



Centre for  
Heart Valve Innovation  
St. Paul's Hospital, Vancouver

# Impact of VinV on Surgical Bioprosthetic Design

*Jian (James) Ye, MD FRCPC*

**Clinical Professor of Surgery**

**St. Paul's Hospital, University of British Columbia**

AP VALVES, Seoul, August 9-11, 2018

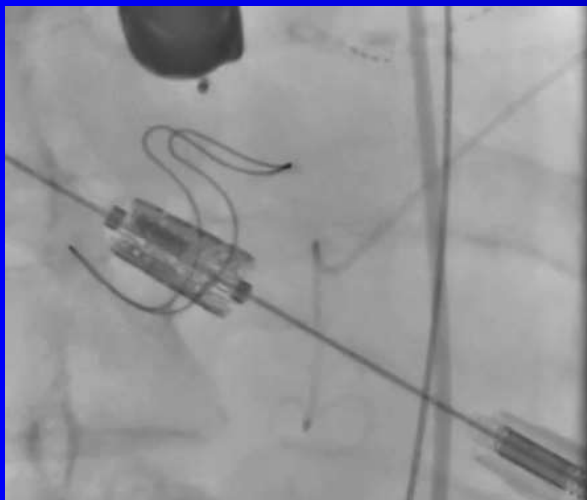


# Disclosure

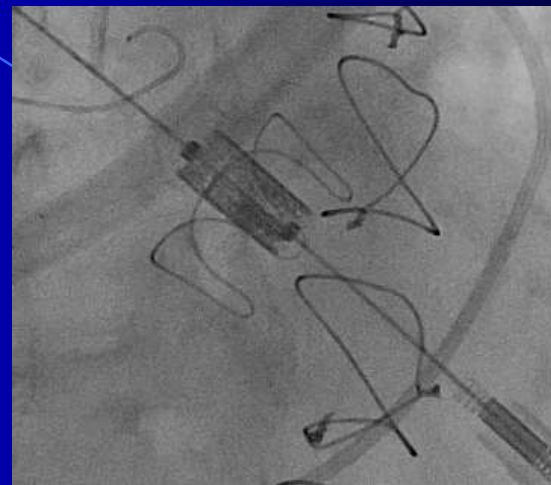
**Consultant:**

**Edwards Lifesciences  
JC Medical Inc.**

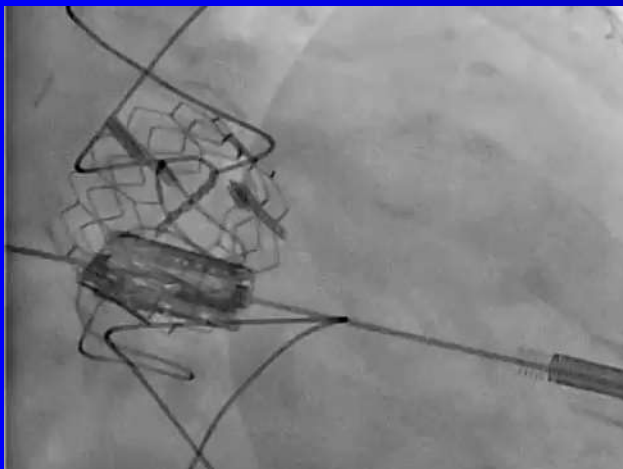
# Is durability of tissue valves an critical issue?



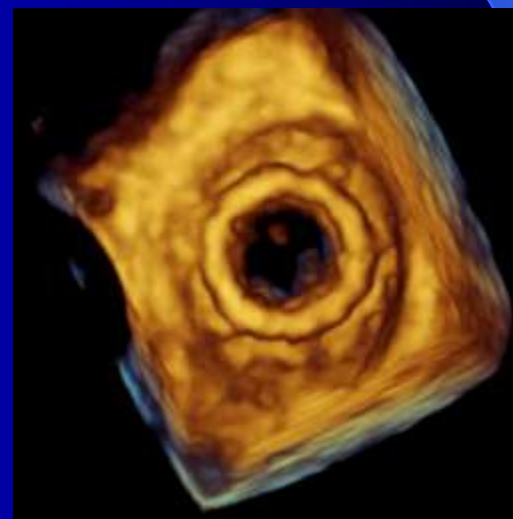
**Aortic VinV**



**Mitral VinV**



**Multiple VinV**



# How to choice a tissue valve?



CE Perimount  
Magna



CE Perimount  
Magna Ease



Sorin Mitroflow



Trifecta  
(St. Jude Medical)



