The use of TAVI for bioprosthetic aortic valve failure –

only for high risk patients or an integral component of AS management strategies

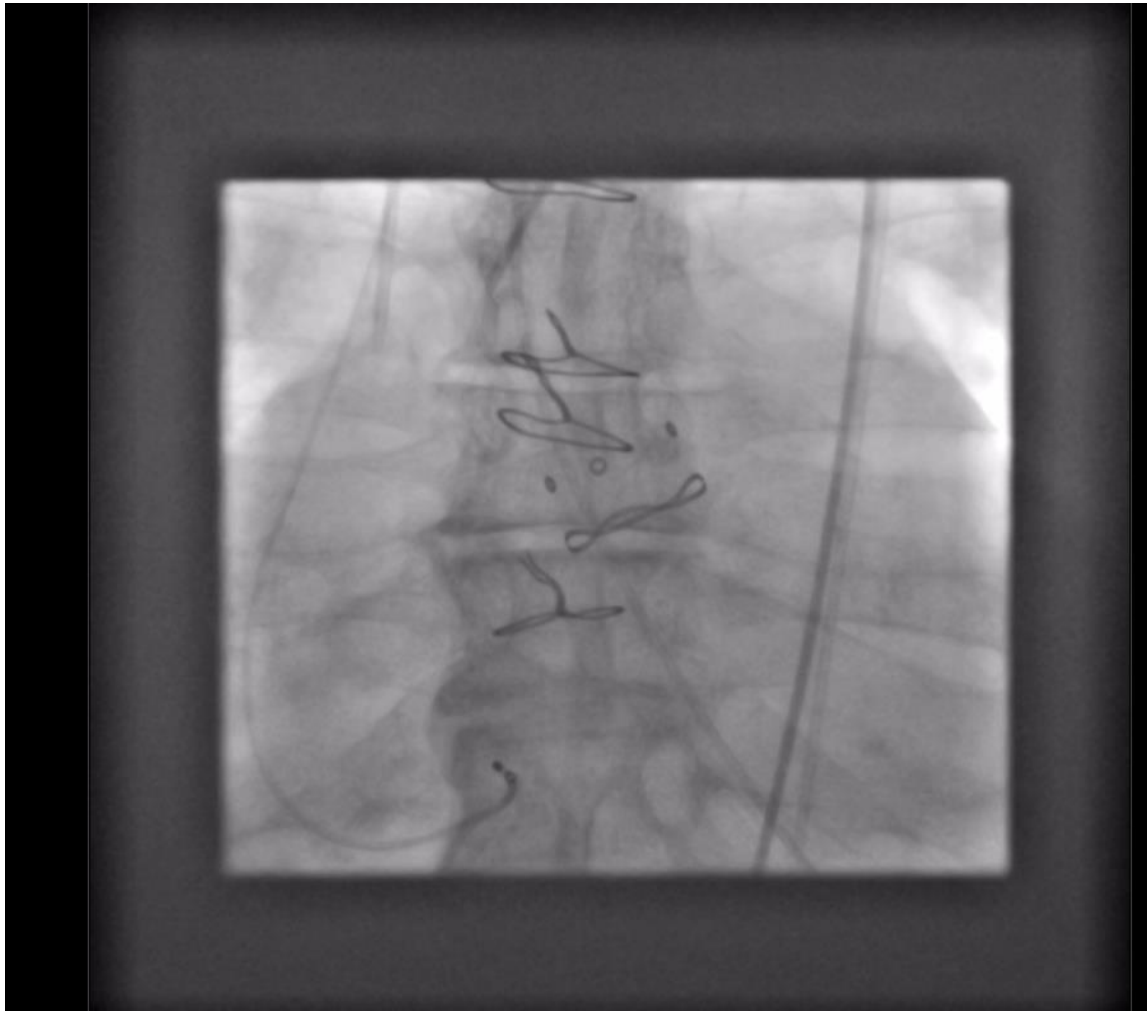
Prof. Dr. Thomas Walther

Kerckhoff HeartCenter, Department Cardiac Surgery, Bad Nauheim, Germany

no personal financial disclosures

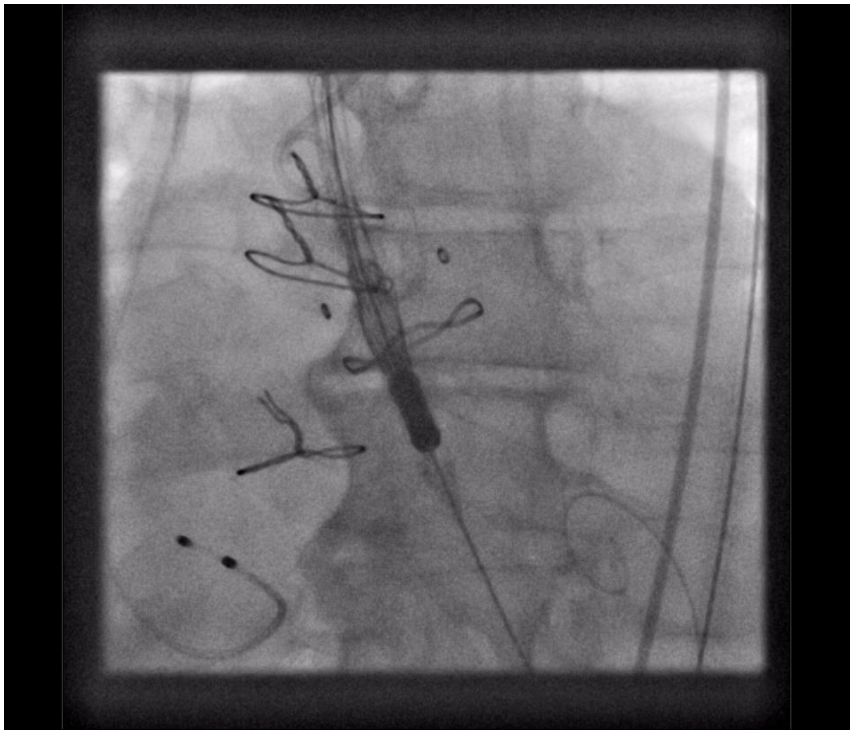
Recent patient example (06/2017)

- s/p AVR (Hancock 23mm) 2007
- 75 years, male, increased risk due to cardiac decompensation and s/p CPR for 30 min.
- Acute cardiac failure with severe AI



Recent patient example (06/2017)

- Acute VinV Acurate neo 23mm, TF implant



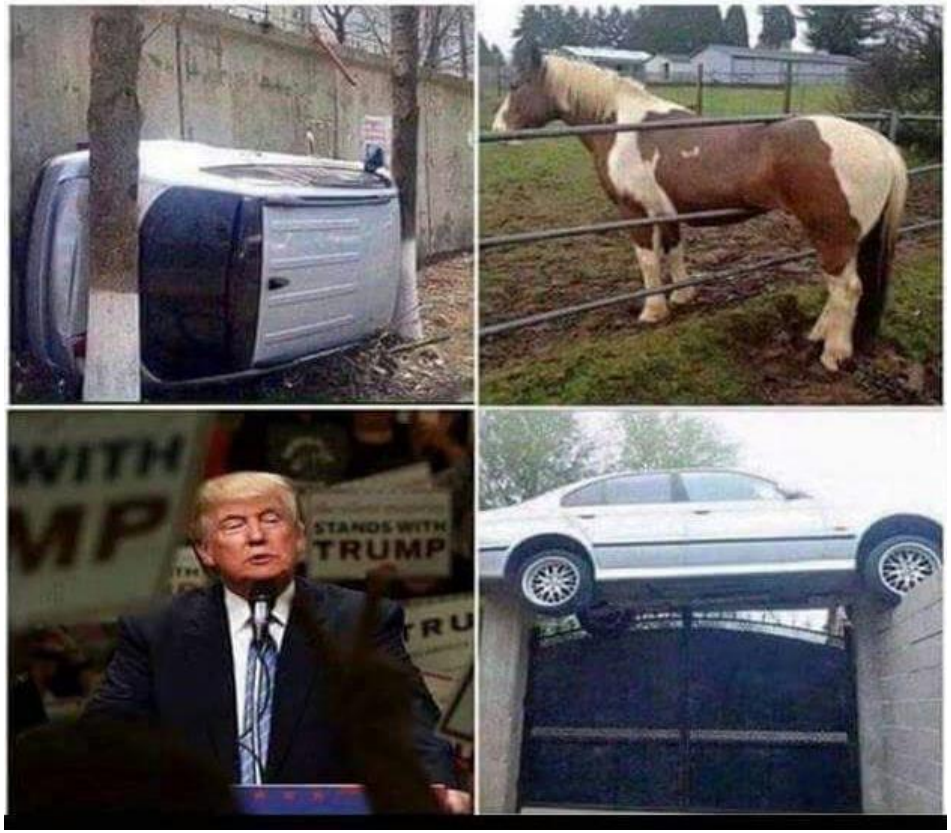
Recent patient example (06/2017)

