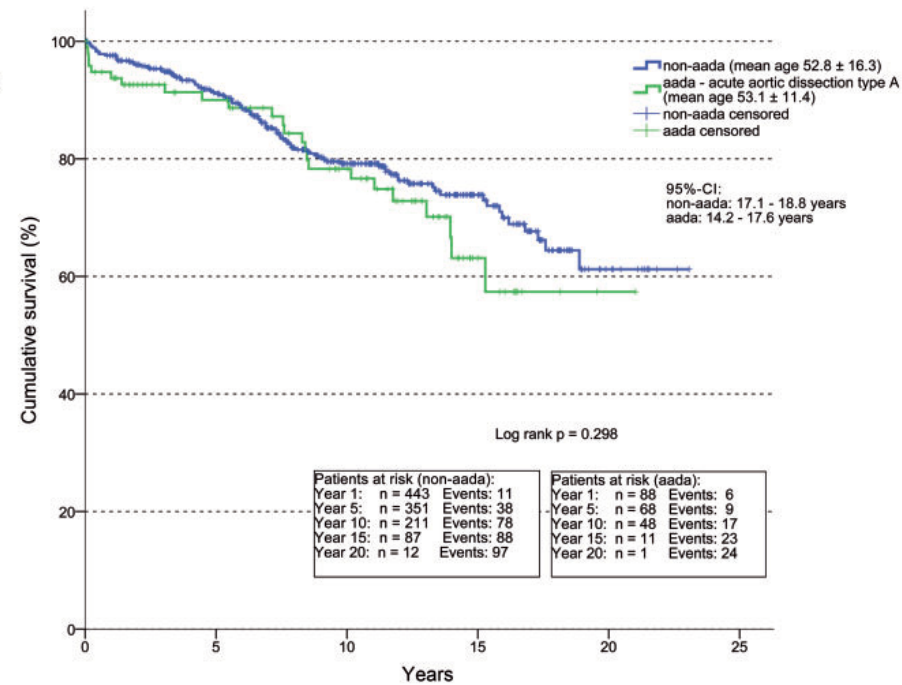
European Journal of Cardio-Thoracic Surgery 52 (2017) 319–324

**n=119 at Hannover**

**A** Long-time survival: David I non-AADA (n = 473) vs. AADA (n = 109)



**B** Long-time survival after discharge: David I non-AADA (n = 464) vs. AADA (n = 97)



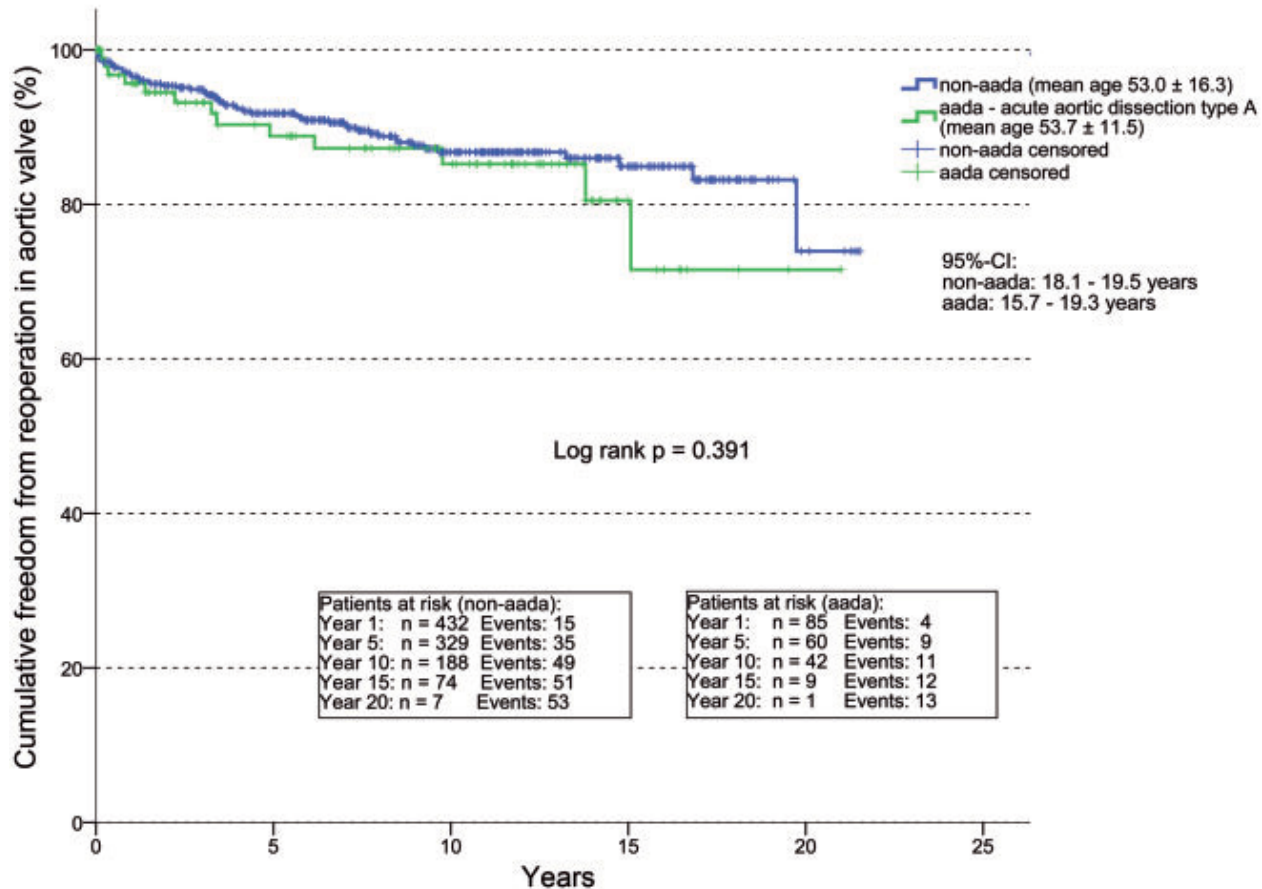
# Valve-sparing David I procedure in acute aortic type A dissection: a 20-year experience with more than 100 patients†

Erik Beckmann, Andreas Martens, Jana Pertz, Tim Kaufeld, Julia Umminger, Jasmin S. Hanke, Jan D. Schmitto, Serghei Cebotari, Axel Haverich and Malakh Lal Shrestha\*

European Journal of Cardio-Thoracic Surgery 52 (2017) 319–324

## n=119 at Hannover

Freedom from aortic valve-related re-operation: David I non-AADA (n = 473) vs. AADA (n = 109)

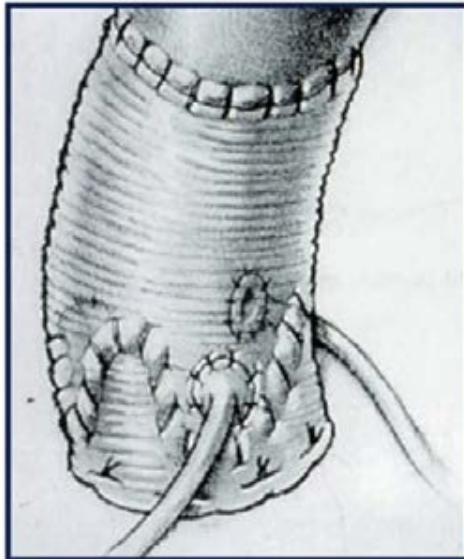


# Survival and reoperation after valve-sparing root replacement and root repair in acute type A dissection

Hans-Hinrich Sievers, MD, Doreen Richardt, MD, Michael Diwoky, Christian Auer, MD,  
Bence Bucsky, MD, Boris Nasser, MD, and Stefan Klotz, MD  
Lübeck

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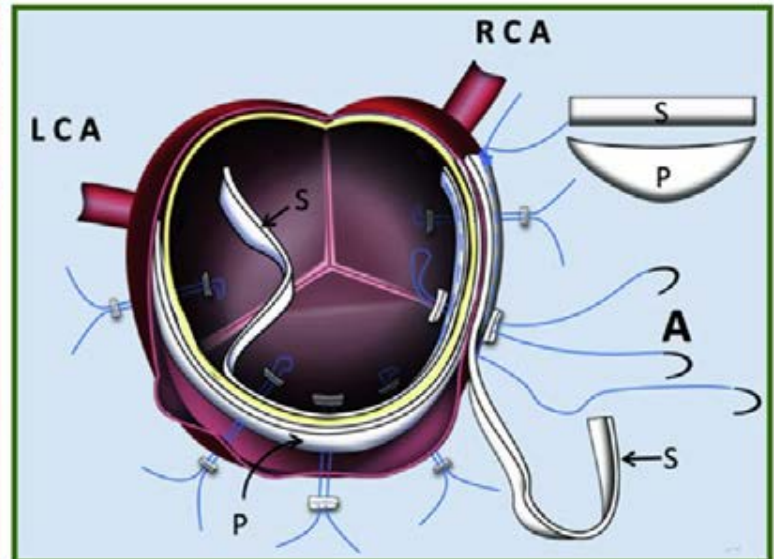
**Reimplantation**  
**N=44**