Medtronic  
Hancock II



Medtronic Mosaic



CE Porcine SAV



Biocor



Edwards Prima  
Plus



Medtronic  
Freestyle



St. Jude Toronto  
SPV

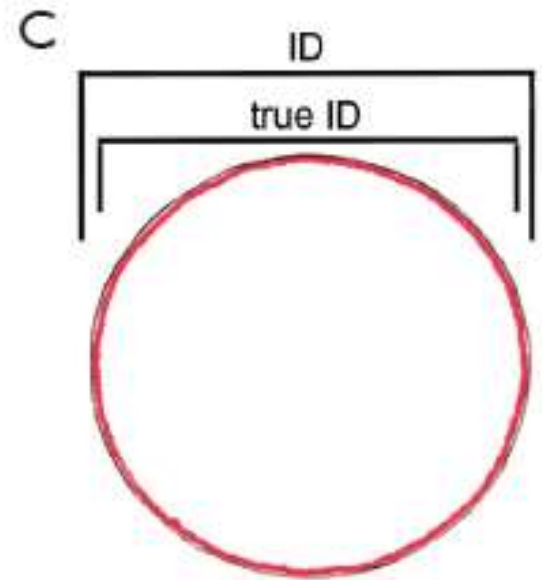
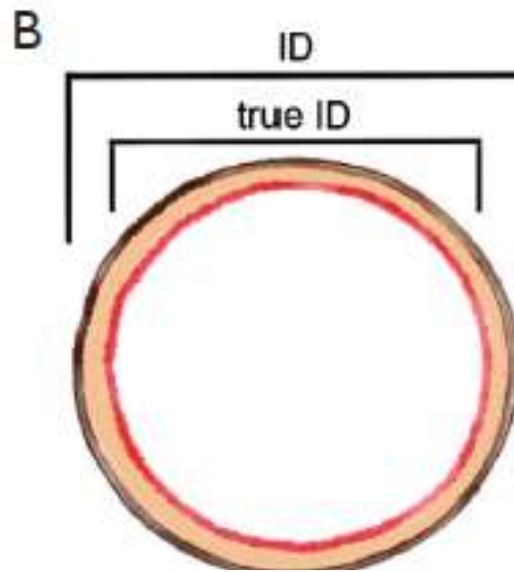
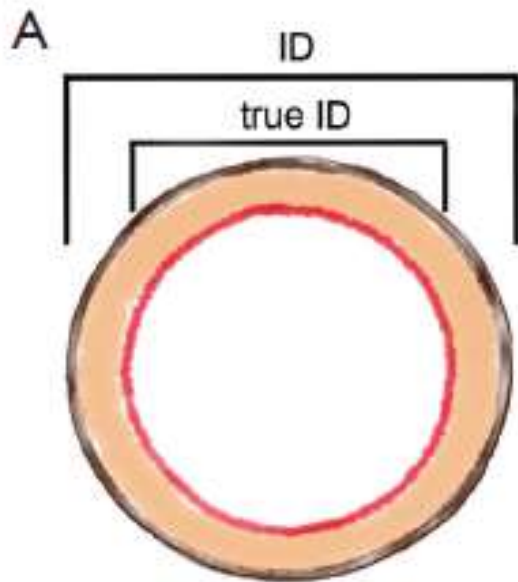


