



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

# Transcatheter Therapies for Mitral Regurgitation

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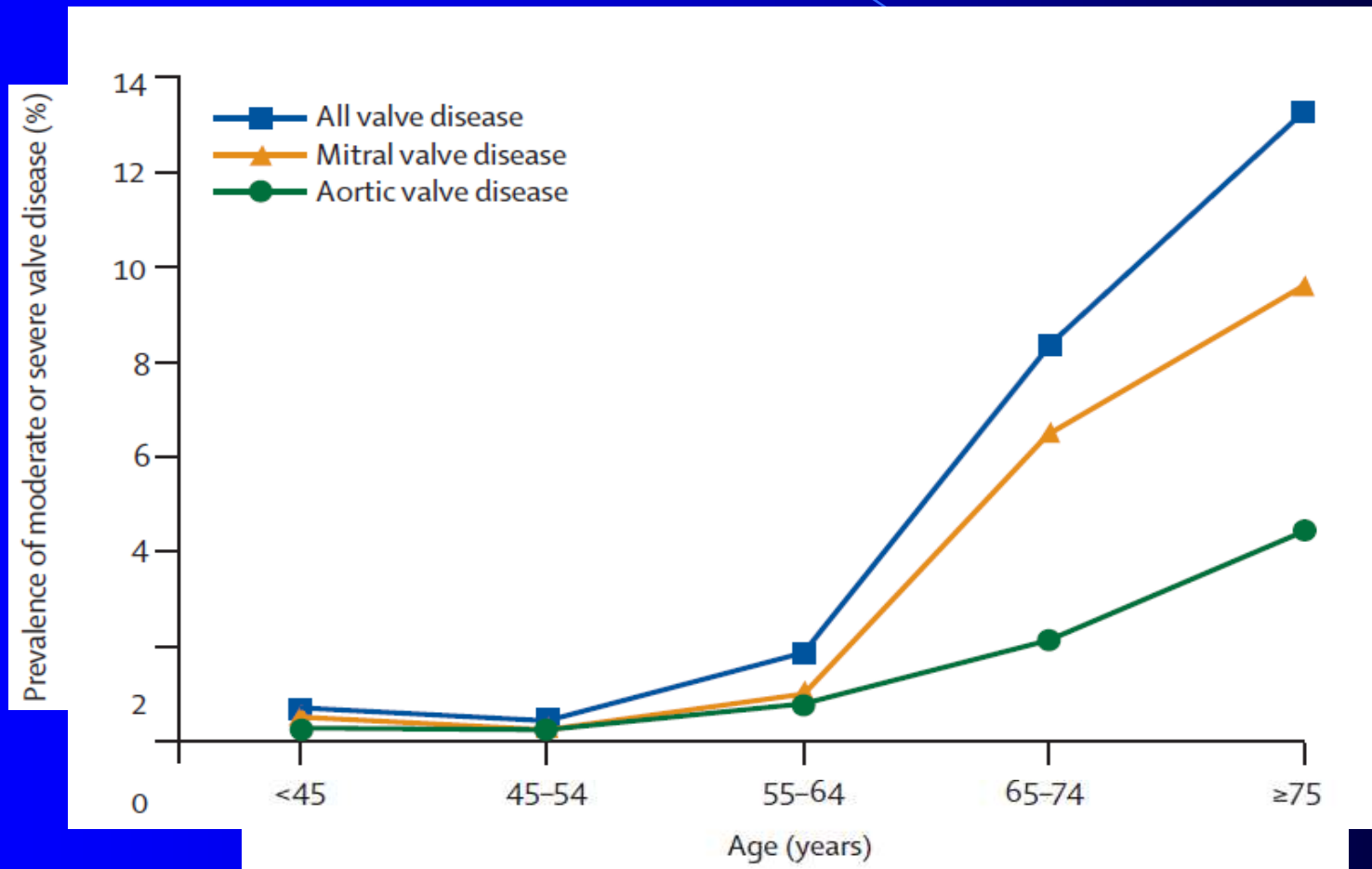
*TCTAP April 30<sup>th</sup>, 2015 – Seoul, Korea*

# Disclosure

- **Consultant to Edwards Lifesciences**

# Prevalence of Mitral Regurgitation

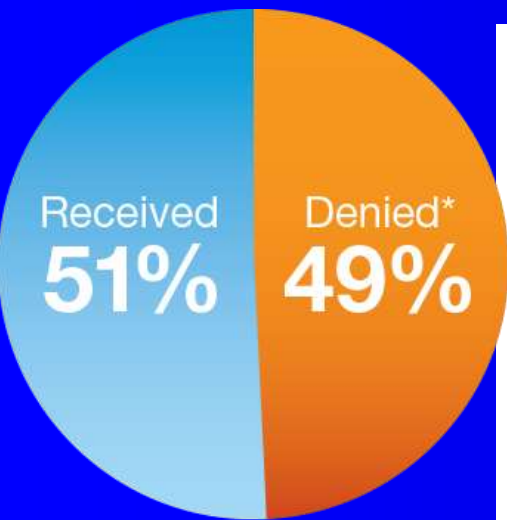
The most frequent valve disease in the United States