**Remodeling**  
**N=39**



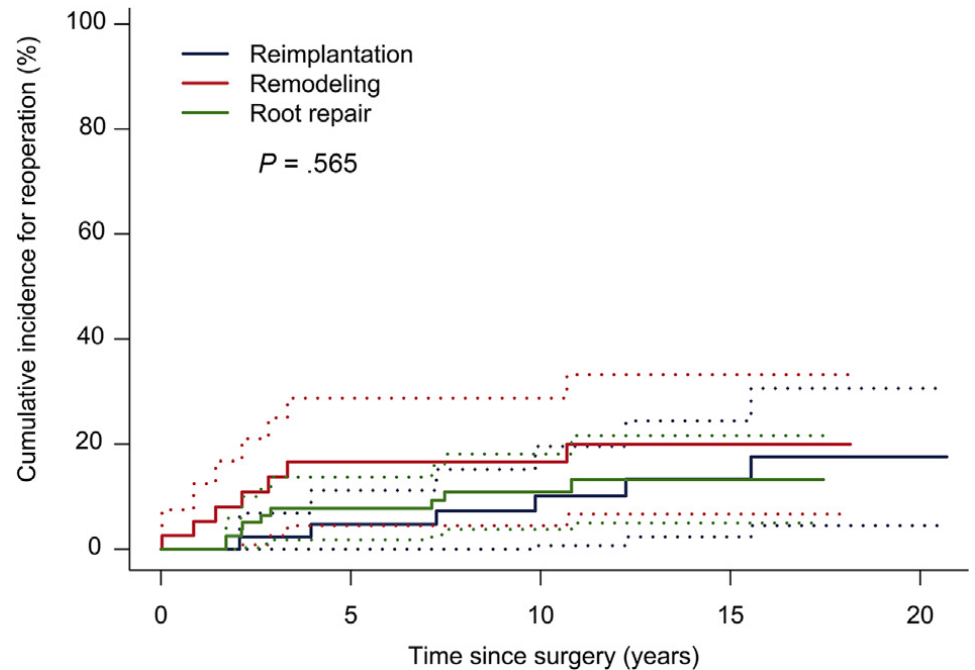
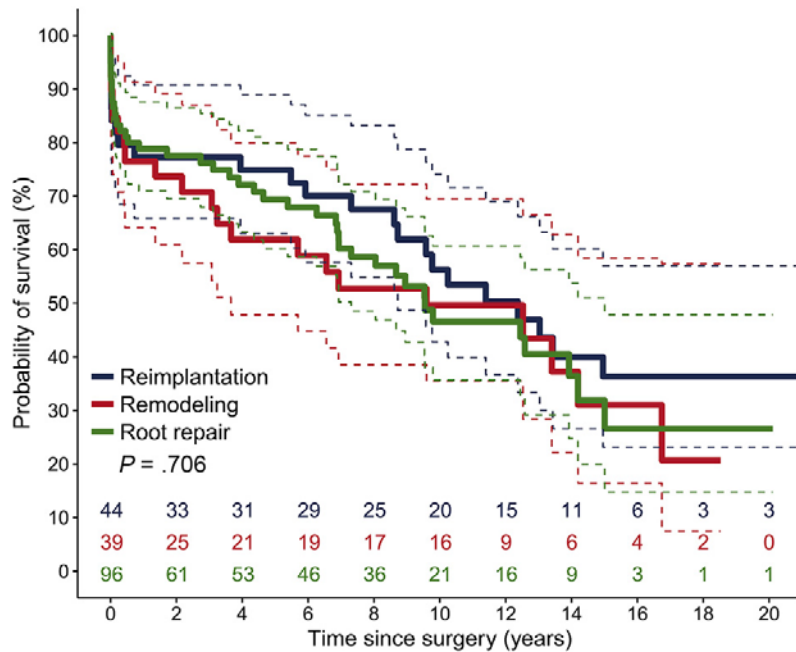
**Root repair**  
**N=96**





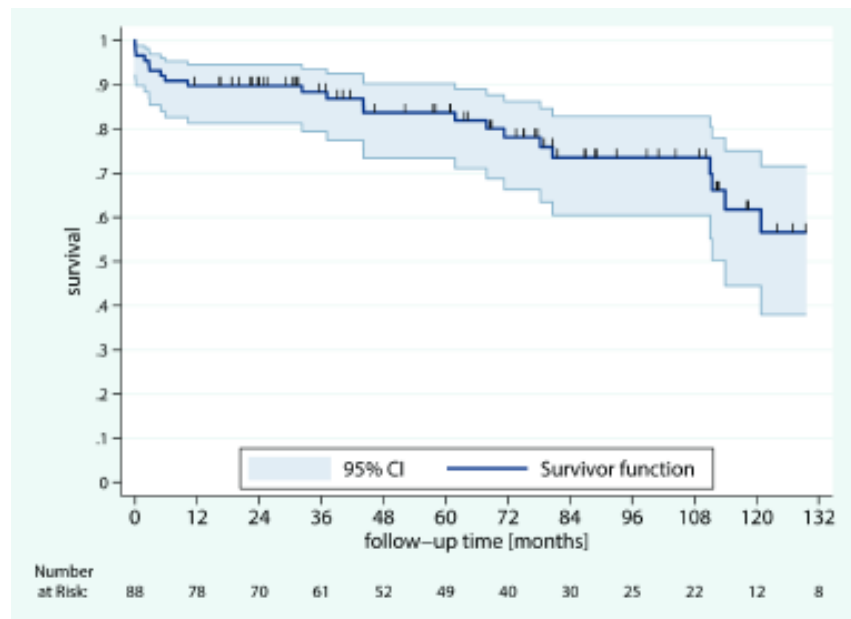
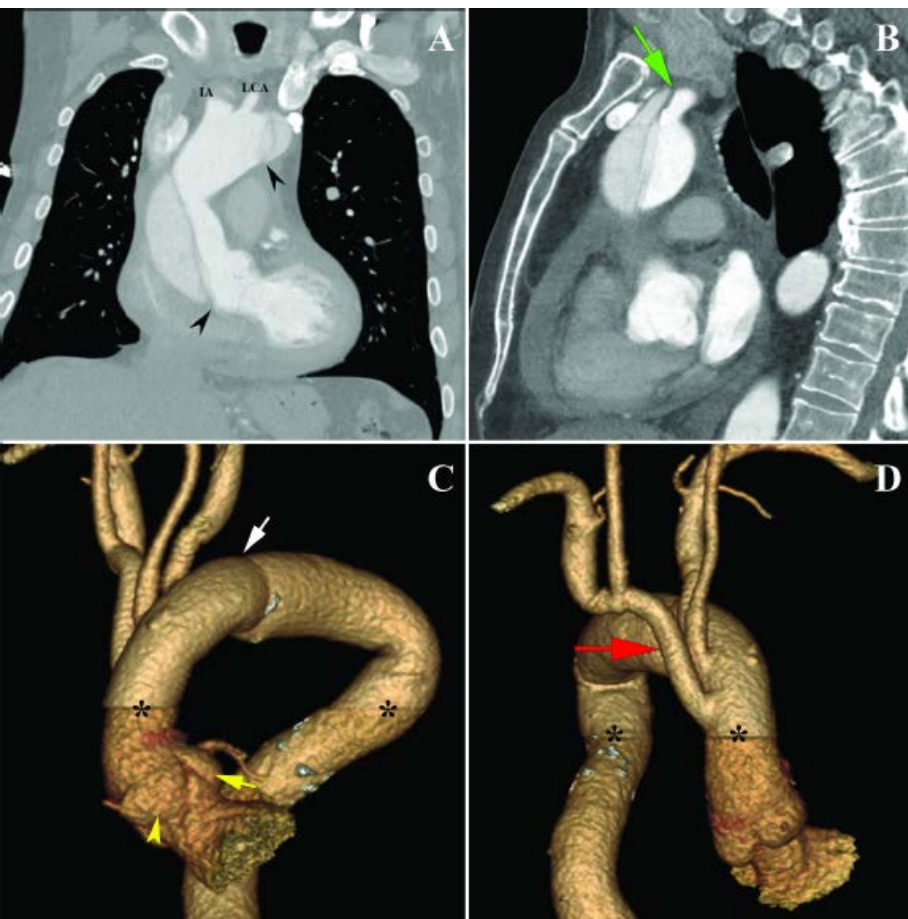
# Survival and reoperation after valve-sparing root replacement and root repair in acute type A dissection

Hans-Hinrich Sievers, MD, Doreen Richardt, MD, Michael Diwoky, Christian Auer, MD, Bence Bucskey, MD, Boris Nasserri, MD, and Stefan Klotz, MD



# Complete resection of all dissected aortic segments (Curative repair)

**Bentall (n=21) vs. VSRR (n=31) at Cardiovascular Clinic Bad Neustadt**

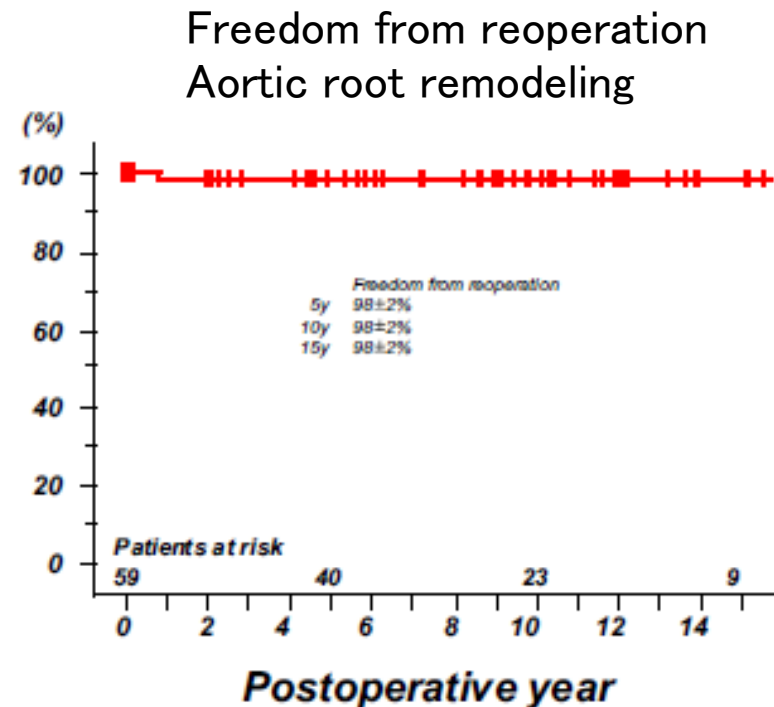
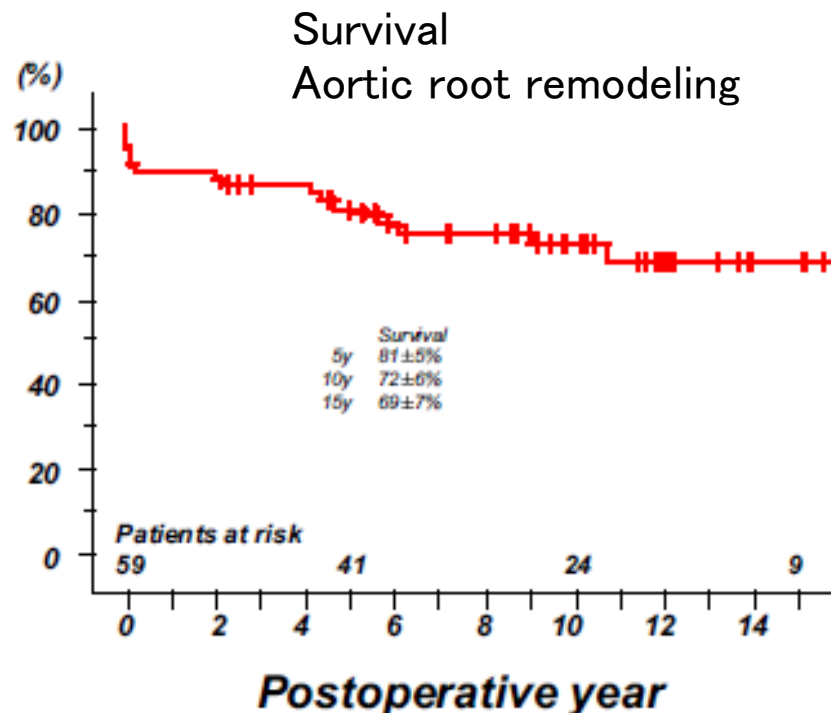