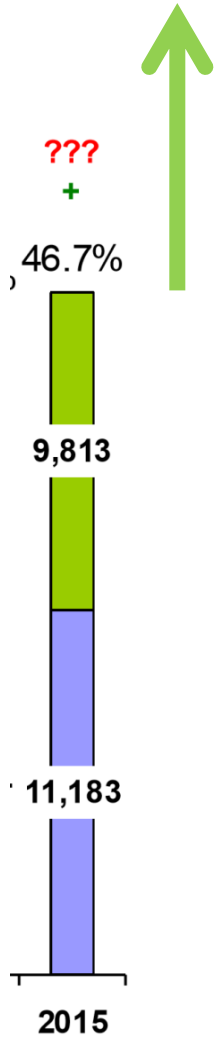
- P_{mean} 11mmHg, uncomplicated further course, extubated 3 hrs later

TAVI 2017

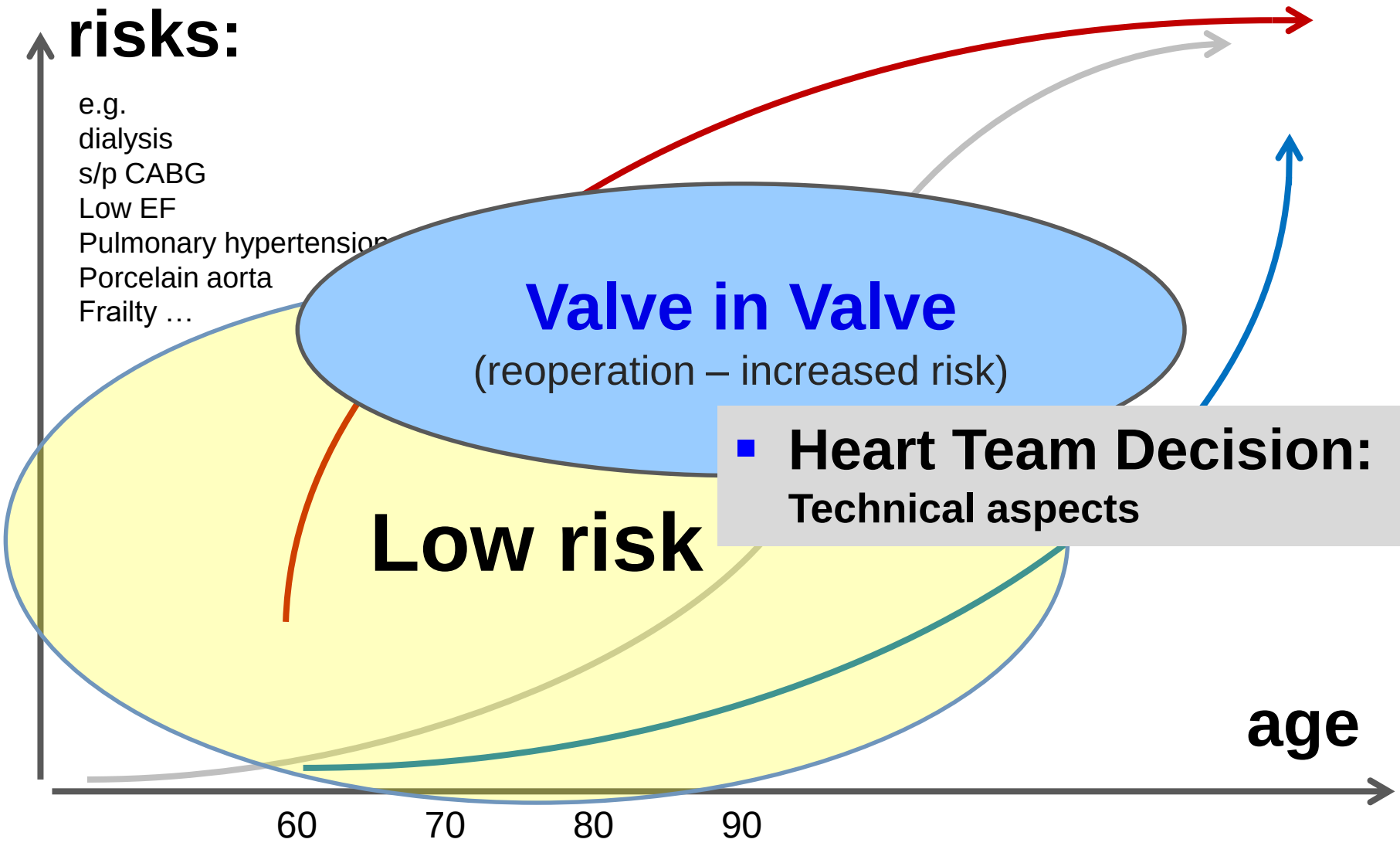
- **> 10 years experience,**
  steep increased in patient numbers