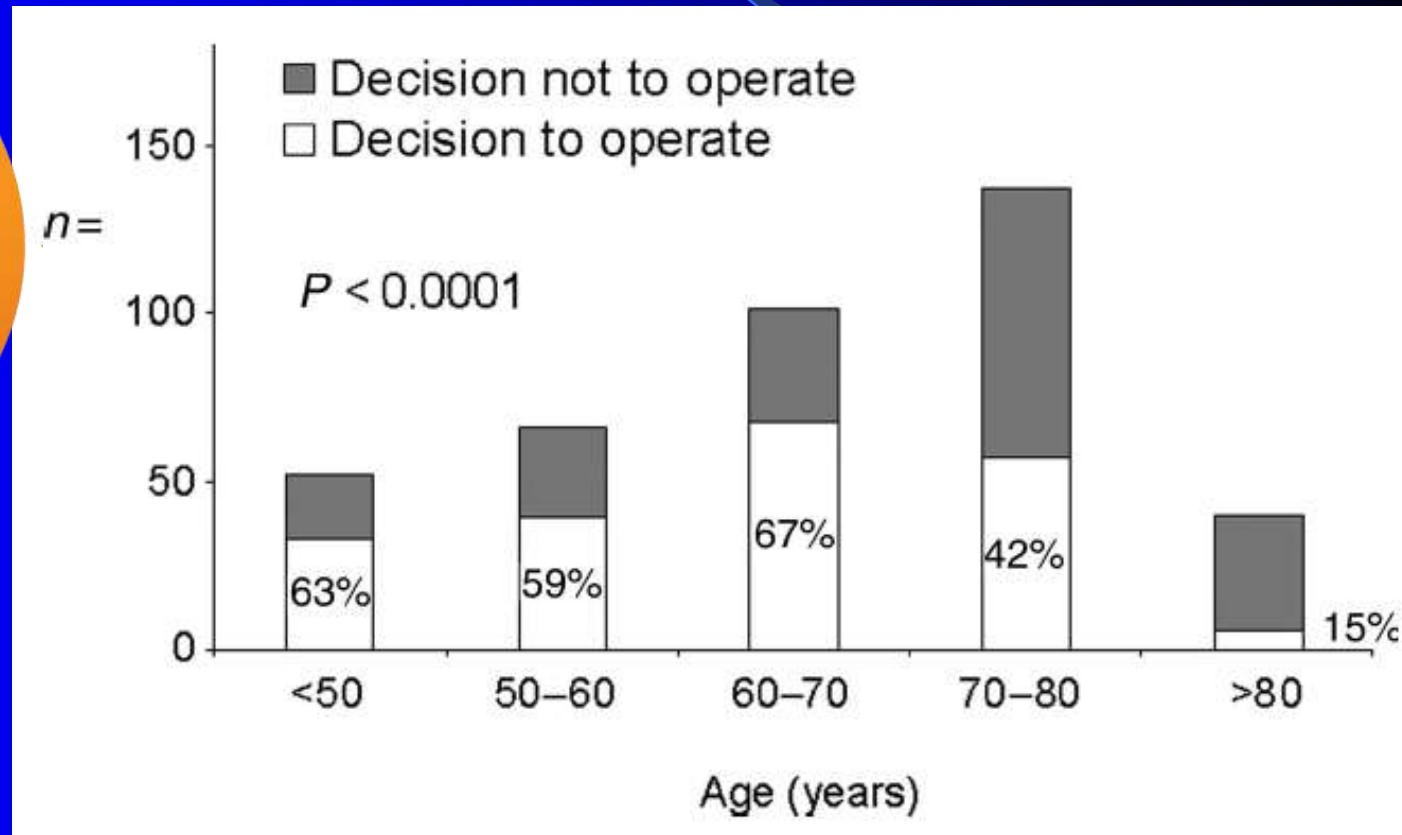
(In comparison, 1 in 20 is affected by aortic valve disease.)

# Nearly half of high risk MR patients were denied surgery

Mirabeel M, etal. *Eur Heart J.* 2007;28(11):1358-1365



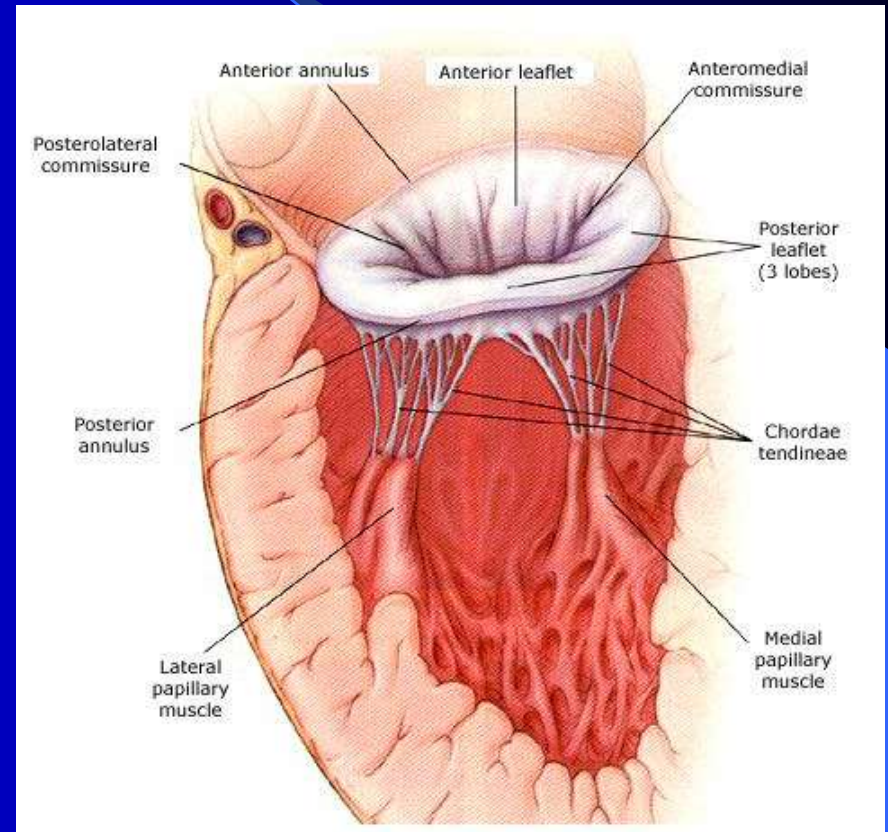
**N = 396 pts.**  
**Received = 203**  
**Denied = 193\***