# Aortic root remodeling leads to good valve stability in acute aortic dissection and preexistent root dilatation



Takashi Kuniyama, MD, PhD, Niklas Neumann, MD, Steffen Daniel Kriechbaum, MD, Diana Aicher, MD, and Hans-Joachim Schäfers, MD, PhD

“Patient characteristics (eg presence of shock or age) did not deter from using remodeling.”



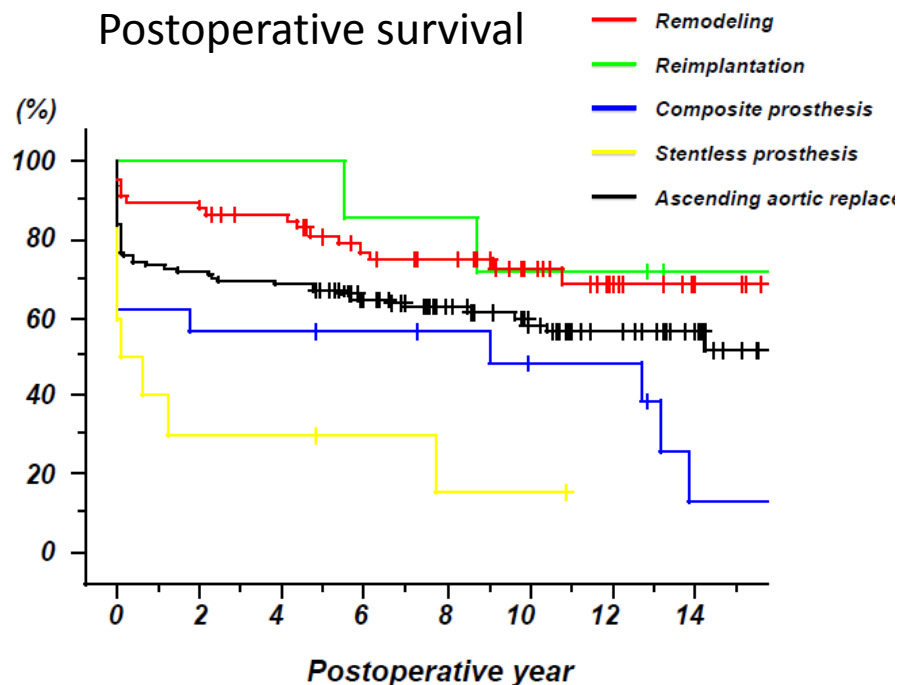


# Aortic root remodeling leads to good valve stability in acute aortic dissection and preexistent root dilatation

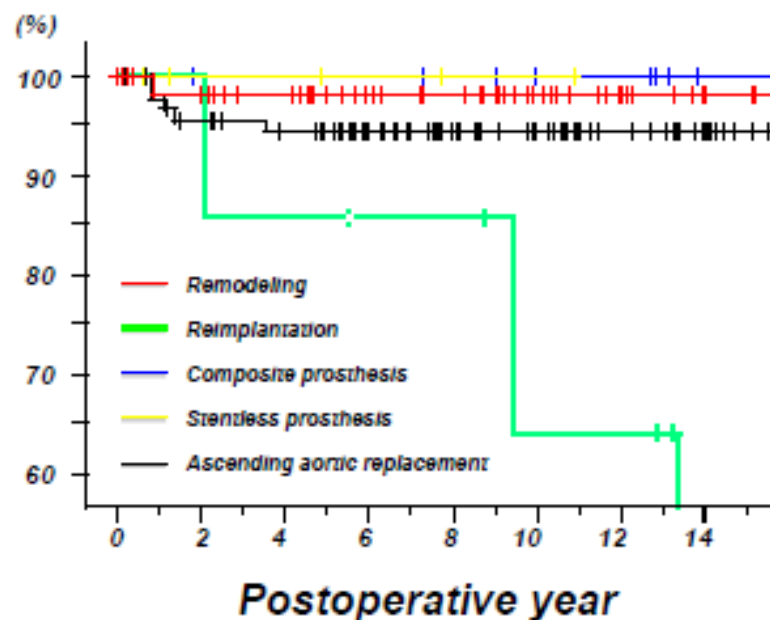


Takashi Kuniyama, MD, PhD, Niklas Neumann, MD, Steffen Daniel Kriechbaum, MD, Diana Aicher, MD, and Hans-Joachim Schäfers, MD, PhD