Sometimes you don`t know how they got there …



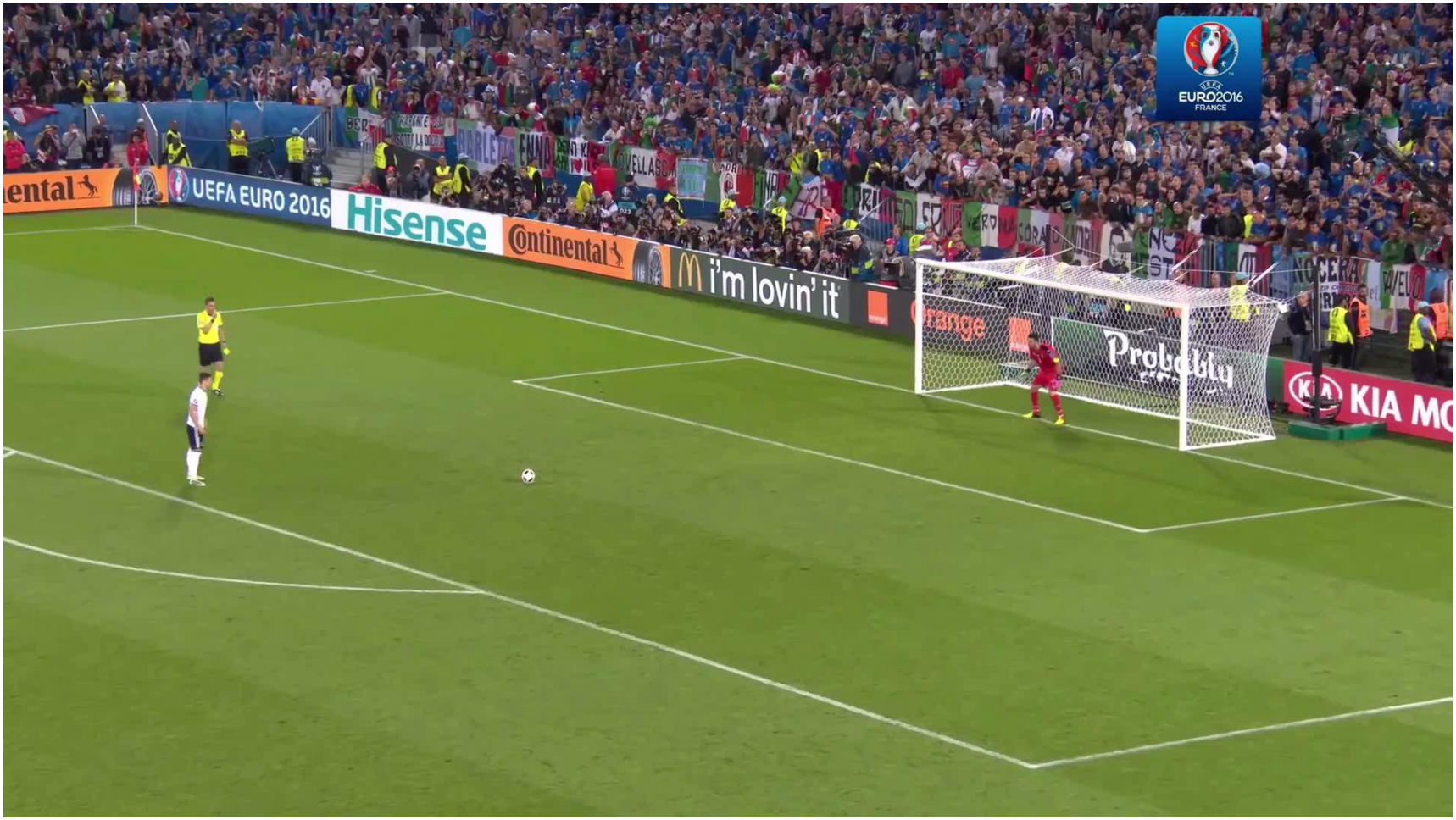


TAVI risk: Low - Intermediate - high



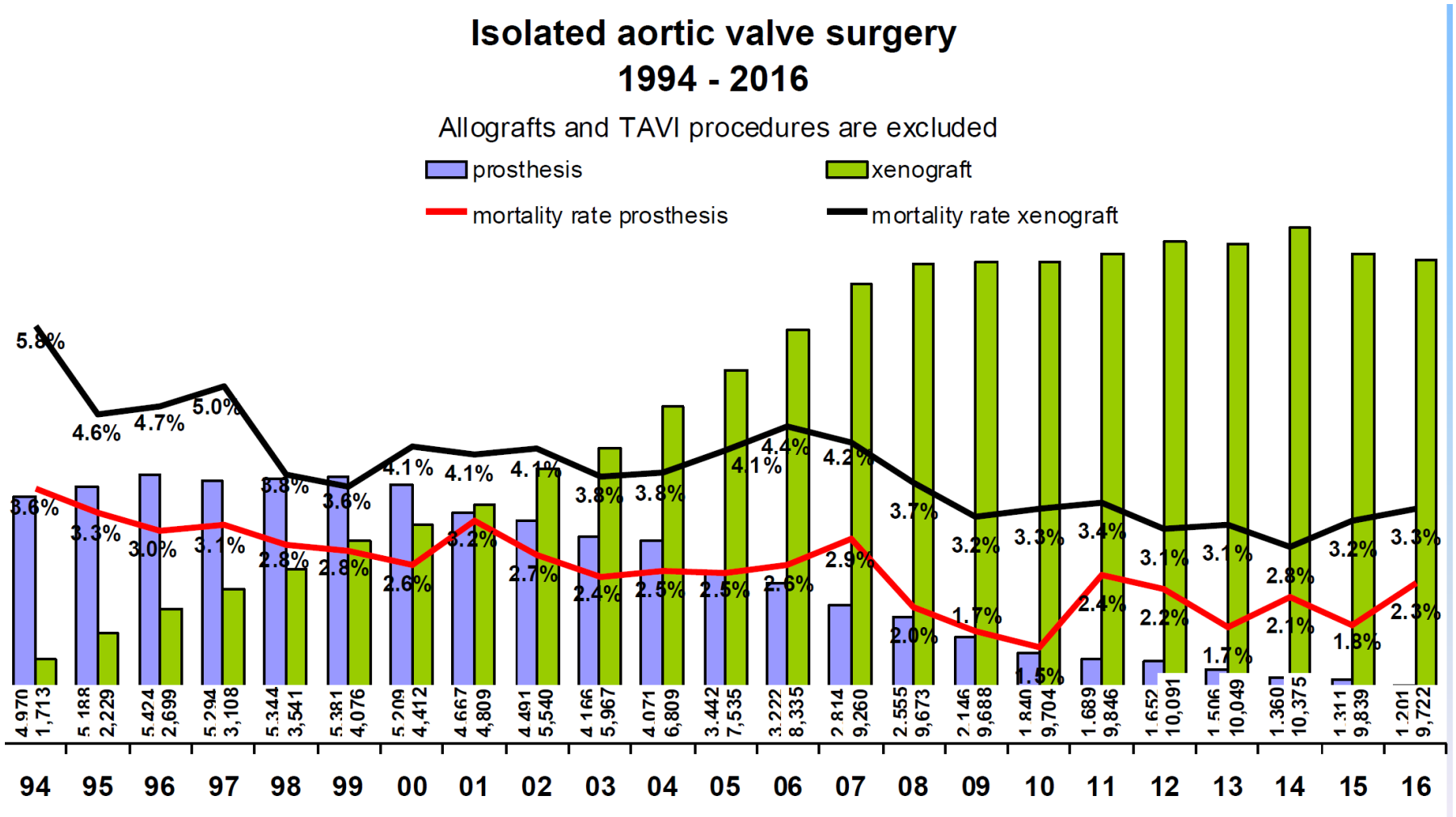
- **Heart Team Decision:**
  Technical aspects

VinV



=> straight forward like a penalty kick …

Increasing number of xenograft implants



=> Increasing elderly pts and potential „demand“ for VinV

The concept of VinV

reduced invasiveness of re-do AVR in high risk patients

no sternotomy, no cardioplegic arrest, off-pump

= *truely minimally invasive*

Degenerated Xenograft

+

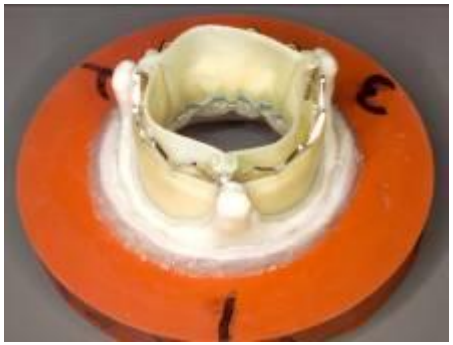
SAPIEN THV

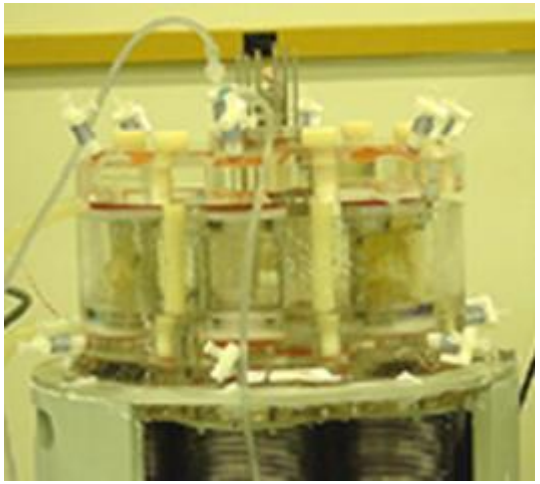
→

Valve-in-a-Valve (VinV)

VinV: bench testing

- valve size matching
- functional performance and migration
- hydrodynamic (steady and pulsatile)
- accelerated wear



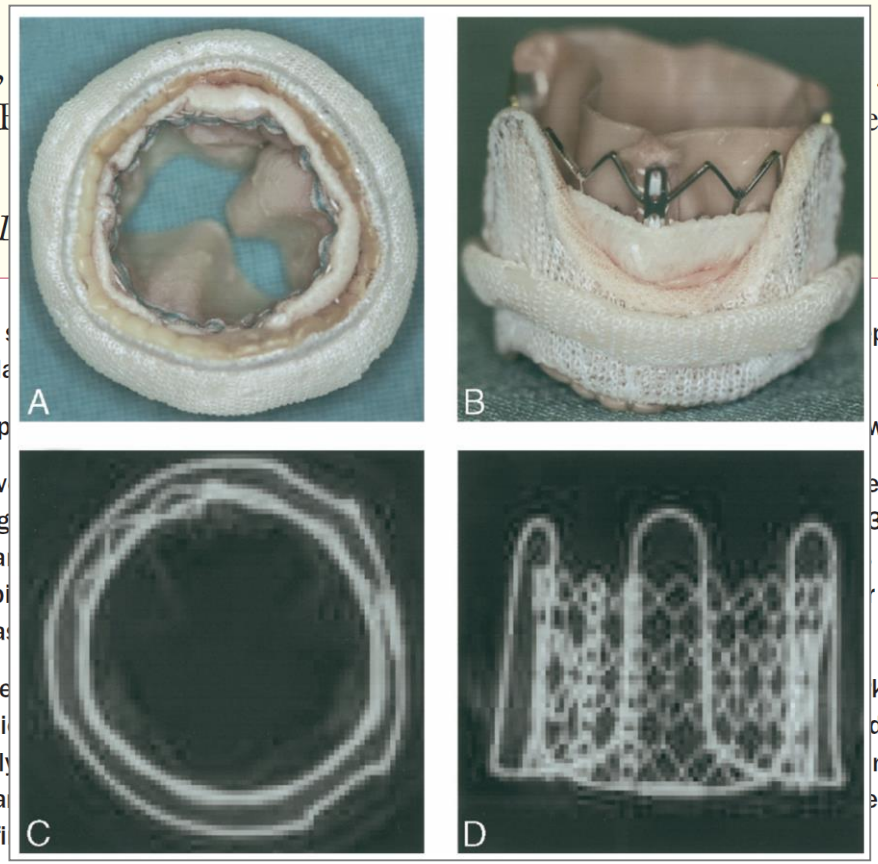


@ Edwards Laboratories, Irvine, CA, USA; M.Dehdashtian and team

VinV: Experimental studies

Valve-in-a-Valve Concept for Transcatheter Minimally Invasive Repeat Xenograft Implantation

Thomas Walther, MD, Jörg Kempfert, MD,*
Fabian Emrich, MD,* F el A. Borger, MD, PHD,*
Gerhard Schuler, MD, PHD*
Leipzig, Germany; and I



Objectives This s peat valve-in-a-valve (VinV) impla

Background Reop with an increased surgical risk.