Sorin Freedom

# Impact on valve designs

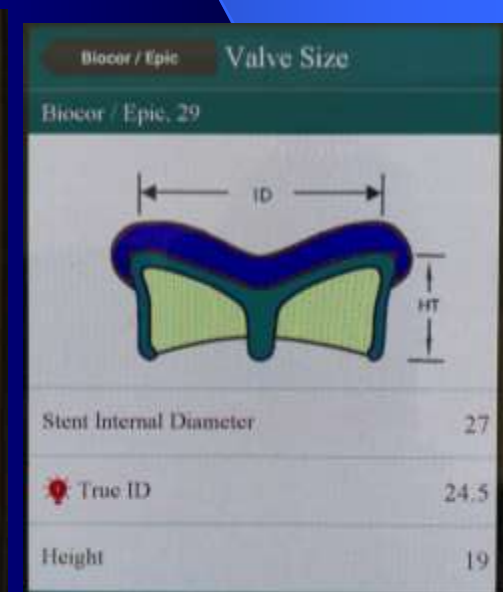
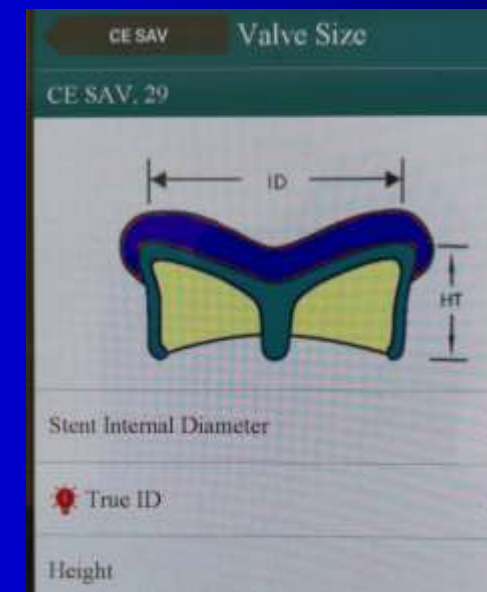
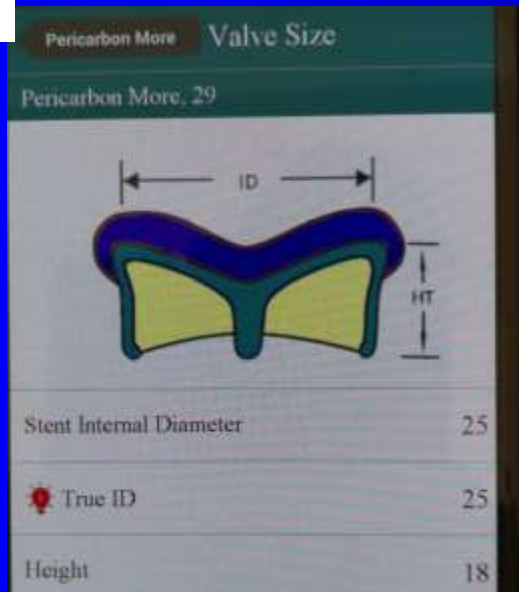
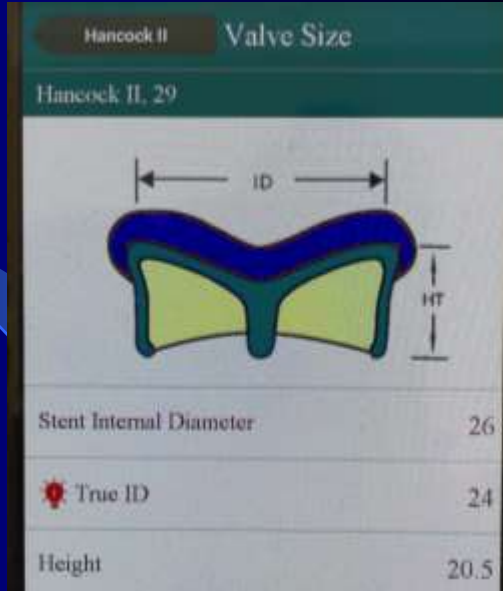
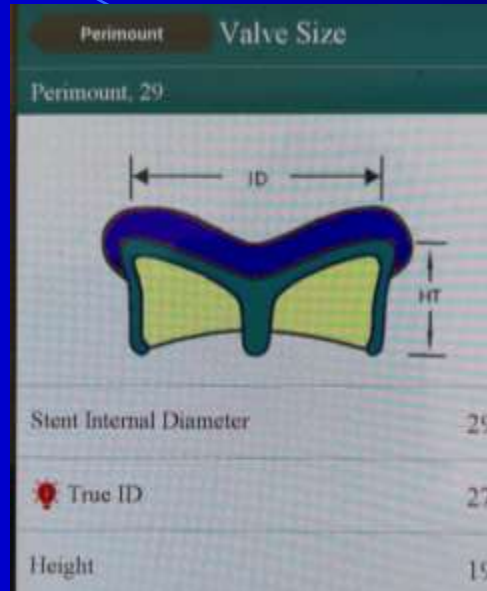
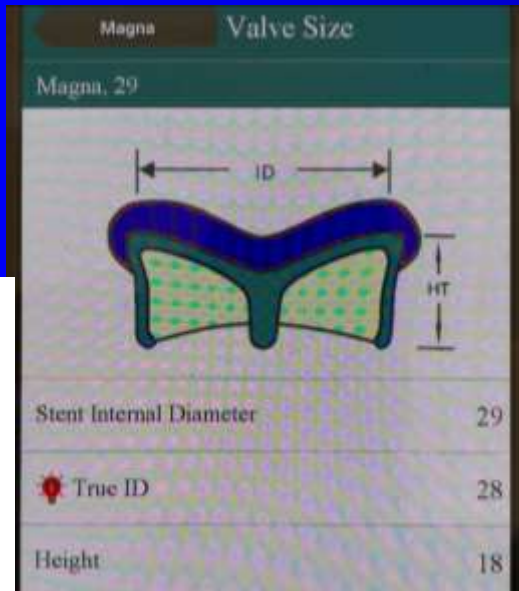
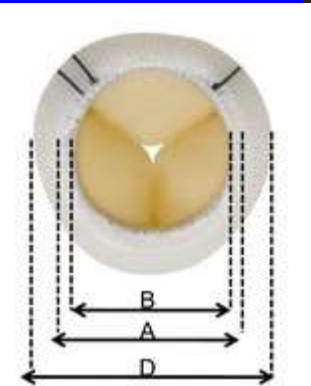
- **Valve durability**
- **Ratio of ID/OD**
- **Profile**
- **Visibility on fluoroscopy**
- **Coronary obstruction**
- **Potential fracture of sewing ring**
- **Expandable valve**