### Postoperative survival



### Freedom from reoperation



# Indication for VSRR & technique & outcomes

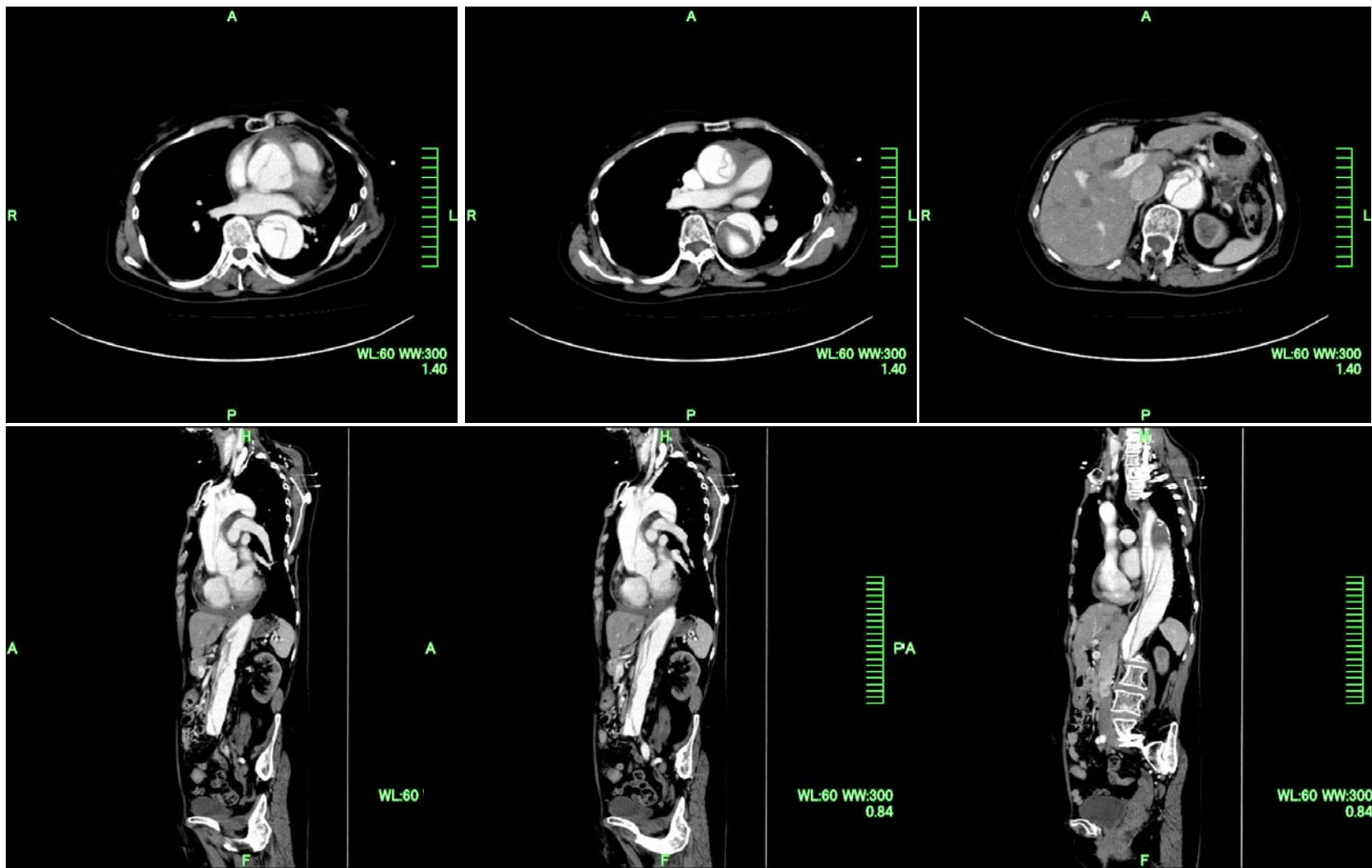
\* 30-day

\* Valve related

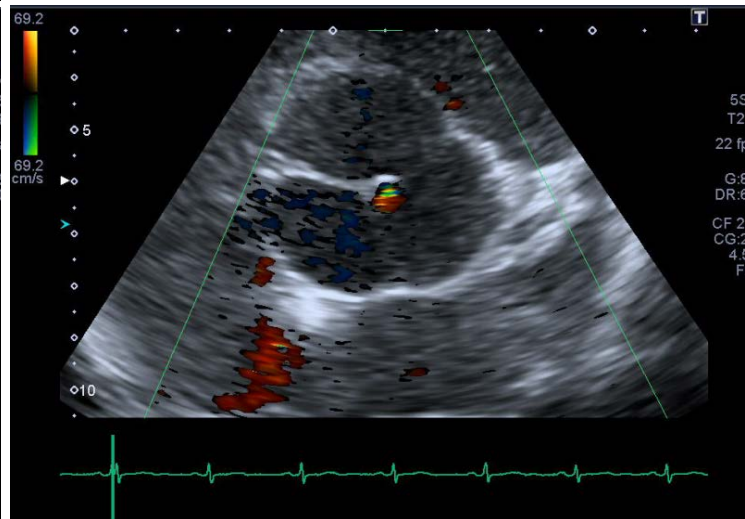
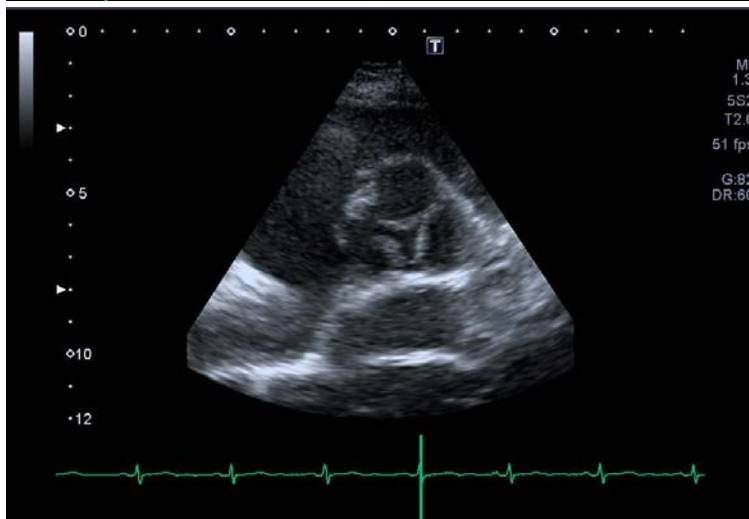
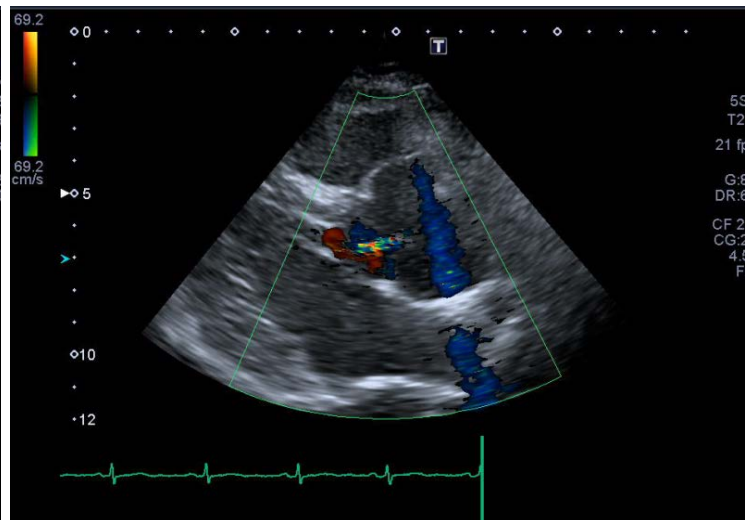
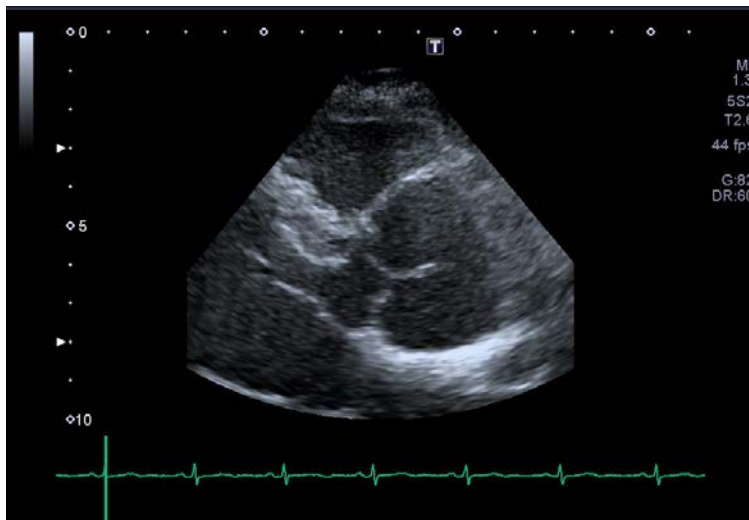
	N	Op mode	indication	Details in technique	mortality	Freedom from reop.
Kunihara JTCVS 2016	59	Remodeling	≥43-45mm, all	41: no biological glue Cusp repair	6.8 %, 0 % 2002~	5y 98% 10y 98%
Emory JTCVS 2019	59	Reimplantation 59 Bentall 77	Highly selected Valve pathology , Pts' condition	no biological glue No cusp repair 84.7%	3.4 %* VSSR 13 % Bentall	1: AVR
Hannover EJCTS 2017	119	David I (straight tube)	Selected Valve pathology , Pts' condition	Glue, surgeon's preference	11 %	5y 88% 10y 85%*
Lübeck JTCVS 2018	179	Reimplantation 44 Remodeling 39 Root repair 96	Selected Valve pathology	First 10 y, GRF (3:redissec) Later sporadically Glue used for root repair	14 %*	10y 10.1% 16.6% 10.9%
Bad Neustadt ATS 2019	31	Modified remodeling 31 Bentall 21	Selected Valve pathology , Pts' condition	Curative repair 8/31 cusp repair No glue	3.4 %* 5.7 %	0:reop*
Kobe EJCTS 2017	24	Reimplantaion	Selected Valve pathology , Pts' condition	Glue, GRF & Bioglue	0 %	5y 83% 10y 69%*