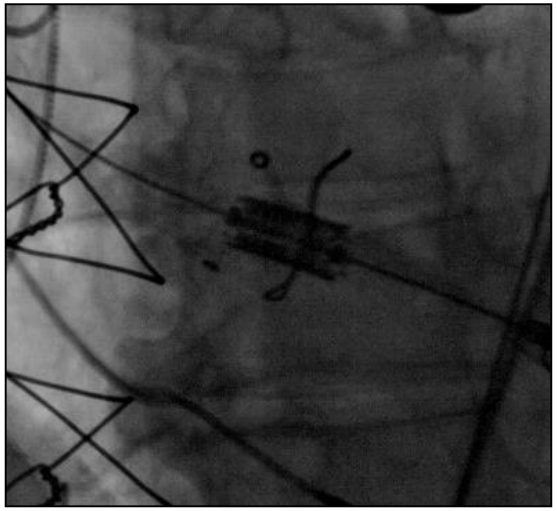
Methods Conv e prostheses were implanted in 7 pig 3-mm stainless steel, balloon expa then performed under fluoro- scopi unloading via cardiopulmonary bypa

Results Valve king within the stent of the con- venti delivered valve. All valves were firmly nsvalvular leaks, and good hemo- dyna ent. Positioning and function were confi

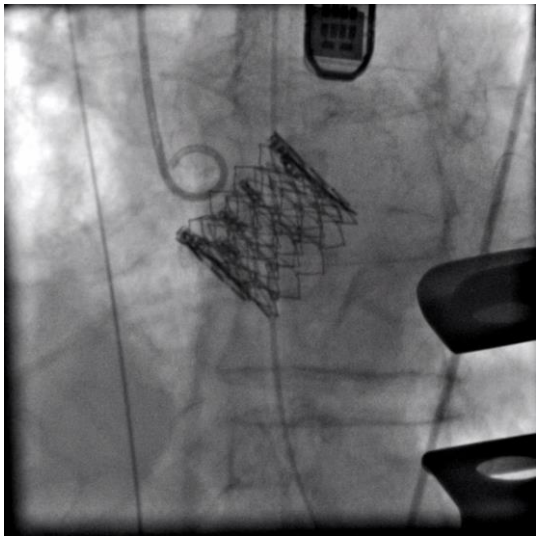
Conclusions The VinV concept is promising for minimally invasive beating heart repeat aortic or mitral valve replacement, using a stent-fixed sutureless prosthesis. (J Am Coll Cardiol 2007;50:56–60) © 2007 by the American College of Cardiology Foundation

VinV

- **TAVI in sAVR**

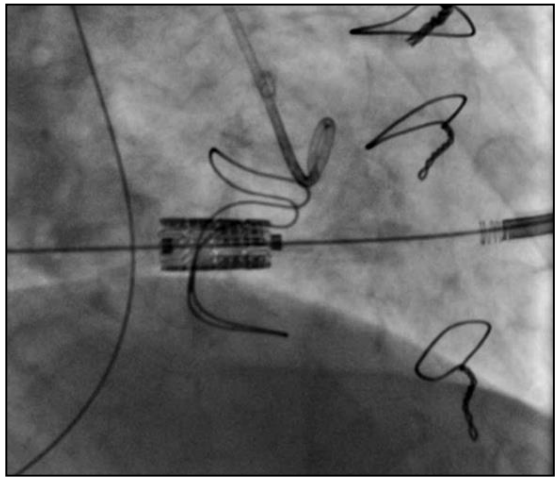


- **TAVI in TAVI** (bailout, degeneration, …)



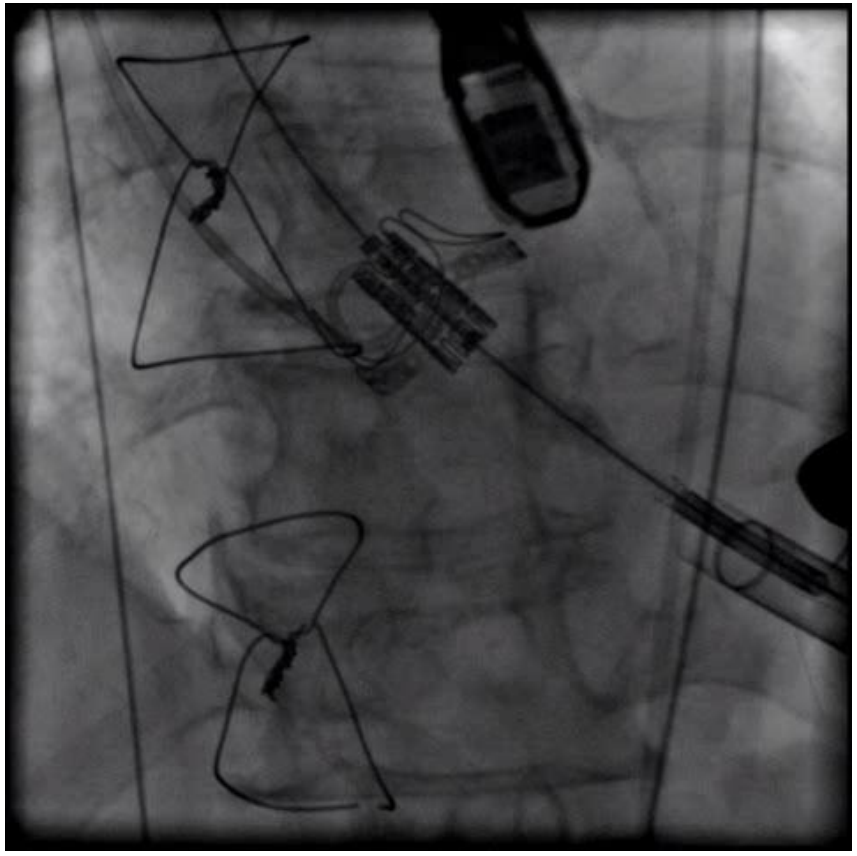
- **TAVI in MVR,**

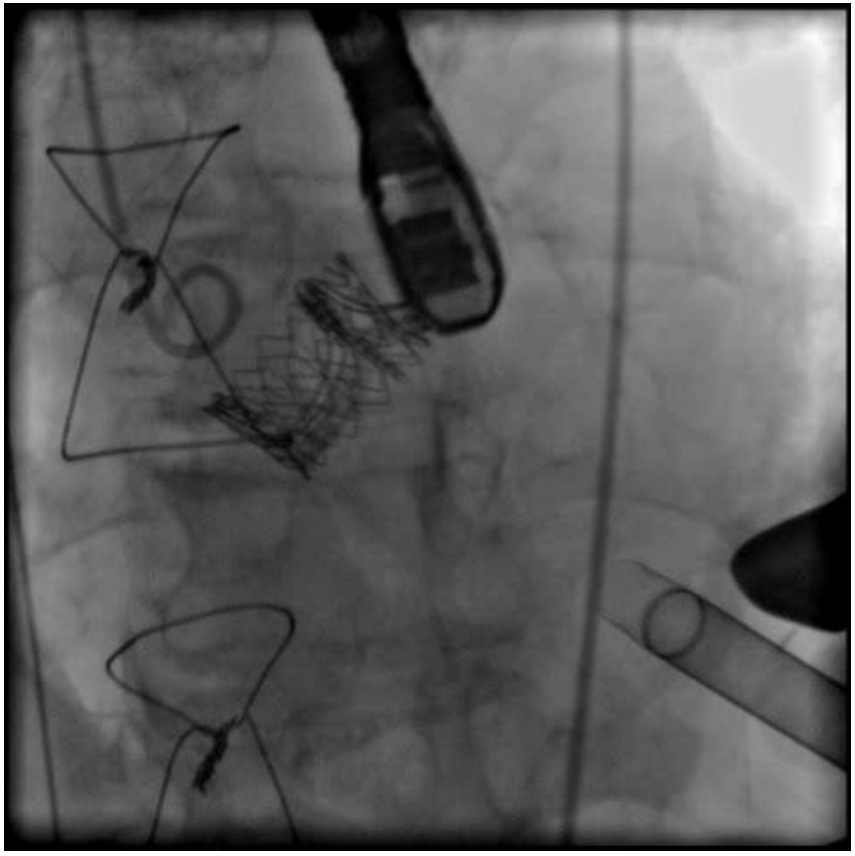
  etc.



VinV: SAPIEN 23 in Perimount 21

first human transapical VinV implantation 2007, Leipzig

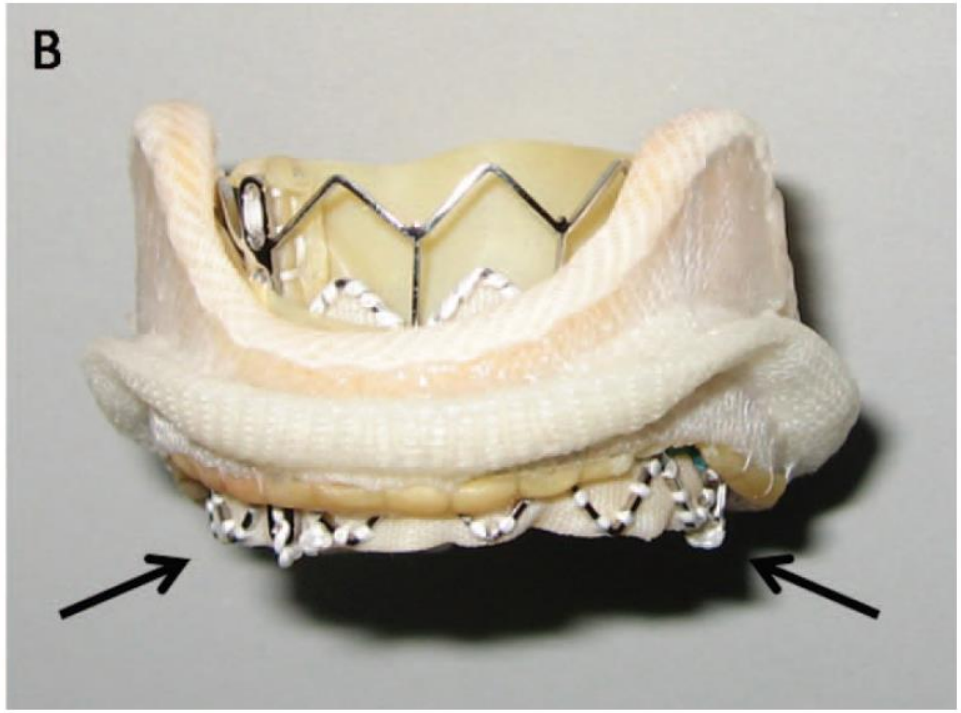




VinV - Literature

Transcatheter Valve-in-Valve Implantation for Failed Bioprosthetic Heart Valves

John G. Webb, MD; David A. Wood, MD; Jian Ye, MD; Ronen Gurvitch, MD;