# True Internal Diameter

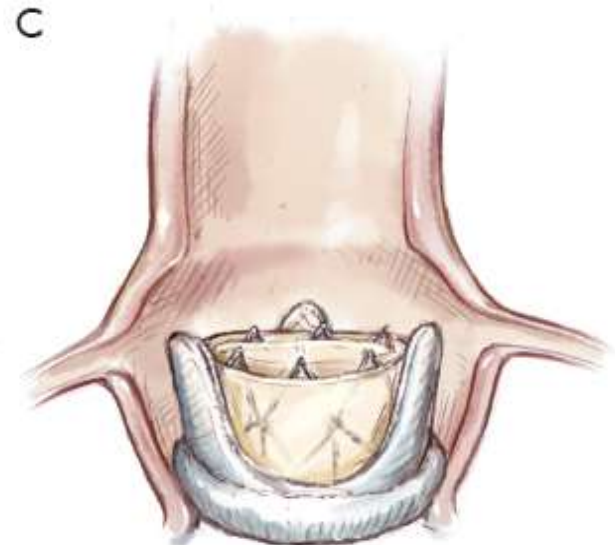
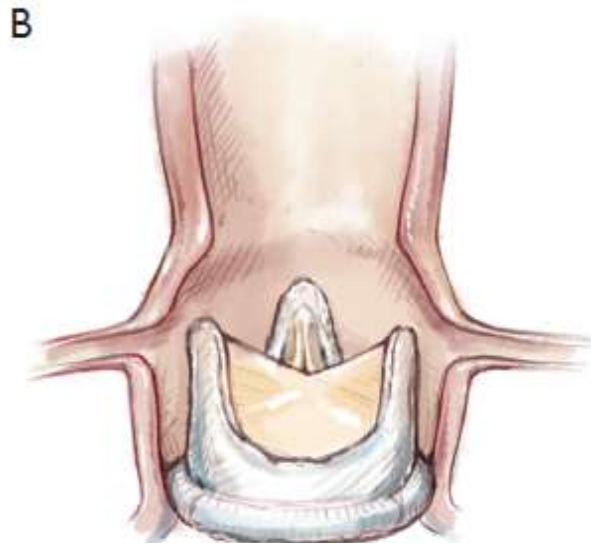
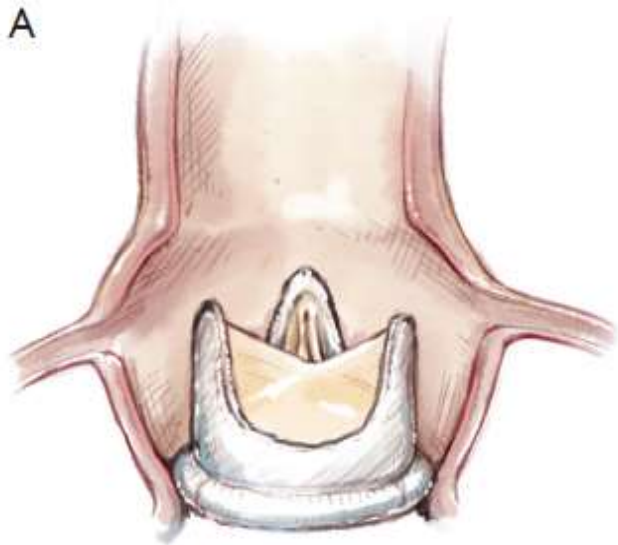