# 急性A型大動脈解離，基部拡大を伴う場合

## 61歳 女性 マルファン症候群

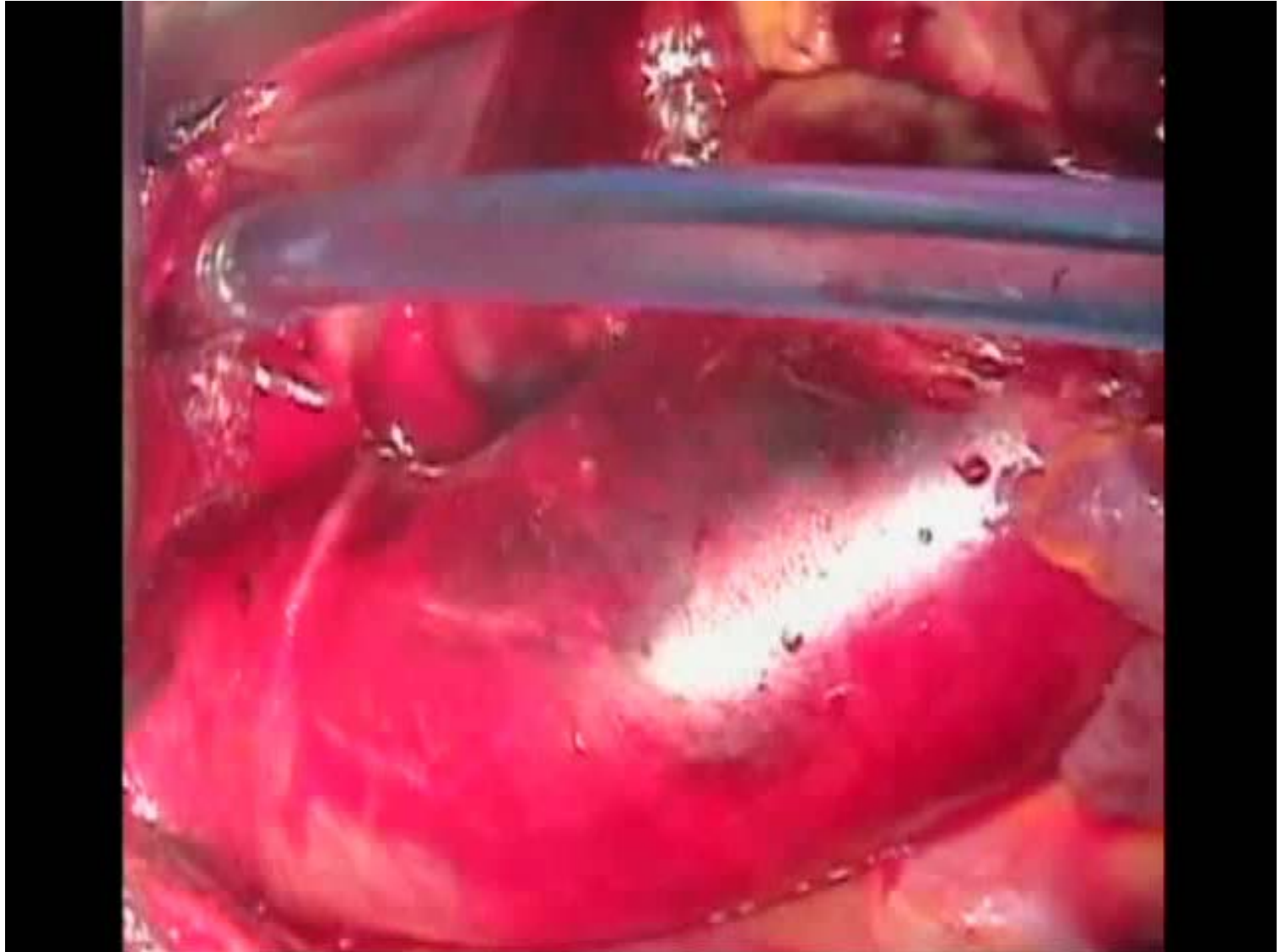


# 急性A型大動脈解離，基部拡大を伴う場合 61歳 女性 マルファン症候群

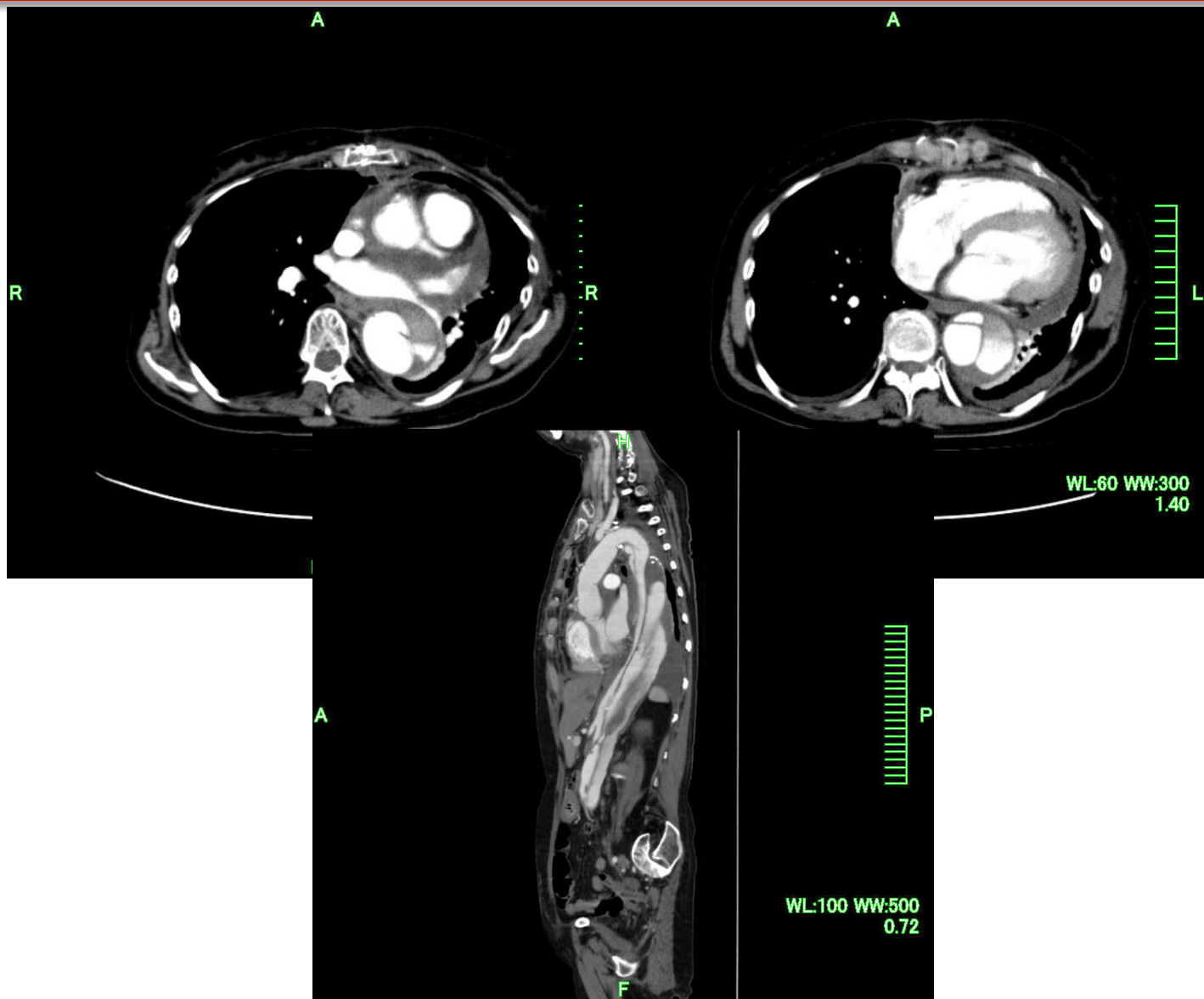


**急性A型大動脈解離，基部拡大を伴う場合  
61歳 女性 マルファン症候群**

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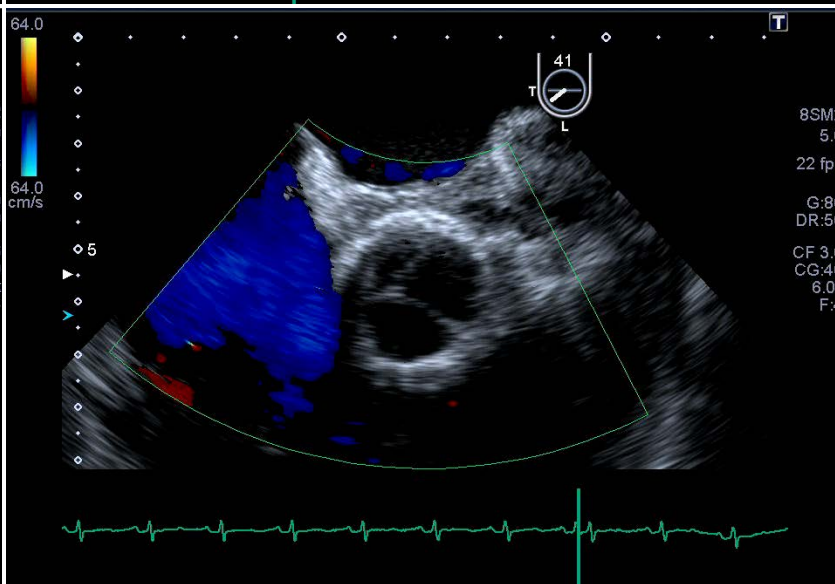
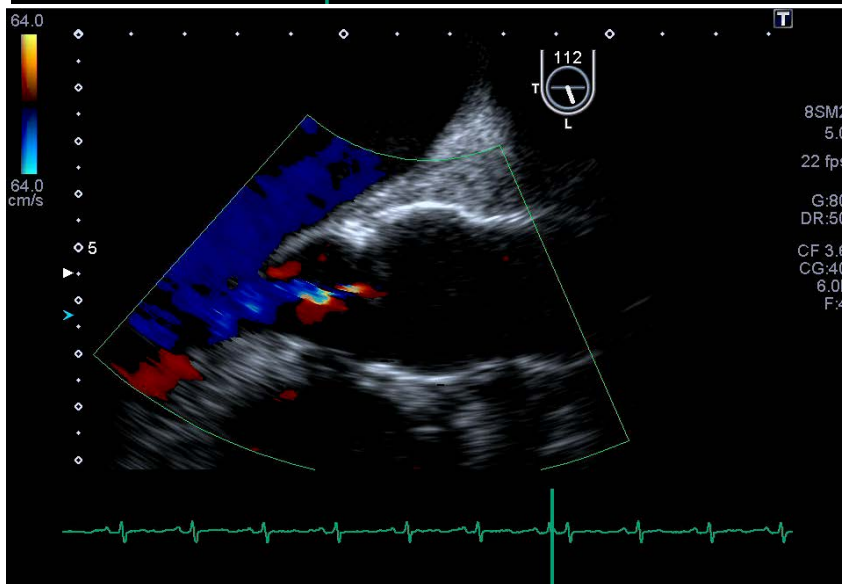
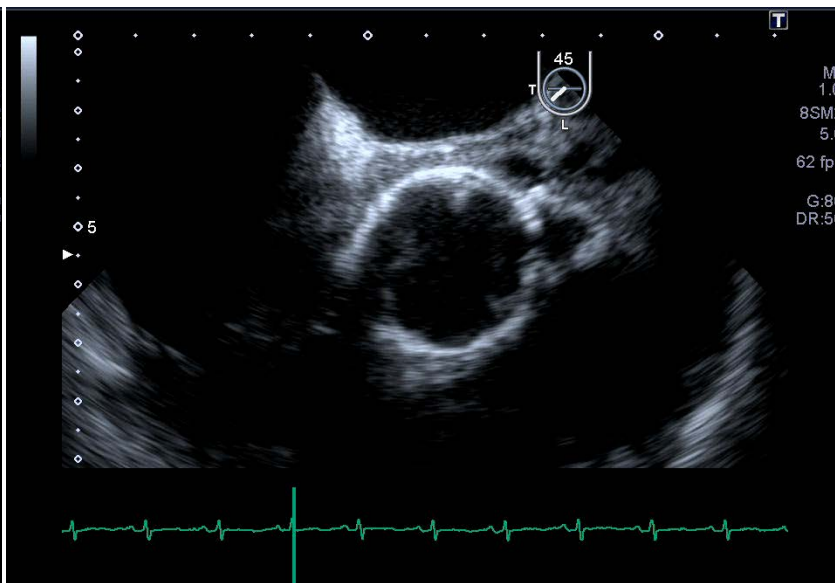
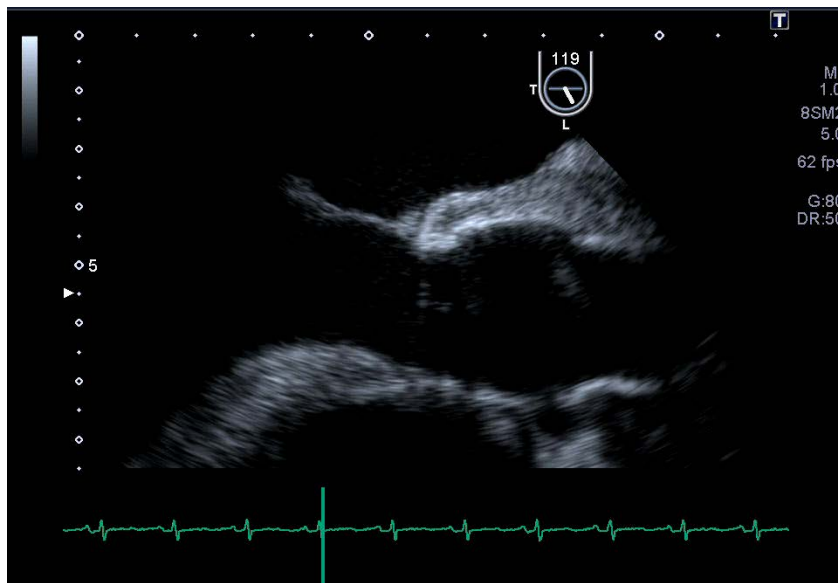