Conclusions—Transcatheter valve-in-valve implantation is a reproducible option for the management of bioprosthetic valve failure. Aortic, pulmonary, mitral, and tricuspid tissue valves were amenable to this approach. This finding may have important implications with regard to valve replacement in high-risk patients. **(*Circulation*. 2010;121:00-00.)**

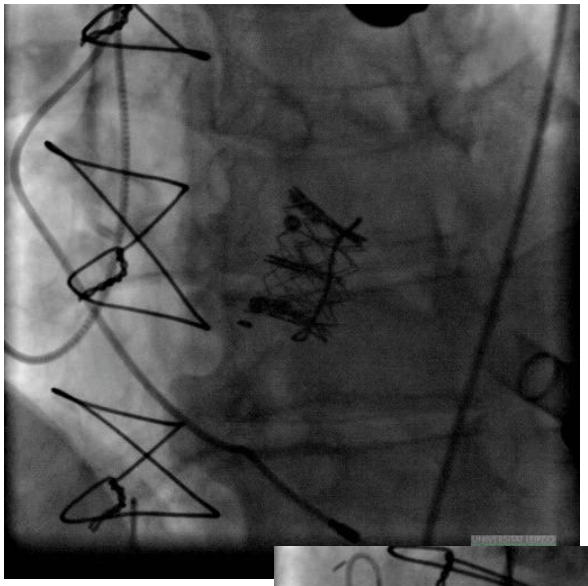
VinV - aortic

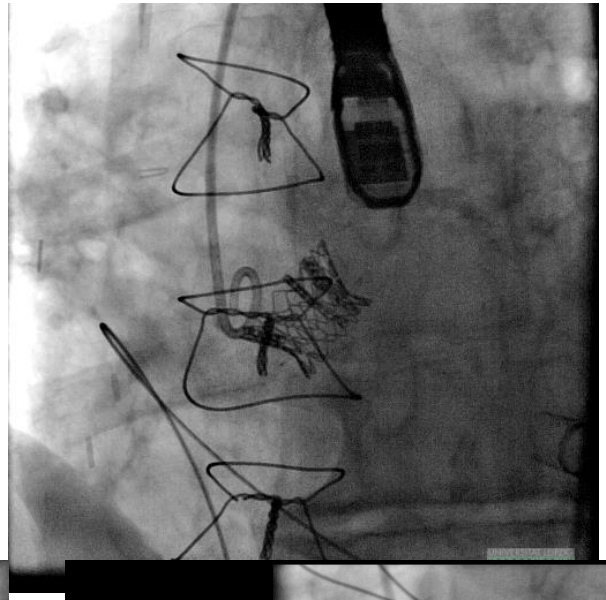
Table 2. Suggested Sapien Size Selection Based on Inner Stent Diameter of Degenerated Bioprosthesis

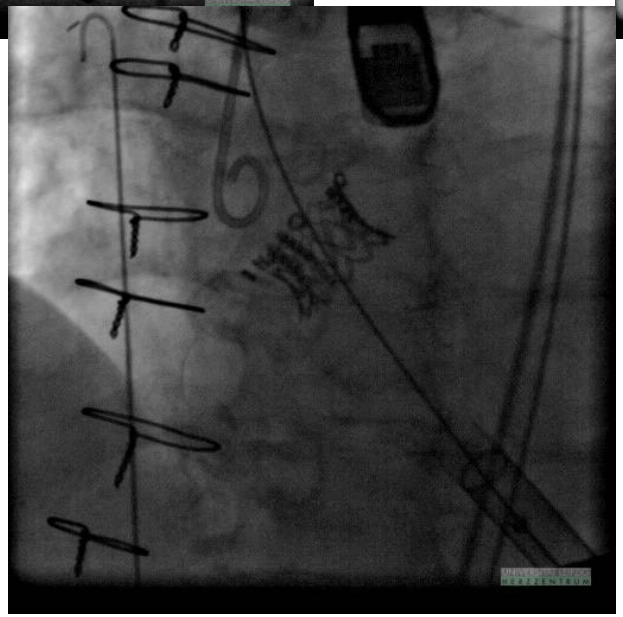
Bioprosthesis	Labeled Size	Inner Stent Diameter (mm)	Suggested Sapien Size	Remarks
CE Perimount	21	20	23	
CE Perimount Magna	23	22	23	
	25	24	26	
	27	26	29	[a]
	29	28	29	[a]
CE Porcine	21	19	23	
SJM Epic	23	21	23	
	25	23	26	
	27	25	26	
	29	27	29	[a]
SJM Epic Supra	21	21	23	
	23	23	26	
	25	25	26	
	27	27	29	[a]
	29	29	29	+1 mL extra balloon volume, might cause mild central leak
Medtronic Hancock II	21	18.5	23	
Medtronic Mosaic	23	20.5	23	
Medtronic Mosaic Ultra	25	22.5	26	
	27	24	26	
	29	26	29	[a]
Sorin Mitroflow	21	17.3	23	Significant crowning expected, might cause central leak
	23	19	23	
	25	21	23	
	27	22.9	26	
	29	24.7	26	