**\* 9.8% patients who were initially denied surgery underwent MV surgery during 1 year follow-up**

# Transcatheter Therapies

- Annuloplasty
- Leaflet repair
- Replacement of ruptured or elongated chordae
- LV reshaping
- Valve replacement



# Annuloplasty

## Indirect

Carillon



Monarc



Viacor PTMA



## Direct

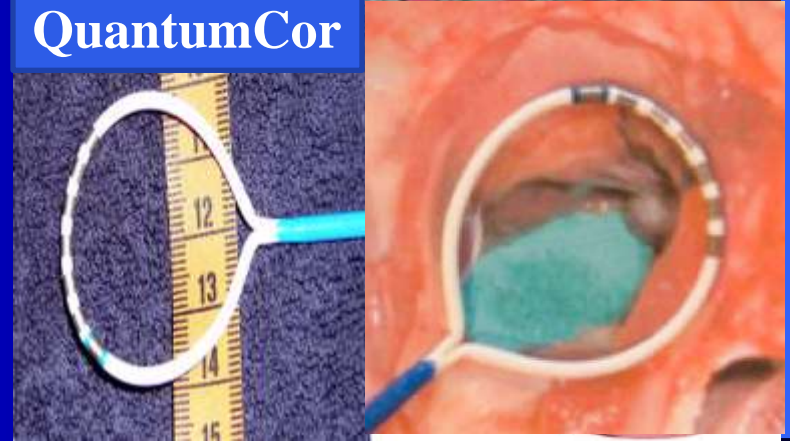
Mitralign



Accucinch GDS

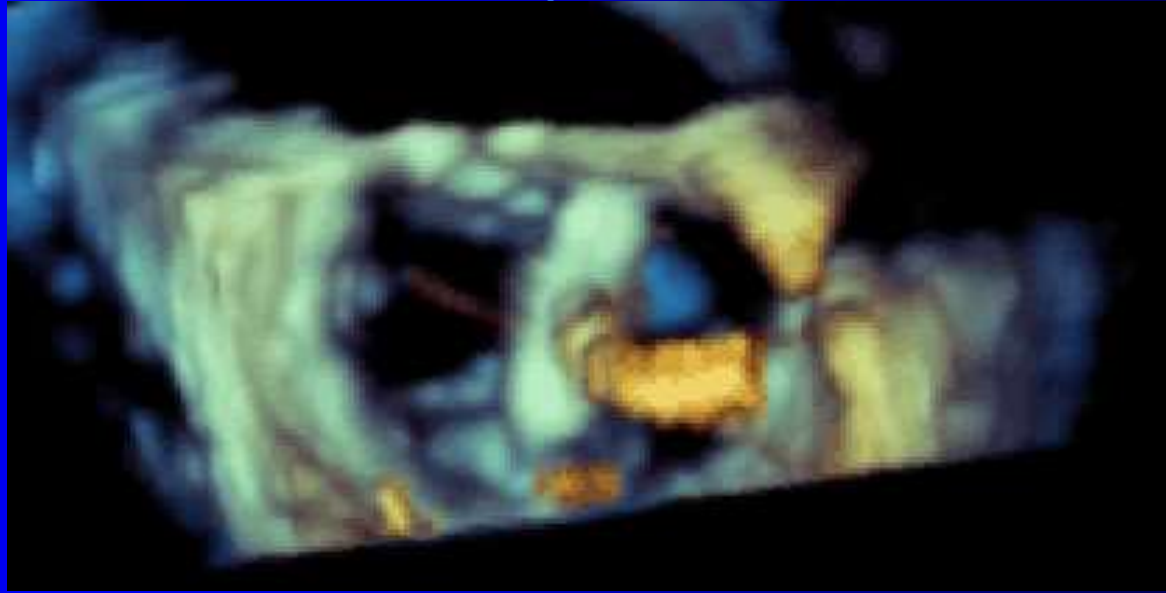


QuantumCor





# Leaflet Repair

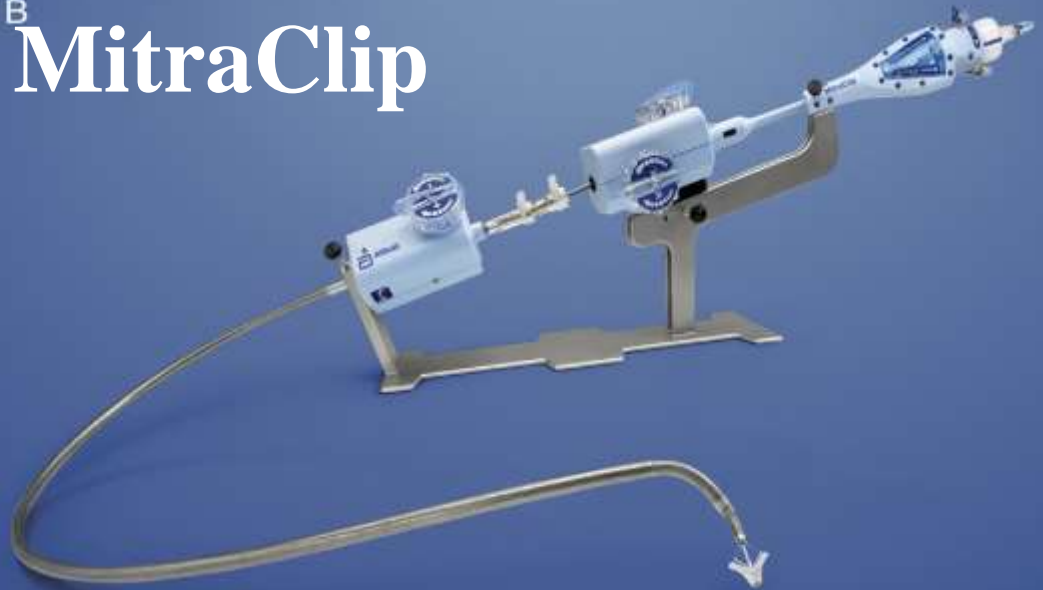


A

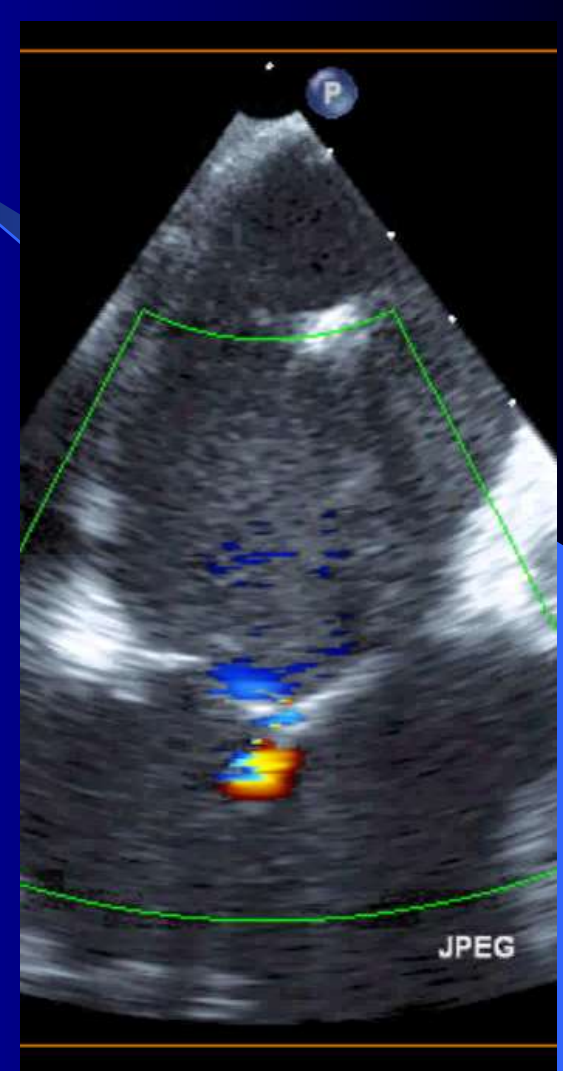
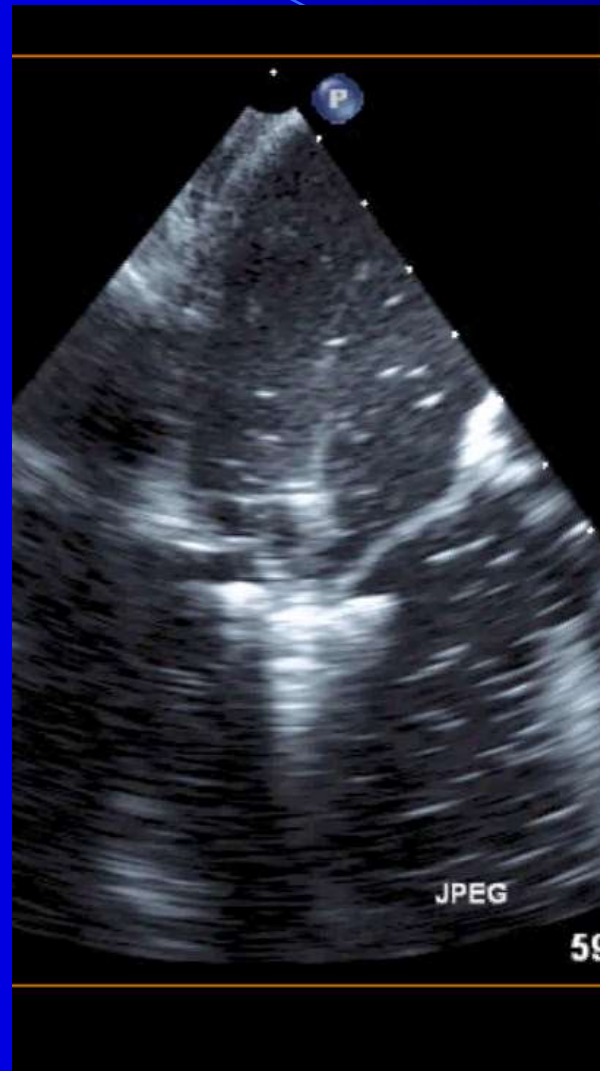
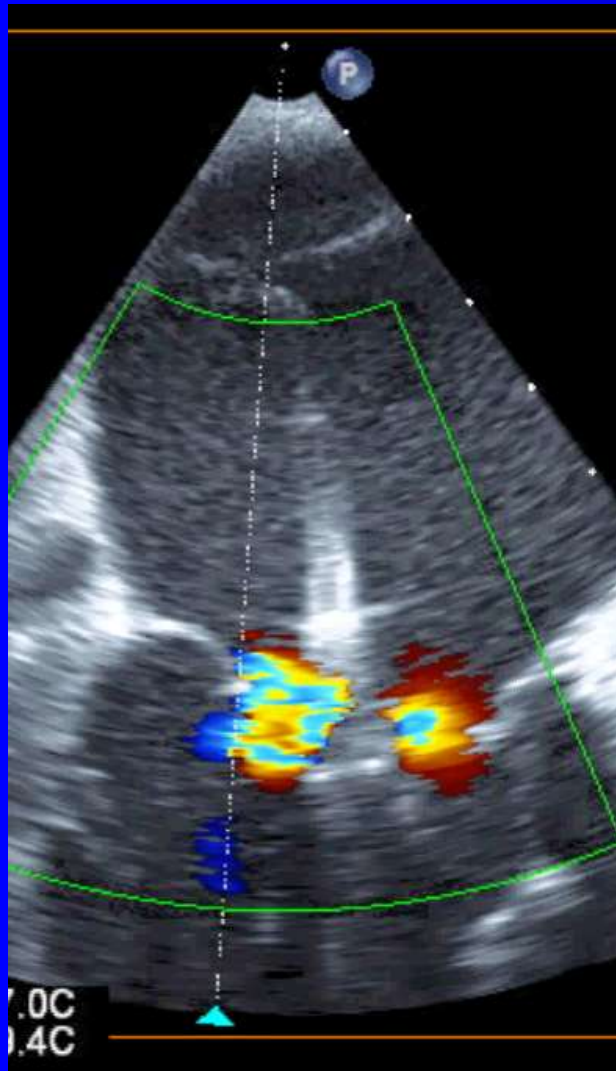