# 術後CT





# 術後心臓超音波図



急性A型大動脈解離，基部拡大を伴う場合  
54歳 男性  
術前CT

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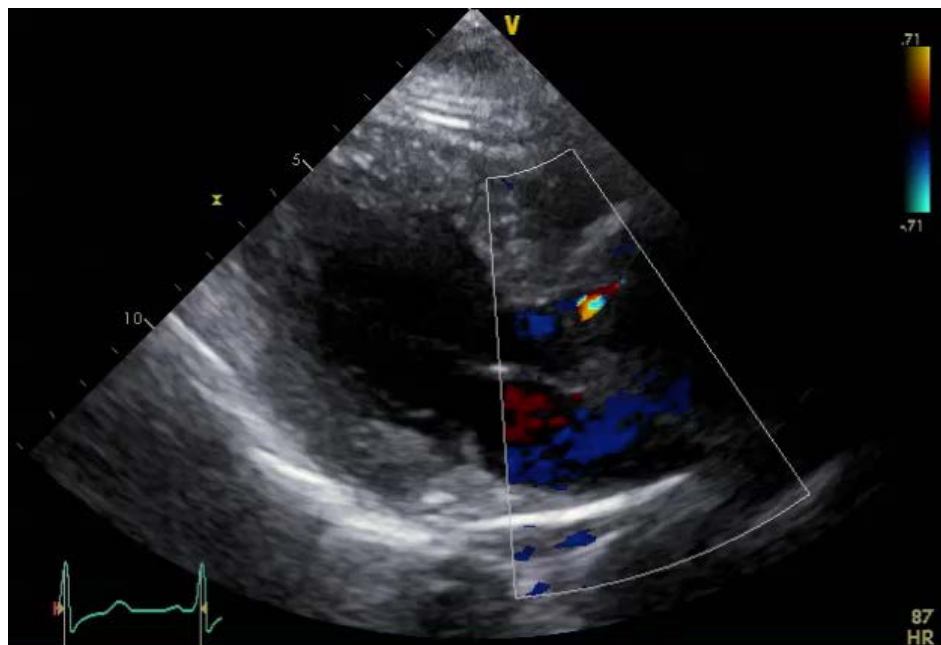


# 急性A型大動脈解離，基部拡大を伴う場合

## 54歳 男性

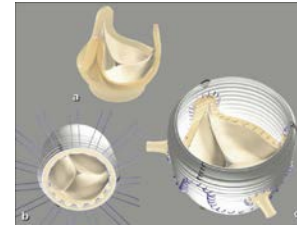
### 心臓超音波図



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# 急性A型大動脈解離，基部拡大を伴う場合 54歳 男性

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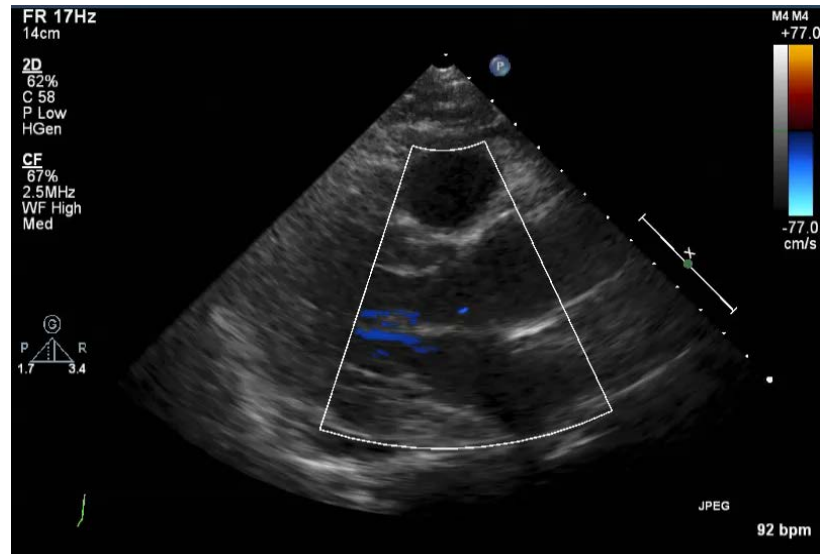
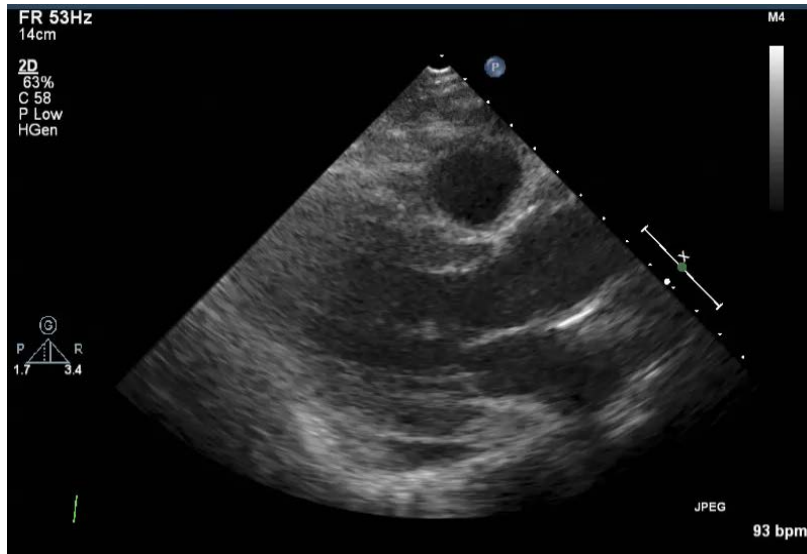
1. 大動脈基部手術 (Valve sparing) 
2. 末梢側 (FET with open J) 