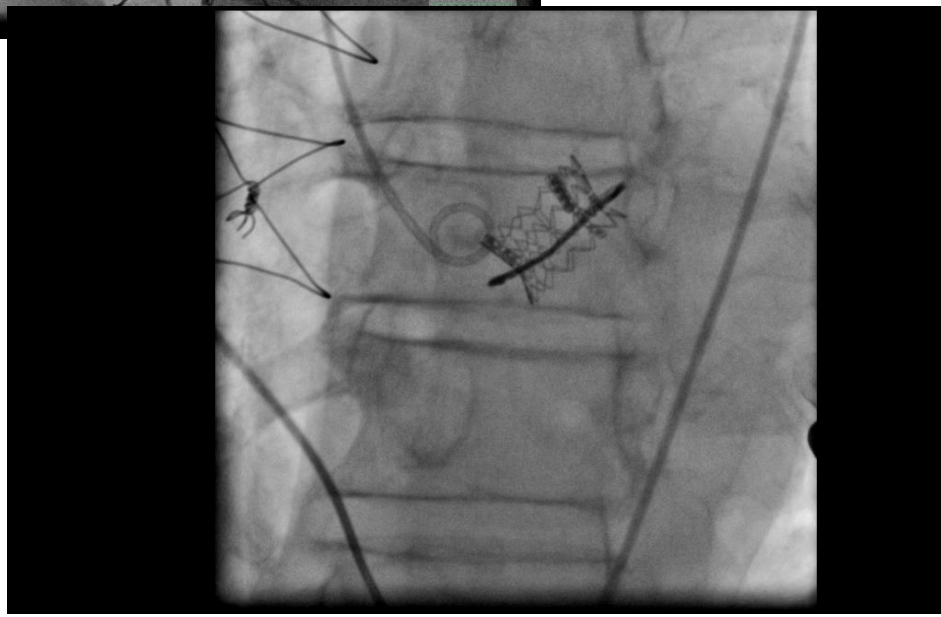
VinV: examples in…

Hancock, Mosaic, Epic, Mitroflow





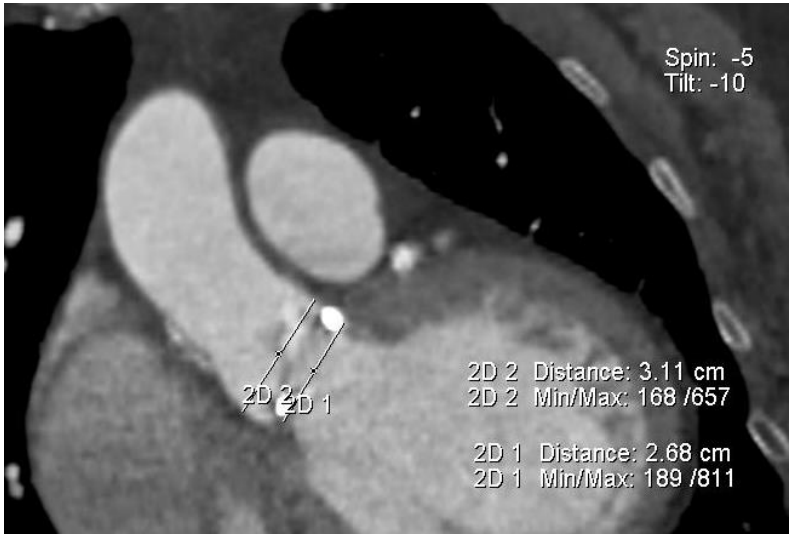


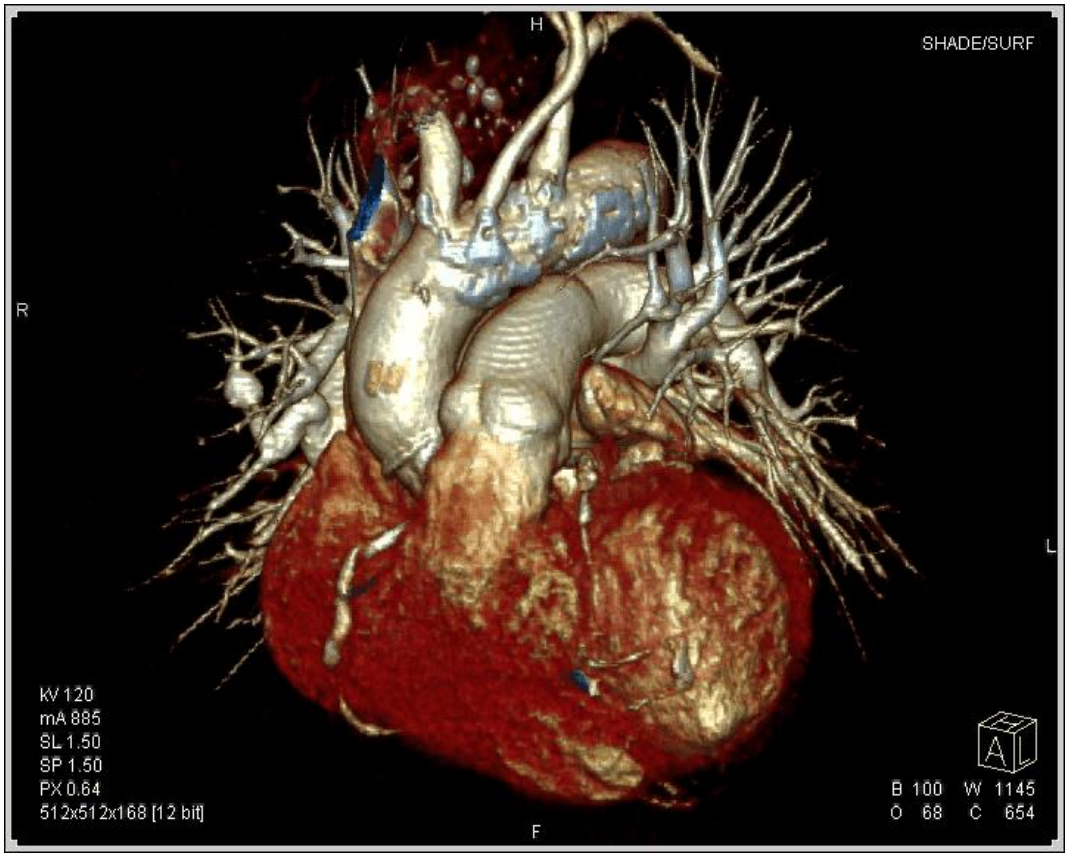


VinV screening

- Type of implanted valve with visualisation (annulus, struts)
- Size of implanted degenerated xenogrft
- Aortic root anatomy
- => selection of suitable TAVI prosthesis: intraannular valve (SAPIEN) or supraannular valve (COREVALVE, ACURATE, etc.)

VinV -aortic: aortic root imaging !





Pre-OP CT mandatory !

VinV app *(V. Bapat)*

Valve In Valve

Mehr von diesem Entwickler

Von UBQO Limited

Öffne iTunes, um Apps zu kaufen und zu laden.

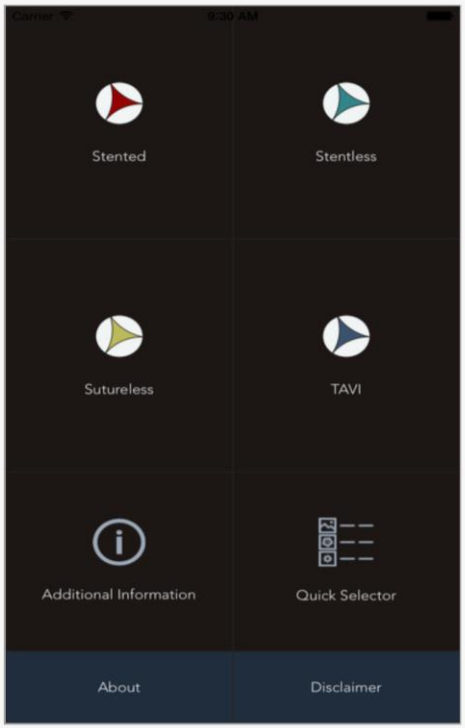
Beschreibung

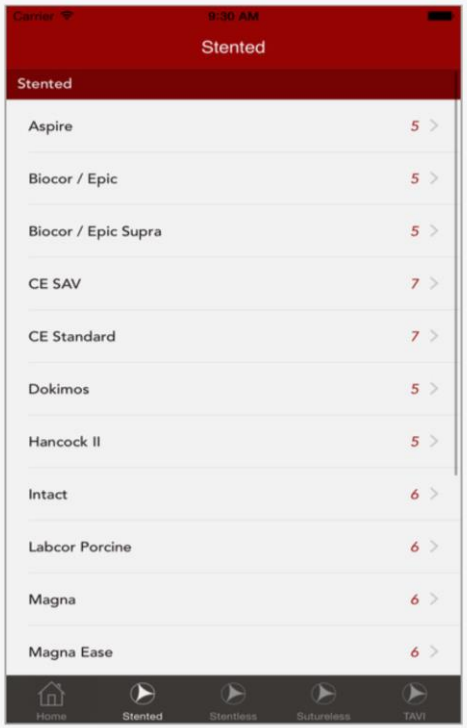
An instant guide to Valve in Valve procedures for clinicians

Quick, clear and concise information about heart valves and Valve in Valve therapy. A guide you wish you always had

Screenshots

iPhone | iPad





VinV

=> but can also be cumbersome …

VinV -
therapy of choice in case of decreased TAVI durability

KERCKHOFF HERZ- UND THORAXZENTRUM

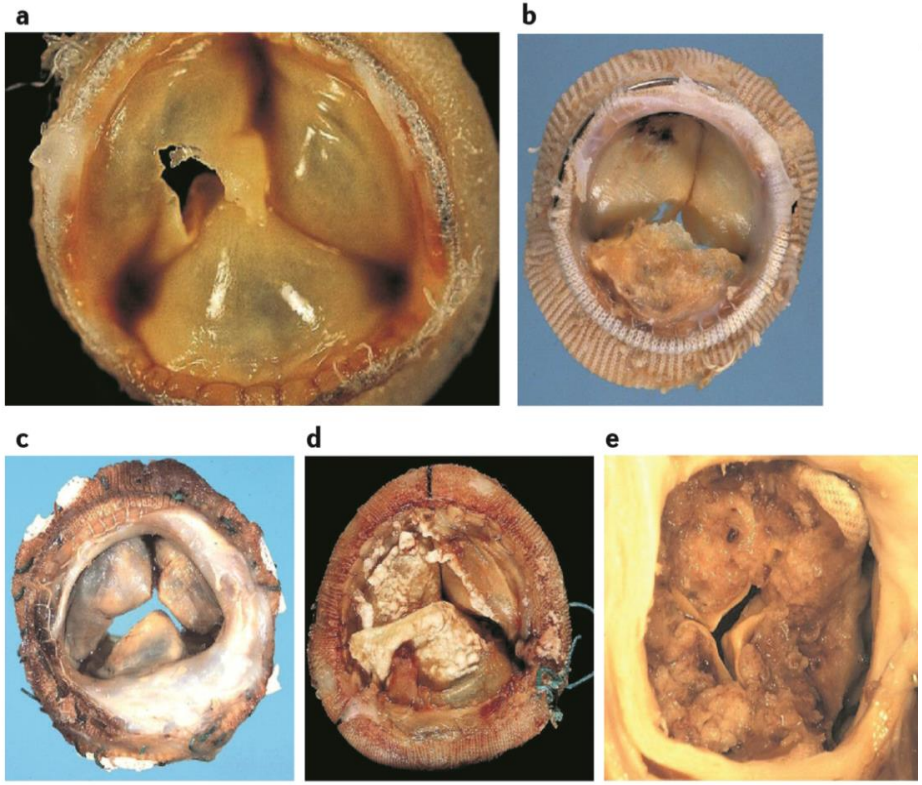
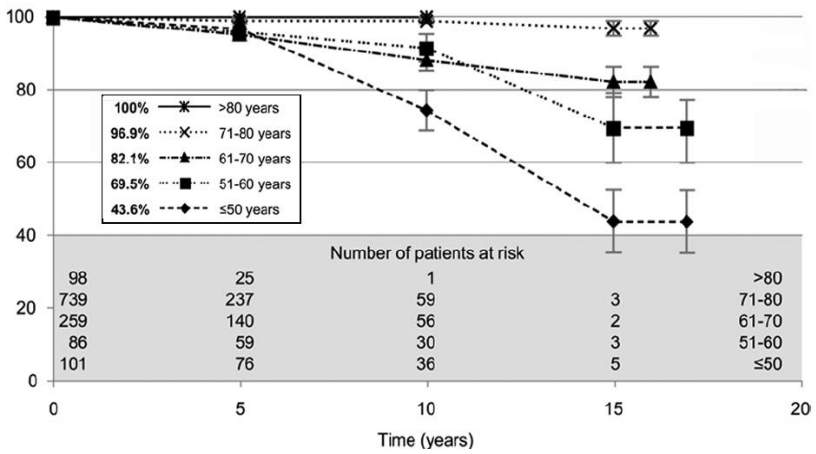
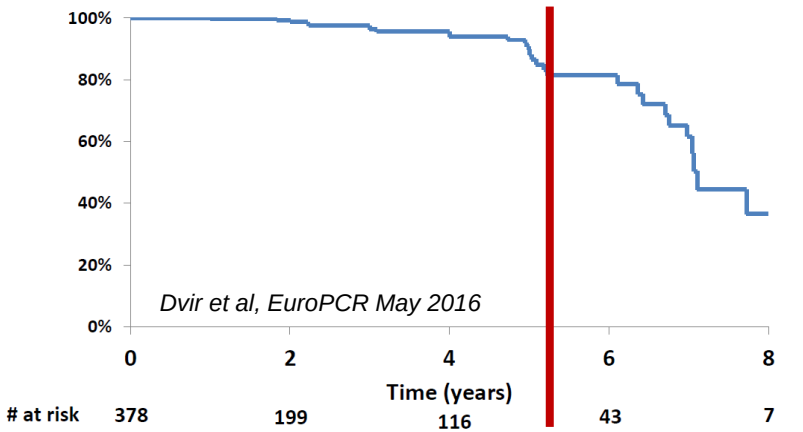