# Large ratio of ID/ED



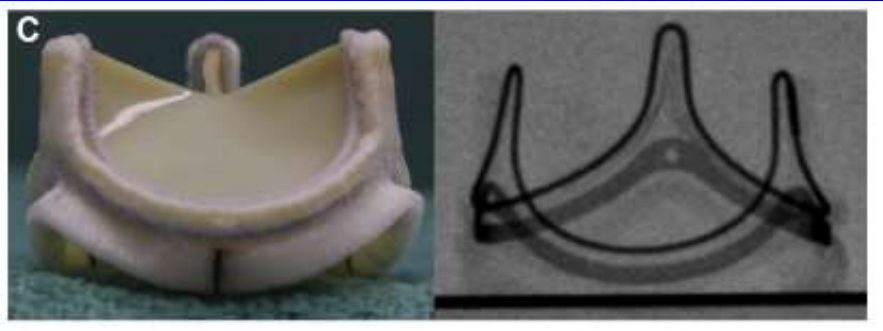
# Profile



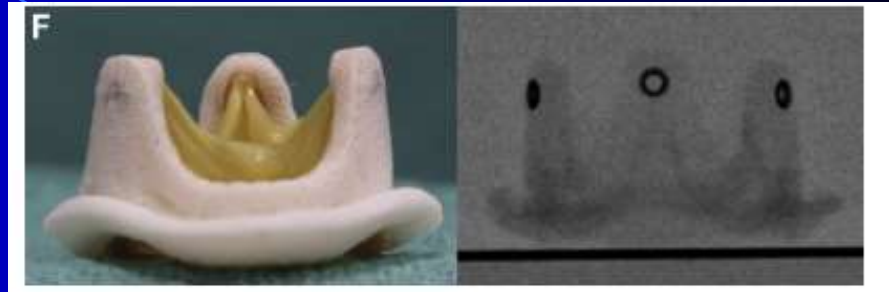
*Ann Cardiothorac Surg* 2017;6(5):541-552