B

## MitraClip



# MitraClip



Before grasping

Grasping

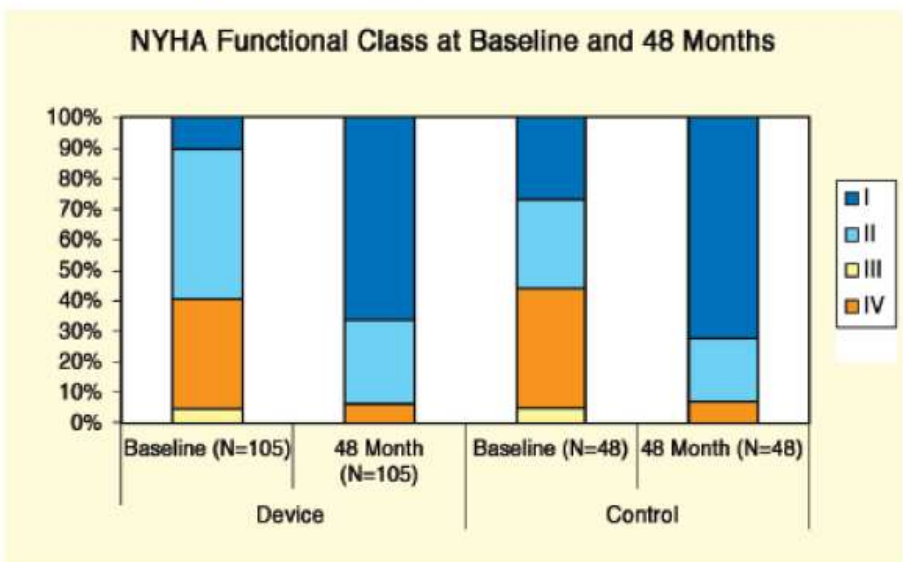
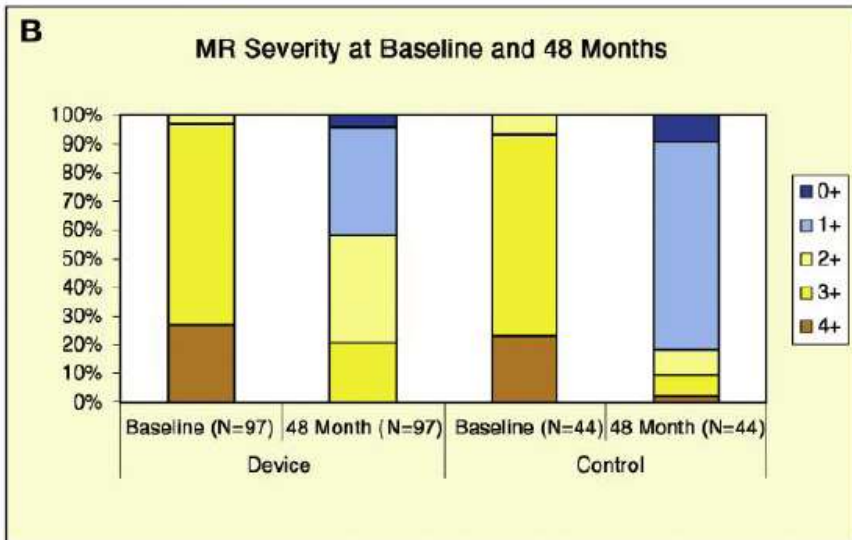
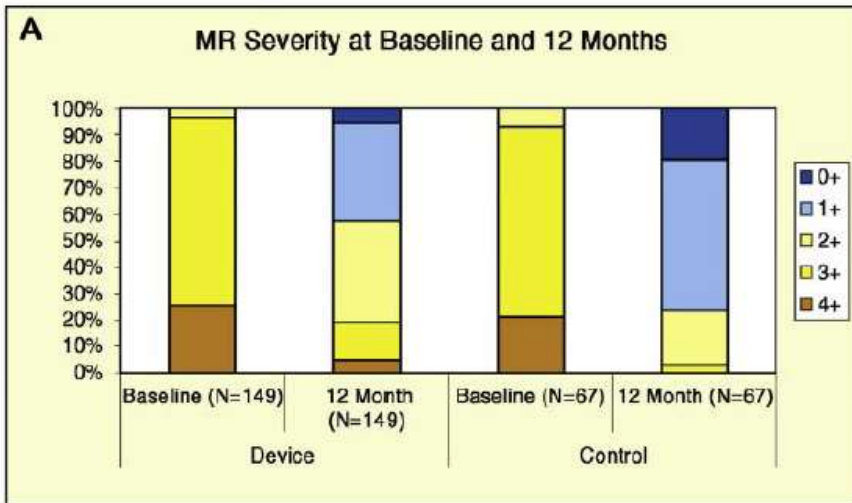
After clipping