Figure 2 | **Pathological specimens showing the most common reasons for bioprosthetic valve failure. a** | Wear and tear. **b** | Calcific degeneration. **c** | Pannus. **d** | Endocarditis. **e** | Thrombus. Wear and tear and calcification are the most common causes. Reprinted from Piazza, N. *et al.* Transcatheter aortic valve implantation for failing surgical aortic bioprosthetic valve from concept to clinical application and evaluation (part 1). *JACC Cardiovasc. Interven.* **4** (7), 721–732 © (2011), with permission from Elsevier.

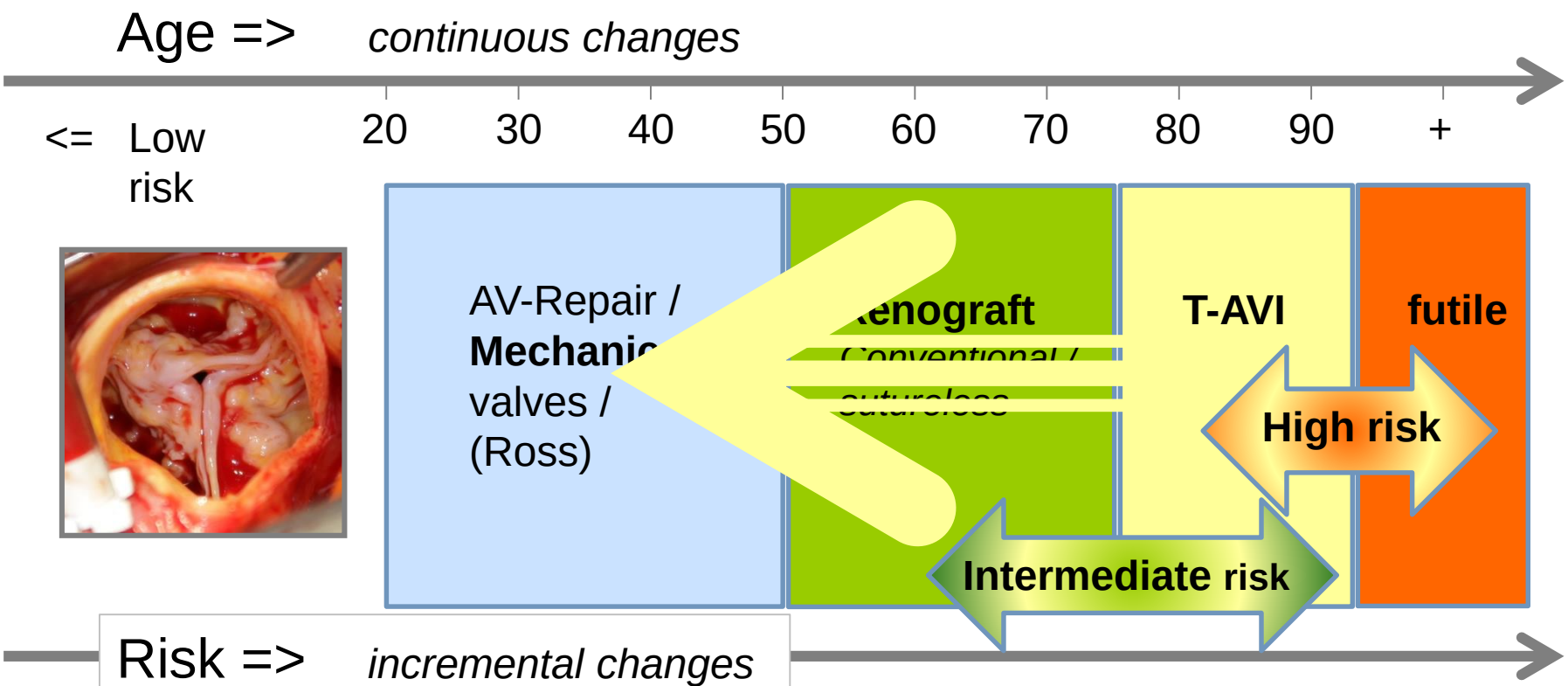




THV degeneration was defined as at least moderate regurgitation AND/OR mean gradient ≥ 20mmHg, which did not appear within 30 days of the procedure and is not related to endocarditis.
KM estimate of THV degeneration included censoring of patients at their date of last known THV functioning well without evidence for degeneration per study definition.

Arsalan M, Walther T: Durability of prostheses for transcatheter aortic valve implantation. Nat Rev Cadiol 2016;13:360-7

AS: increasing use of xenografts / potential VinV

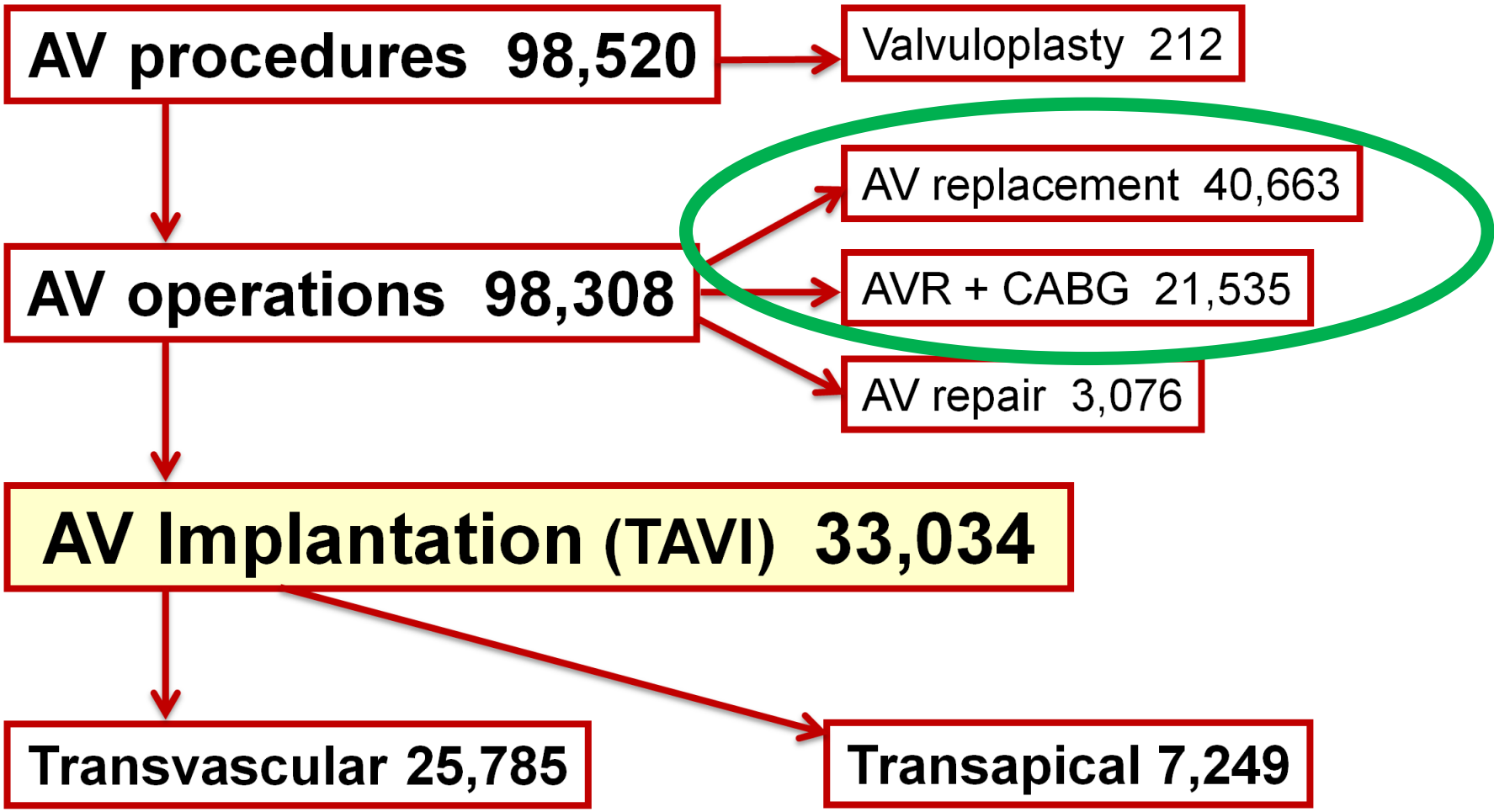


	Low risk	*Interm. risk*	*High risk*
Log. Euroscore	**< 10**	**10 - 20**	**> 20**
STS Score	**< 3**	**3 - 6**	**> 8**
AKL Score	**< 3**	**3 - 6**	**> 6**