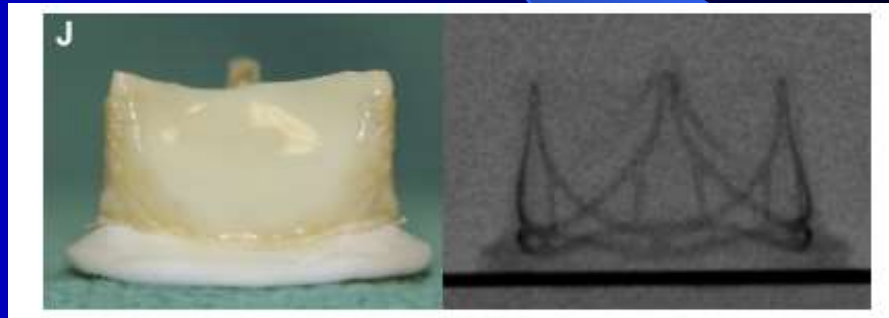
# Visibility on fluoroscopy



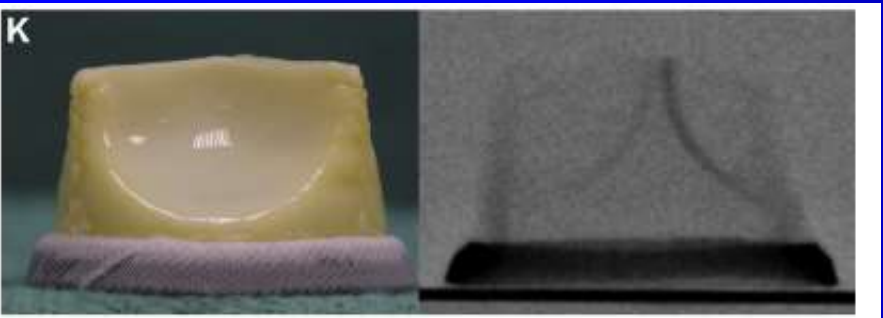
**Magna Ease**



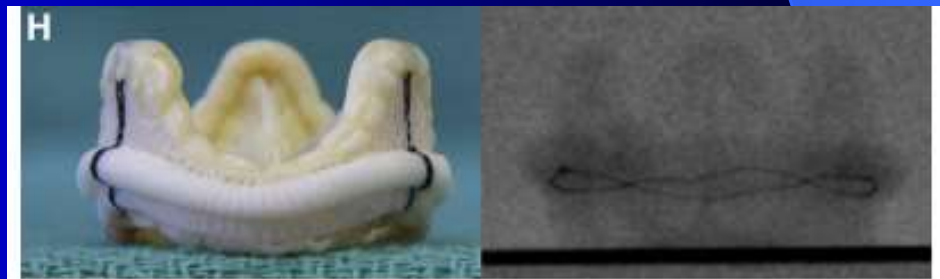
**Mosaic**



**Trifecta**



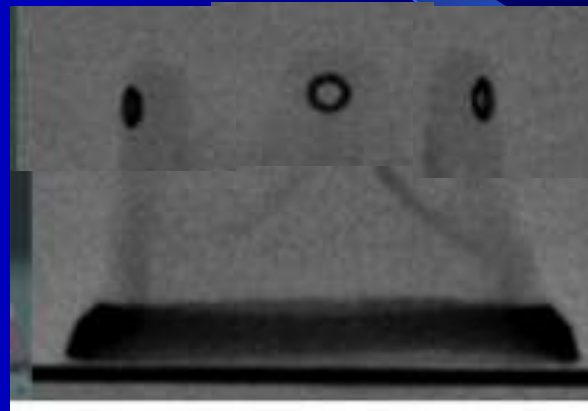
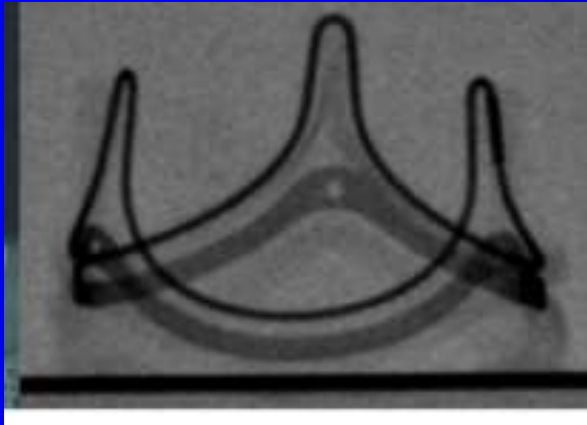
**Mitroflow**