# MitraClip - Outcomes

## EVEREST II RCT 4-year Results

- Sustained clinical benefits in NYHA comparable to those seen after surgery
  - Improvement in MR: durable through 4 years
  - Surgery more effective in MR reduction



# Ventricular Reshaping

**Paracor HeartNet**



**Mardil-BACE**



**iCoapsys**



**VenTouch System**



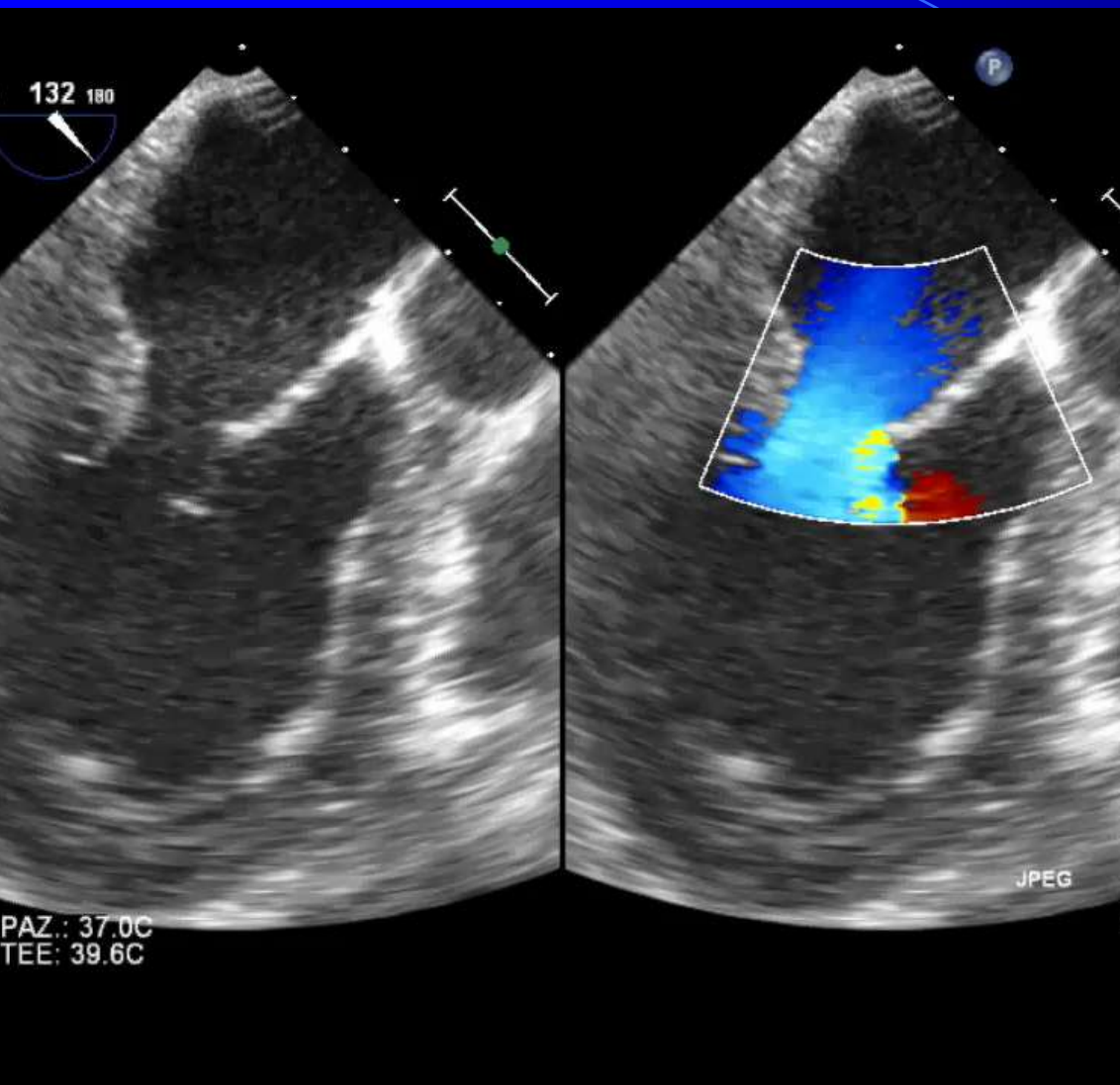
# Chordal Replacement

## NeoChord DS1000 Device

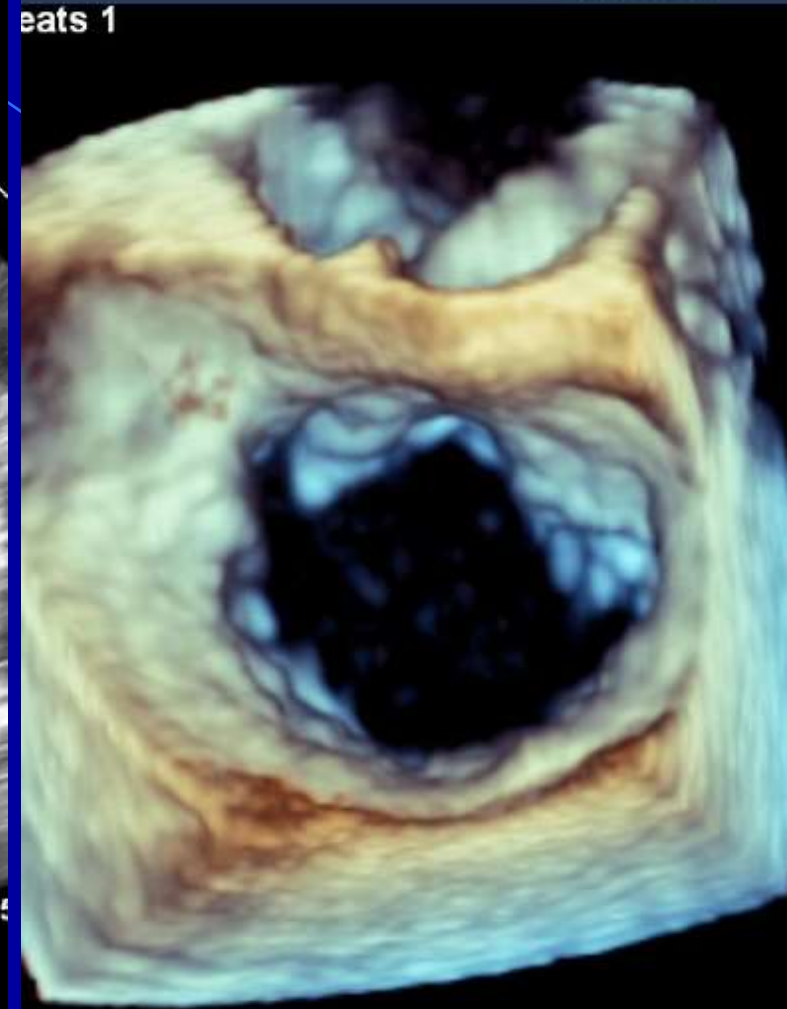