GARY

Patients 2011 - 2015

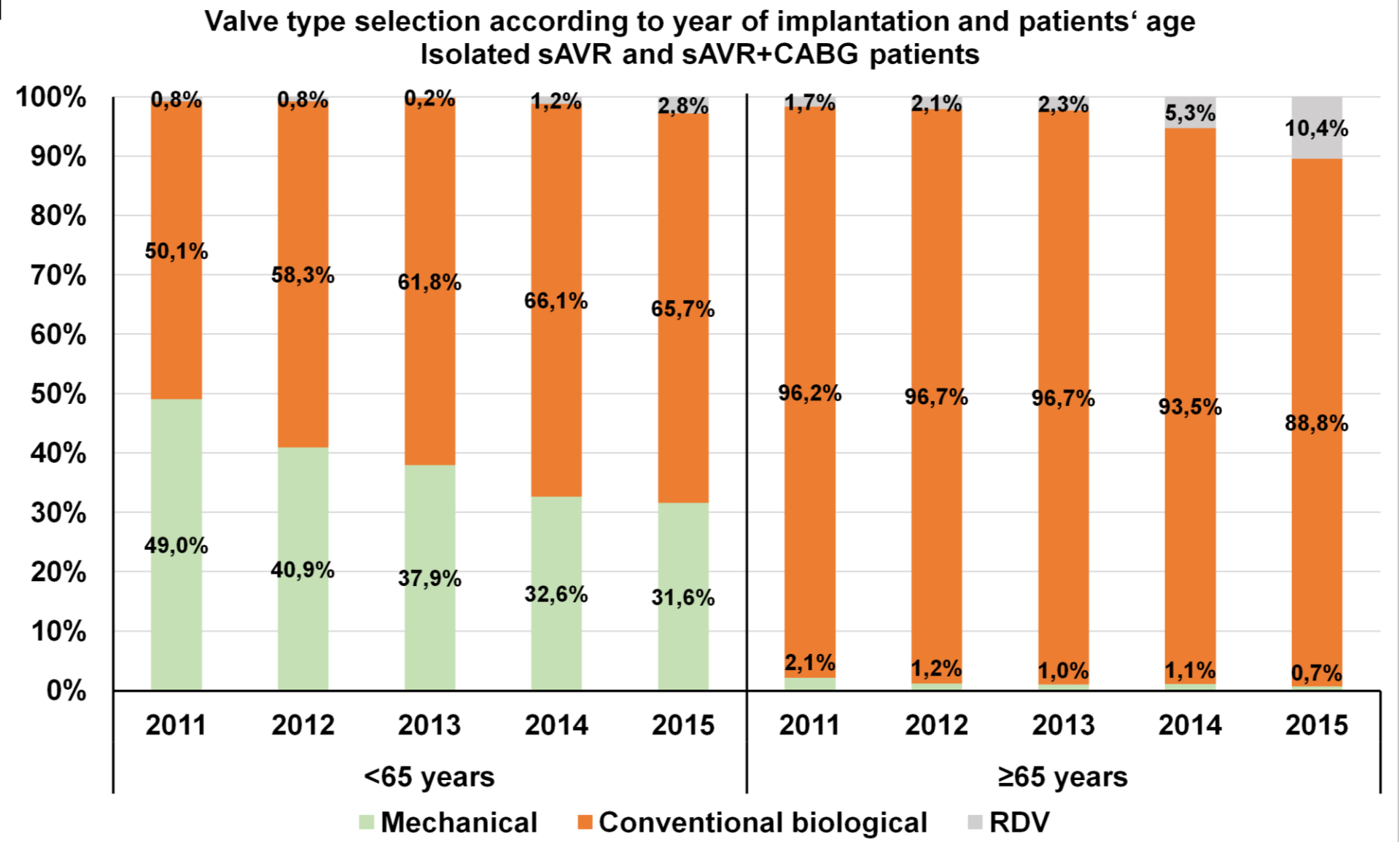
Deutsches Aortenklappenregister



GARY

Patients 2011 - 2015

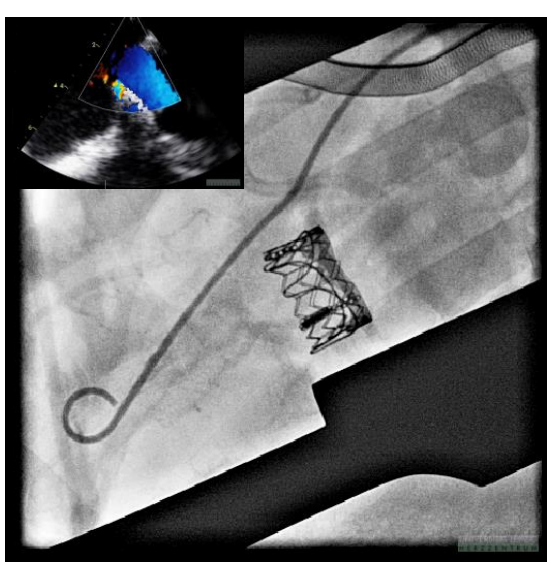
Deutsches Aortenklappenregister

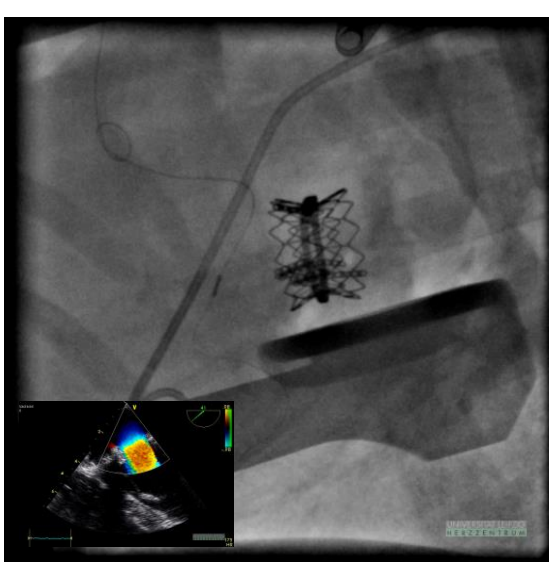


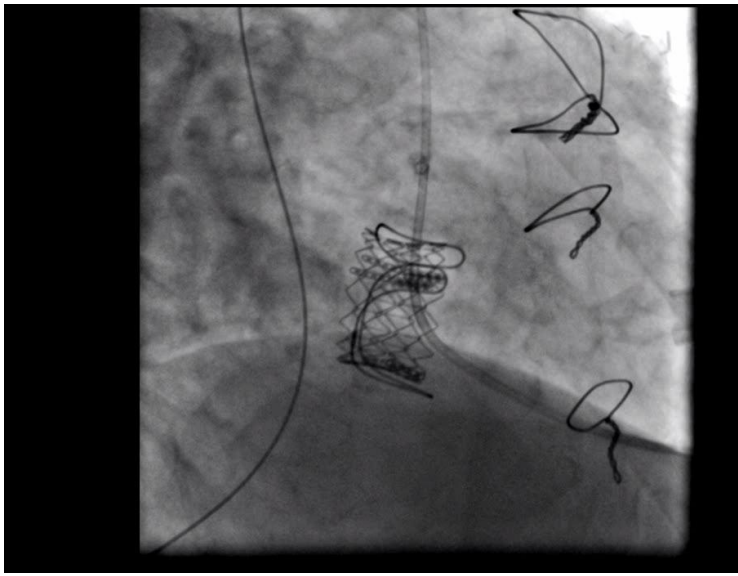
VinV / VinR mitral

- Experimental evaluation 2008
- Nowadays clinical routine.

  Consider complex anatomy, LVOT, mitral - aortic angle, etc.







Kempfert, Walther et al: Eur Heart J. 2008;29:2382-7

Valve in valve (VinV)

- **Established minimally invasive option** for **(all) patients with degenerated xenografts**
- **Exact screening important, exclude endocarditis, PV leak, aortic pathology, etc.**
- **Change in valve selection criteria - lower threshold for xenografts**

Thank you !

t.walther@kerckhoff-klinik.de