**Epic**

# Visibility on fluoroscopy

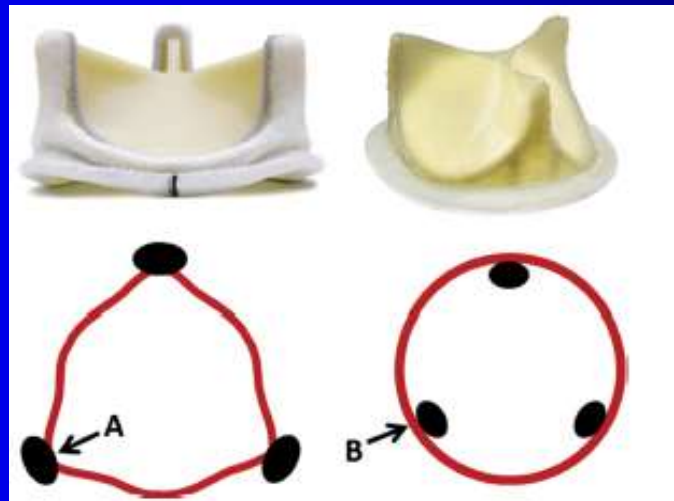
## Ideal markers



# Reduce risk of coronary obstruction



**Magna Ease**



**Mitroflow**

# Potential fracture of basal ring

Table 1: Combined Results of Bioprosthetic Valve Fracture Bench Testing

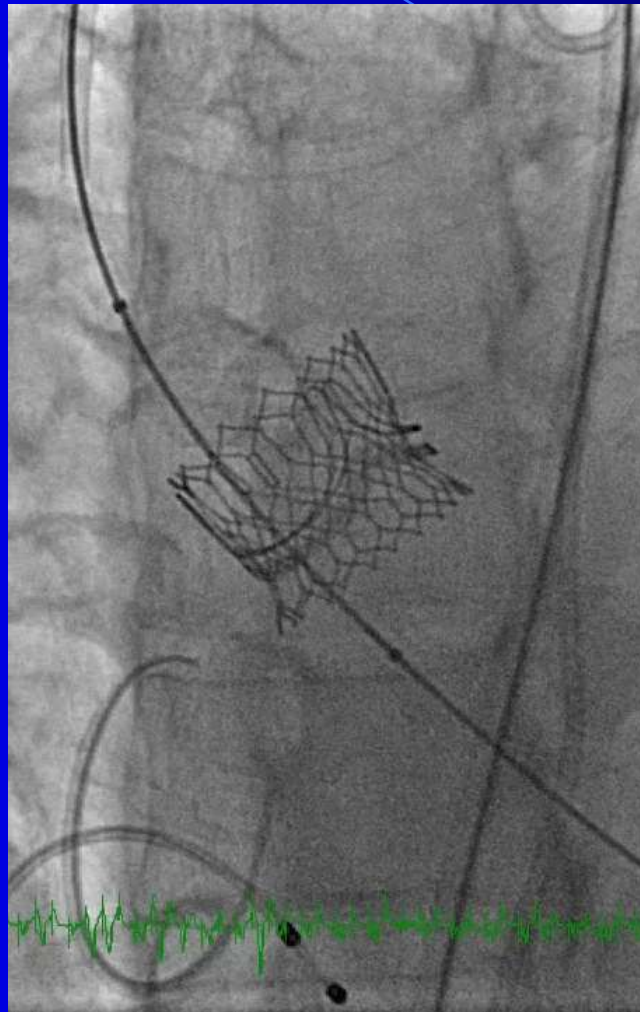
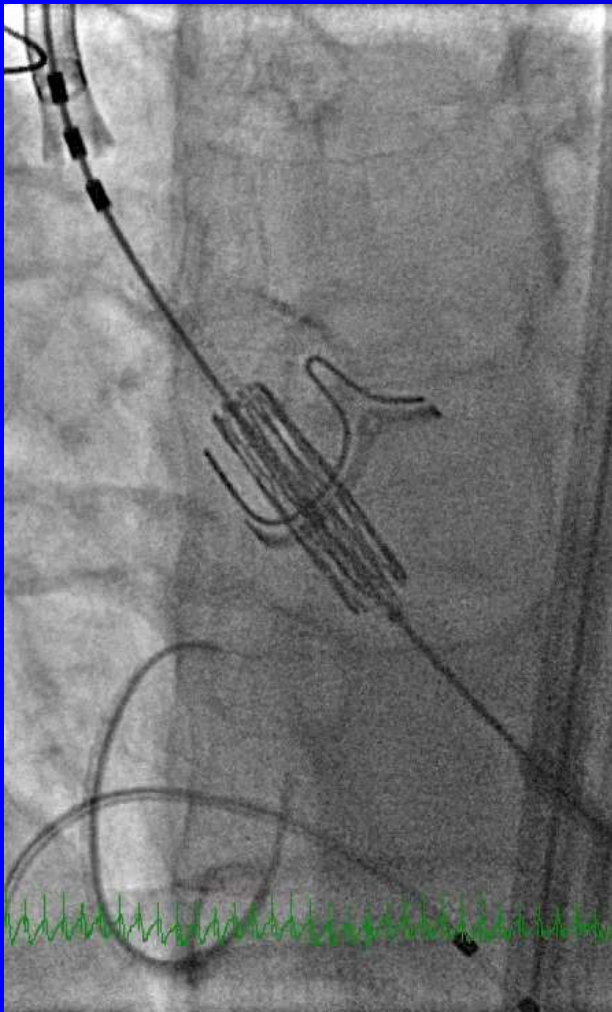
Manufacturer/ Brand	Valve Size	Bard TRU Balloon Fracture/Pressure	Bard Atlas Gold** Fracture/Pressure	Appearance After Fracture
St. Jude Triecta	19 mm 21 mm	NO NO	NO NO	
St. Jude Biocor Epic	21 mm	YES/ 8 atm	NOT TESTED	
Medtronic Mosaic	19 mm 21 mm	YES/ 10 atm YES/ 10 atm	YES/ 10 atm YES/ 8 atm	
Medtronic Hancock II	21 mm	NO	NOT TESTED	
Sorin Mitroflow	19 mm 21 mm	YES/ 12 atm YES/ 12 atm	NOT TESTED YES/ 10 atm	
Edwards MagnaEase	19 mm 21 mm	YES/ 18 atm YES/ 18 atm	YES/ 19 atm YES/ 21 atm	
Edwards Magna	19 mm 21 mm	YES/ 24 atm YES/ 24 atm	NOT TESTED	