FOR AORTA  
FROZENIX



  
JGraft

# 術後CT, 心臓超音波図

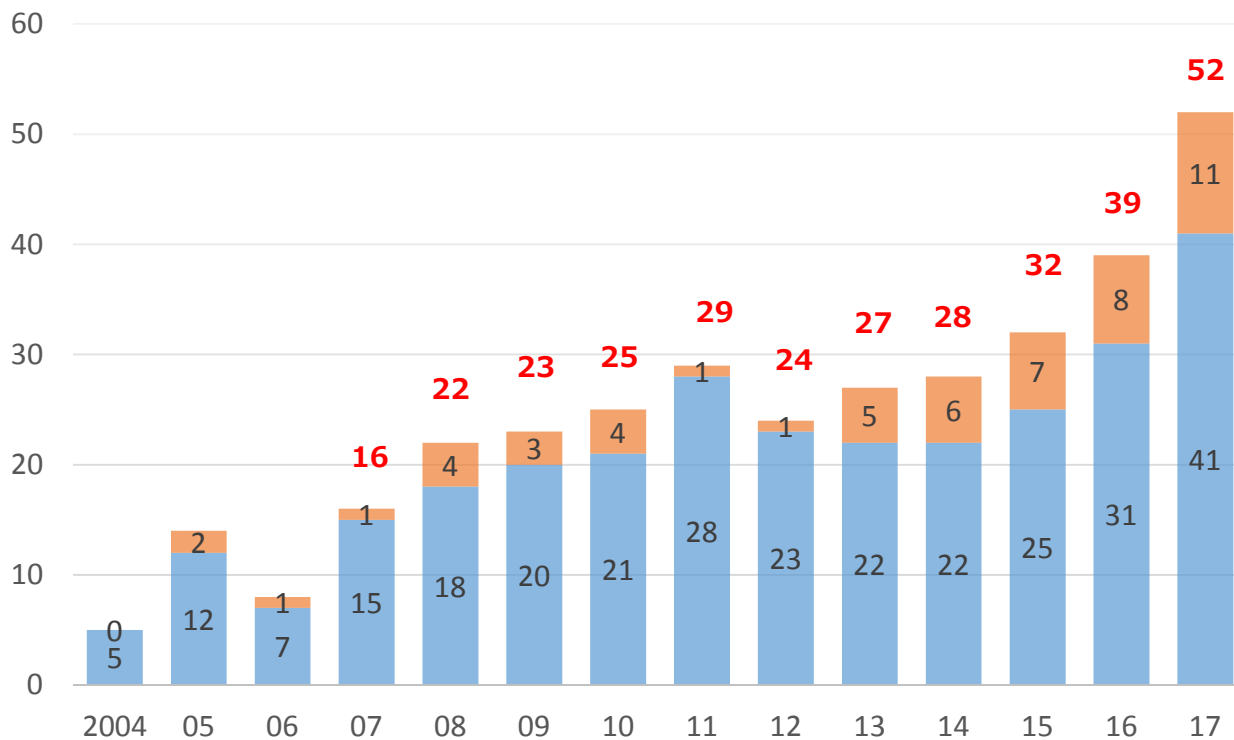




# 緊急手術 No refusal policy



## 急性A型大動脈解離手術件数の推移



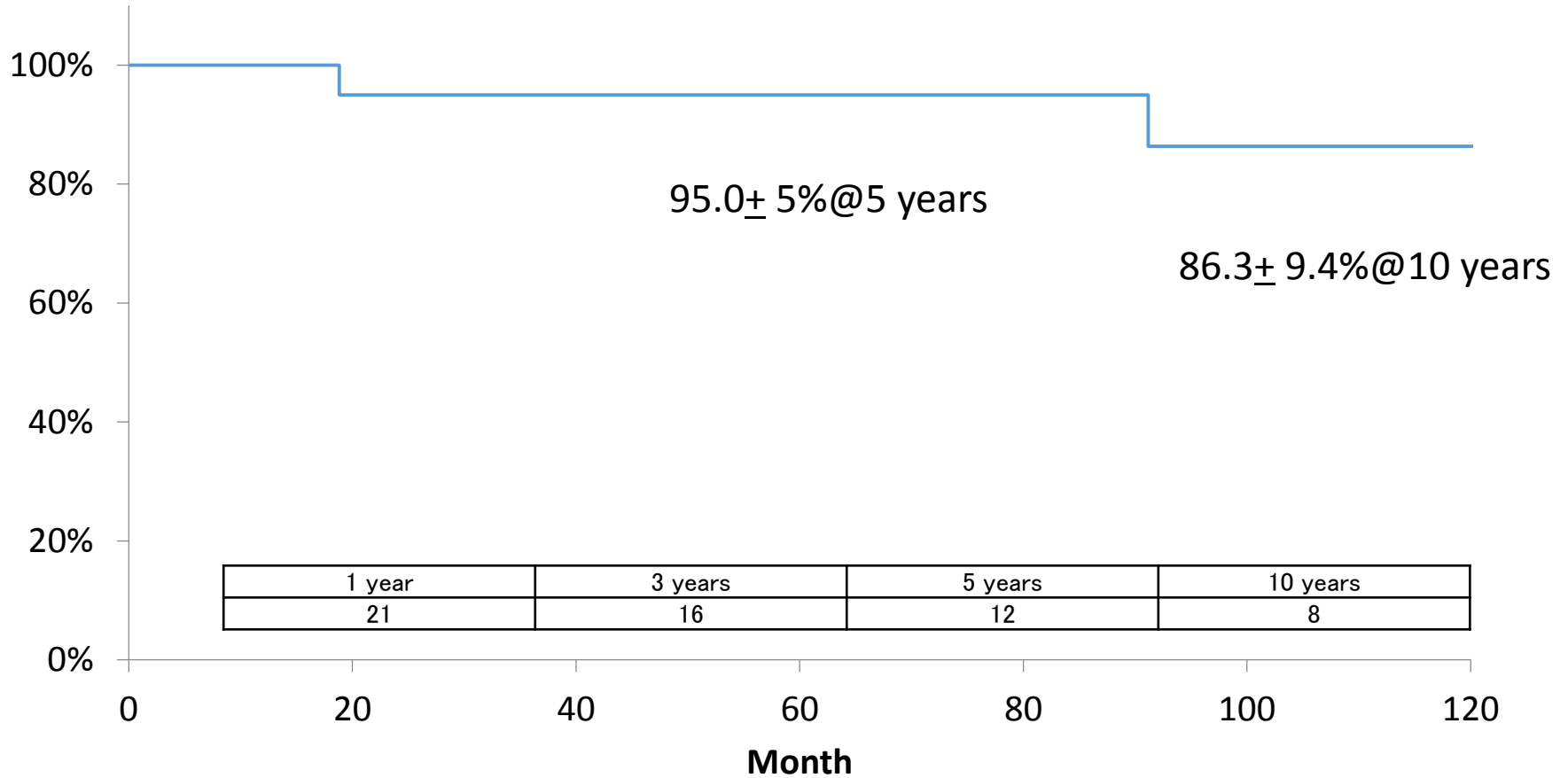
# Type A-AD & VSRR

## My experience

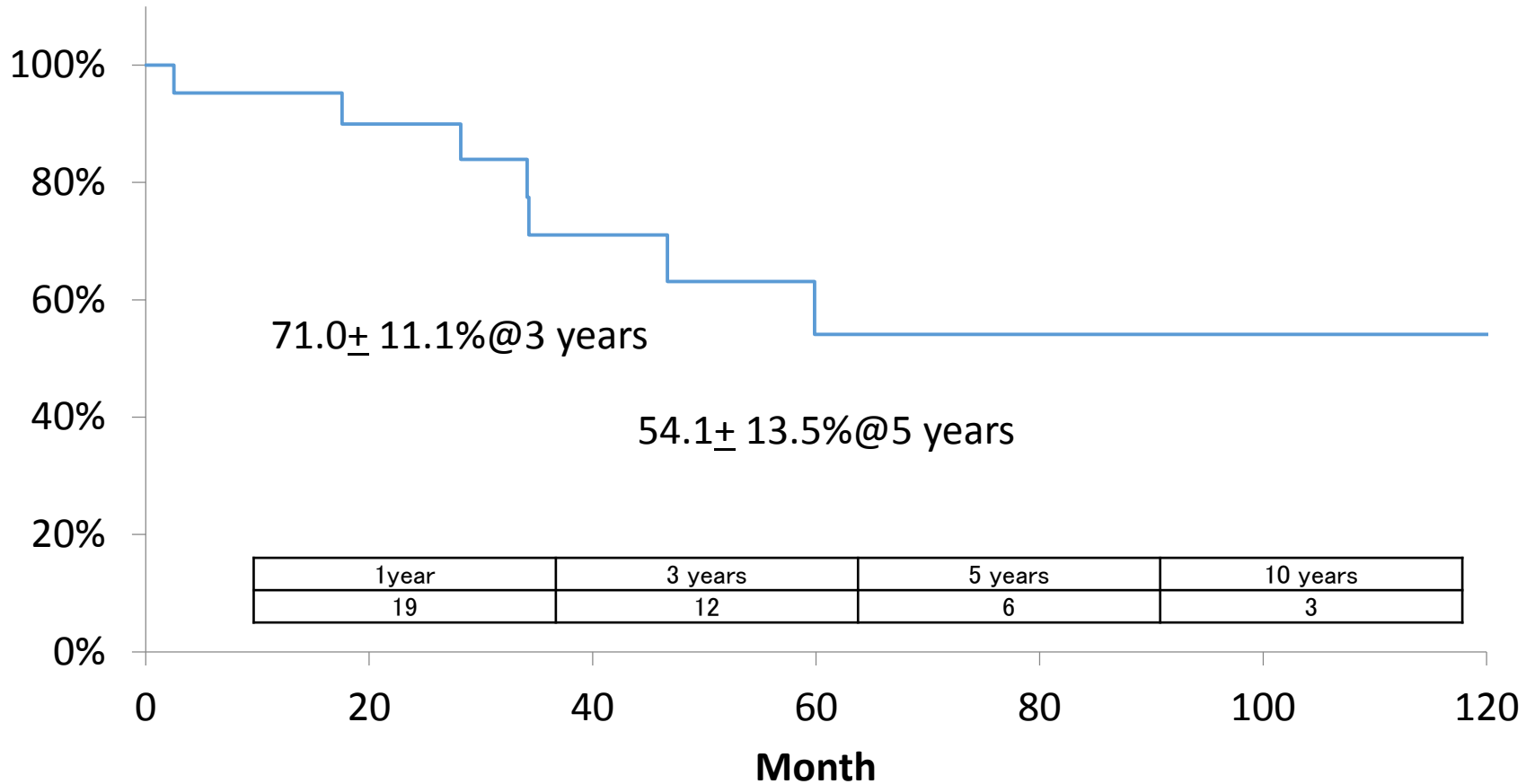
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	Age	Sex	DeBakey type	AAE $\phi$	Preop AR grade	CTD	Distal procedure	F/u	Survival	AR
1	61	F	I	45	moderate	Marfan	TAR	9y	yes	mild
2	69	M	II	50	nil	-	Hemi	3y8m	yes	nil
3	43	M	I	50	mild	-	TAR	2y5m	yes	trivial
4	54	M	I	50	mild	-	TAR	2y	yes	trivial
5	69	F	II	54	severe	s/o Marfan	TAR	1y4m	yes	nil

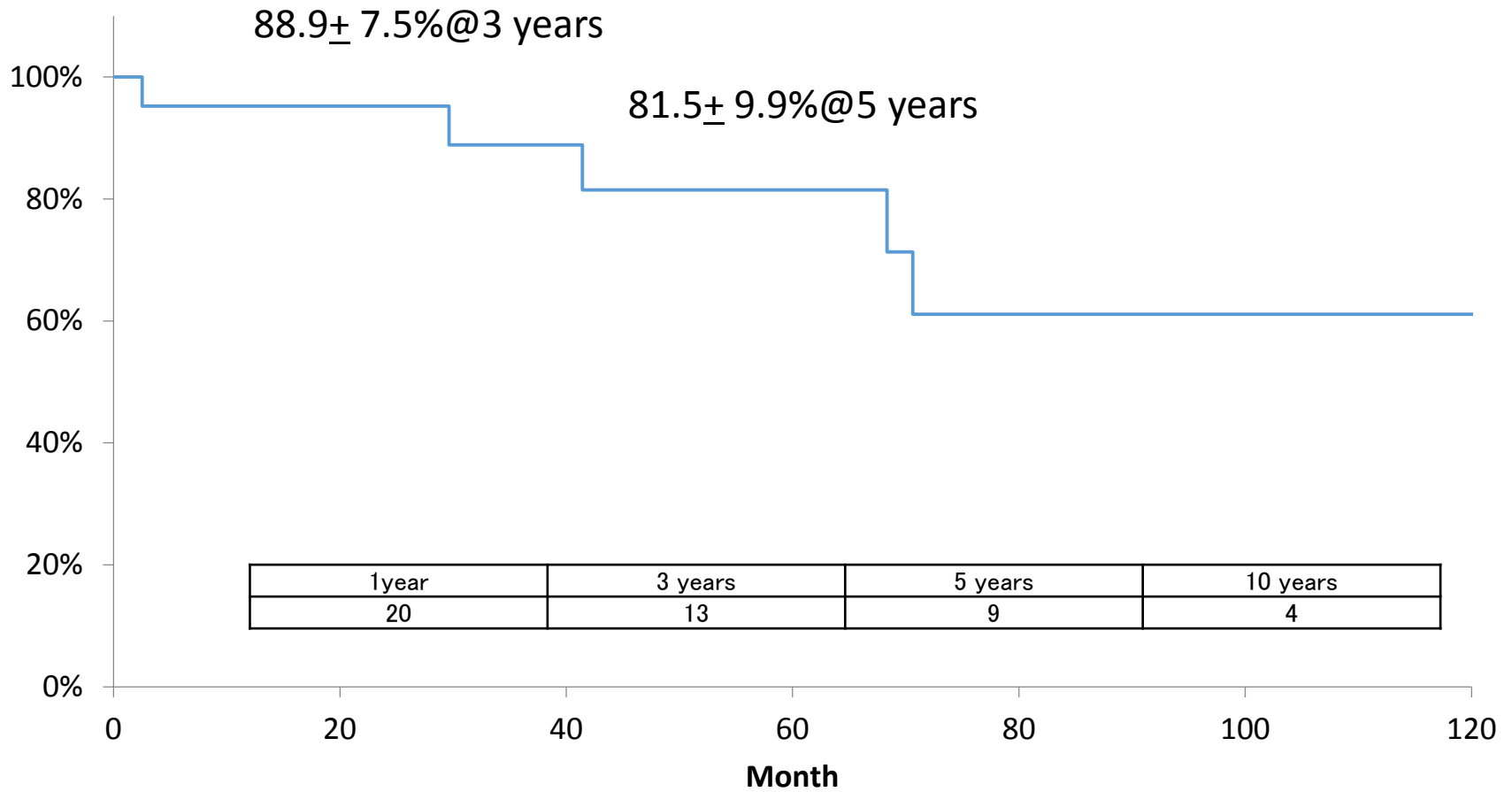
# VSRR (n=22) at Kobe University Survival



# VSRR (n=22) at Kobe University Freedom from moderate AR



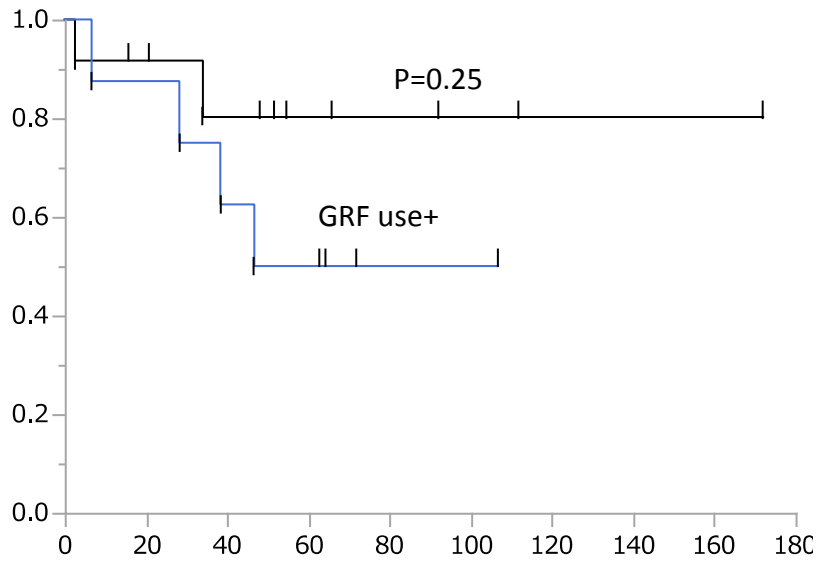
# VSRR (n=22) at Kobe University Freedom from AVR





# GRF necrosis !!

Freedom from more than mild AR

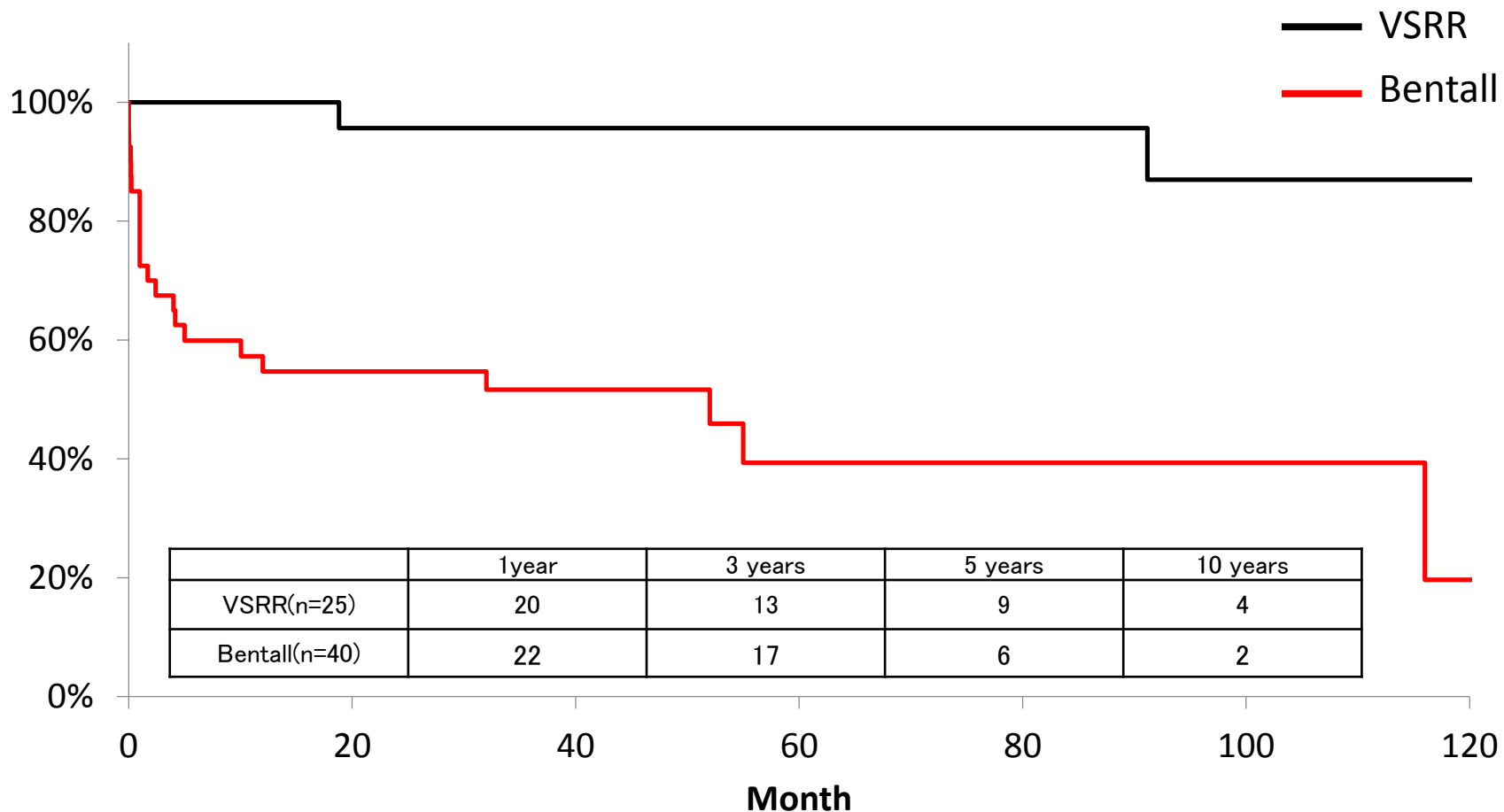


Number at risk

GRF-	13	7	3	2
GRF+	8	5	2	



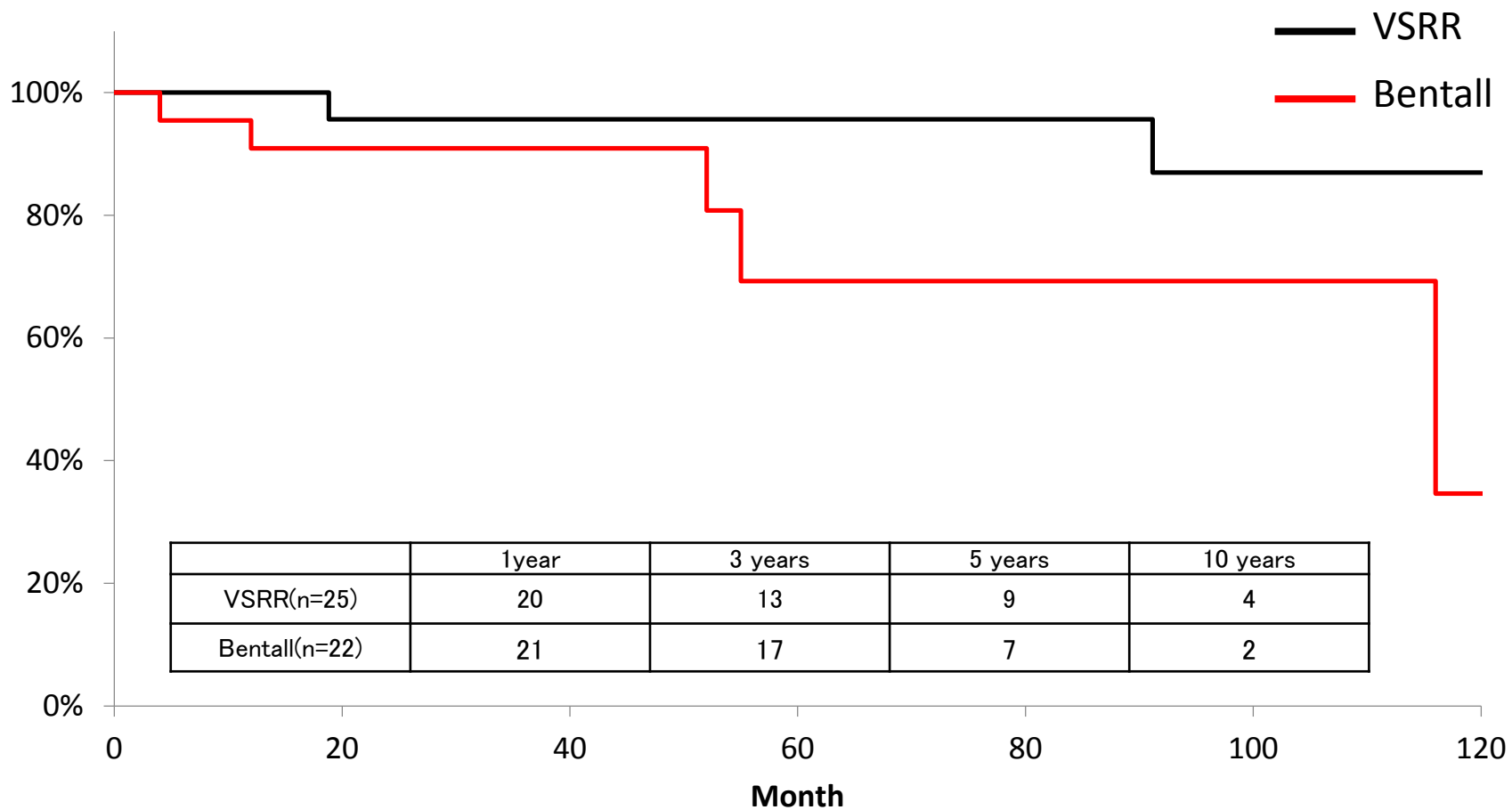
# Survival (+Hospital mortality)



Log rank  
 $p < 0.05$



# Survival (- Hospital mortality)



Log rank  
p=0.051

# Conclusions

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- 急性 A 型解離に対する自己弁温存大動脈基部置換術は適切な患者選択を行えば良好な遠隔予後が得られる.
- 非解離症例同様, 遠隔期にAR出現し再手術を要することがある.
- 生体糊使用には慎重を要する.