Ballons sized 1 mm larger than valve size. The Medtronic Mosaic and Sorin Mitroflow have an inverted flow. Therefore, their appearance after fracture would be different. Courtesy: Johanson, et al., 2017; Allen, et al., 2017; \*\*these data obtained from Johanson et al.



# Fracture of surgical basal ring





# Expandable Surgical Valve

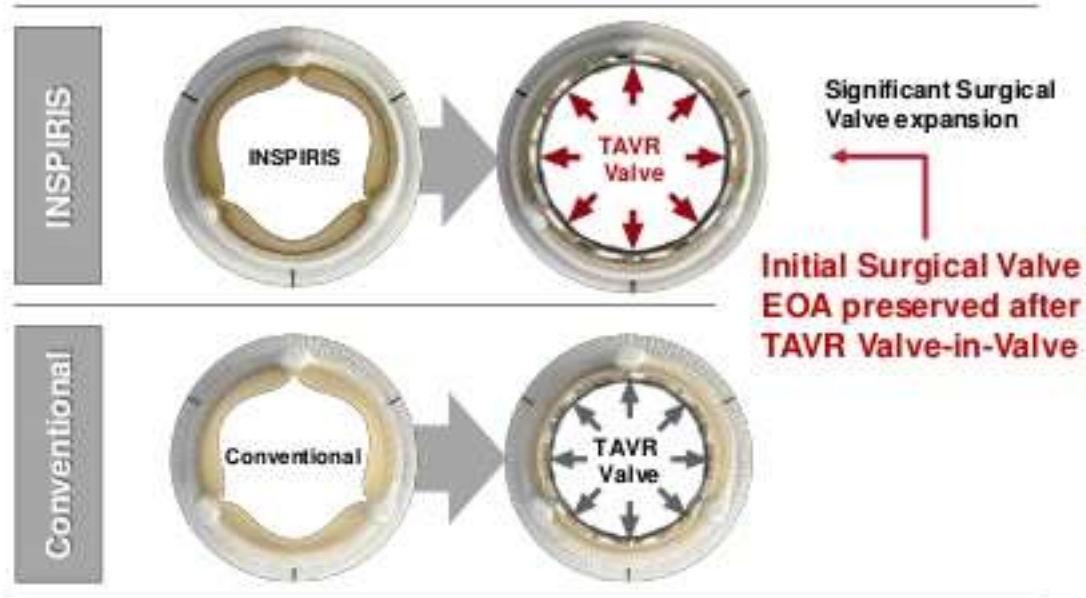


Edwards

# Expandable Surgical Valve

Edwards Lifesciences

**The VFit Feature is Designed to Be Expandable to Preserve Effective Orifice Area (EOA)**



**Larger is Better<sup>1</sup>**

Better survival of Valve-in-Valve TAVR patients in larger-size surgical valves

<sup>1</sup>Dvir D, et al. JAMA. Transcatheter Aortic Valve Implantation in Failed Bioprosthetic Surgical Valves. 2014;312(2):162-170.

INSPIRIS not approved for sale.

# Optimal bioprosthesis

- **Excellent durability**
- **Large ratio of ID/OD**
- **Low profile**
- **Good visibility and markers on fluoroscopy**
- **Low risk for coronary obstruction**
- **Expandable ring**

THANKS!