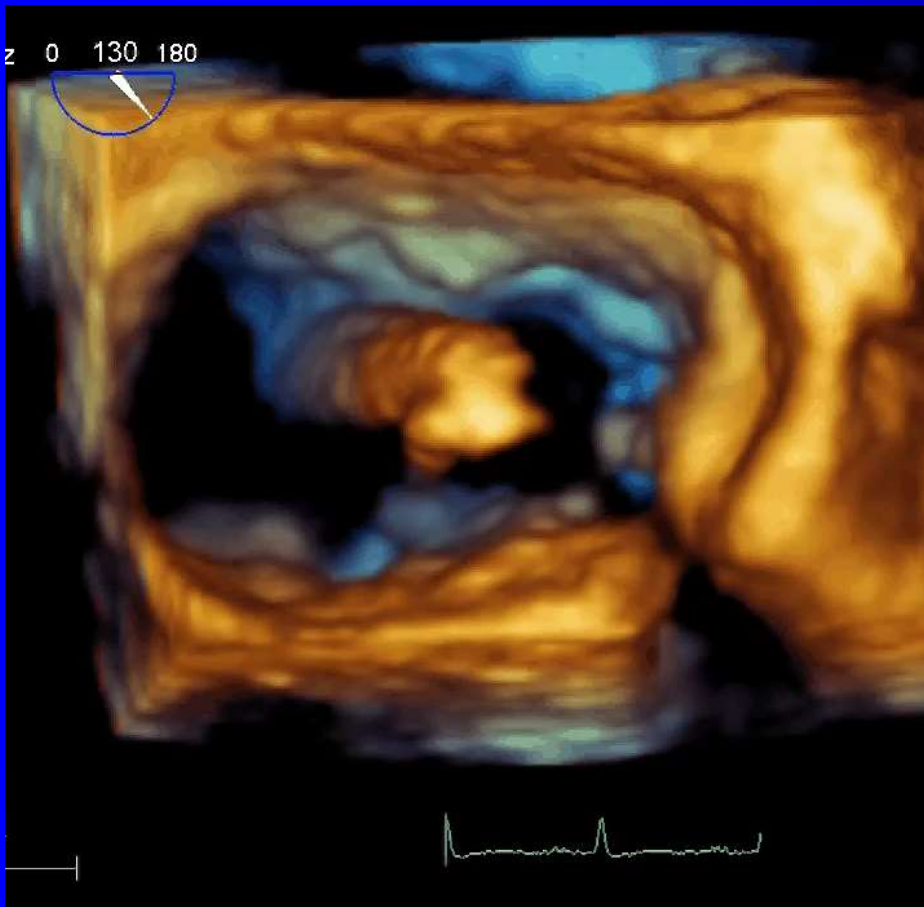
# Ideal Case – Baseline Echo



beats 1

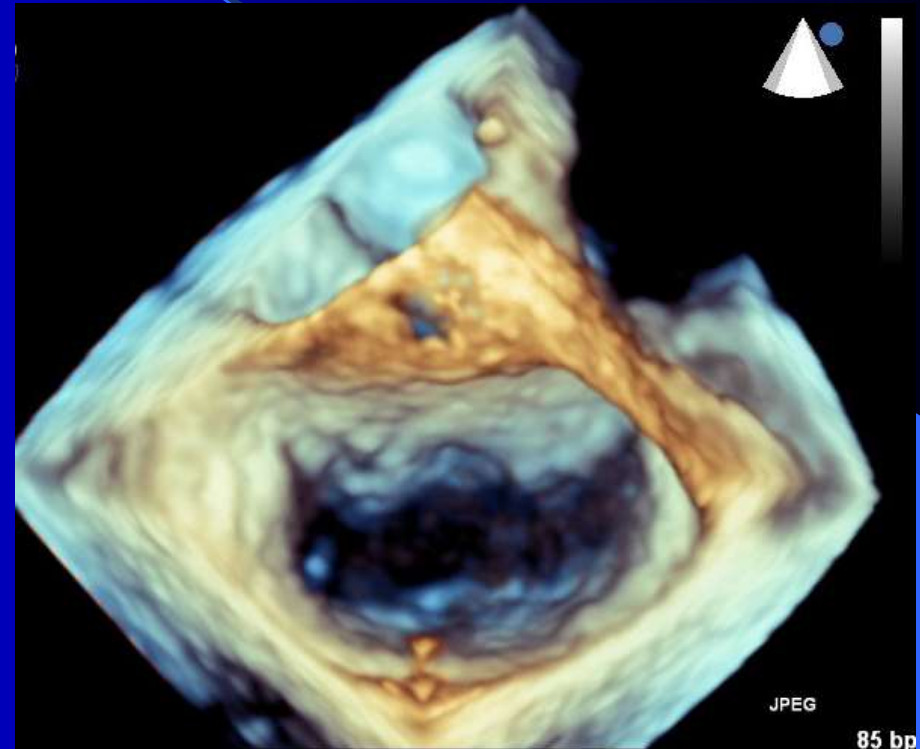
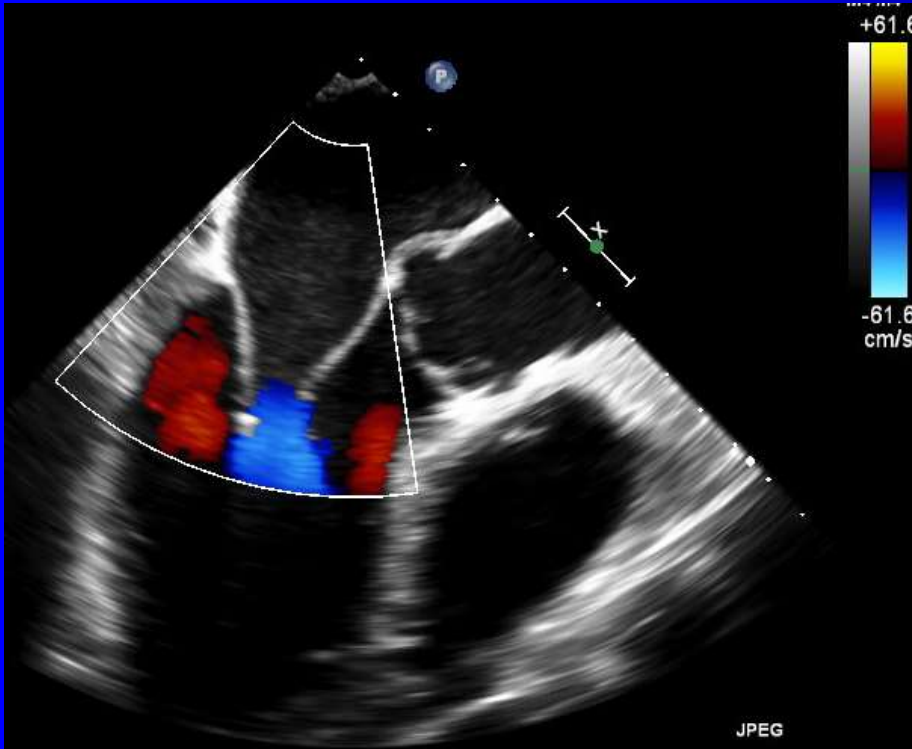


# Captured Flail Portion of P2 Segment



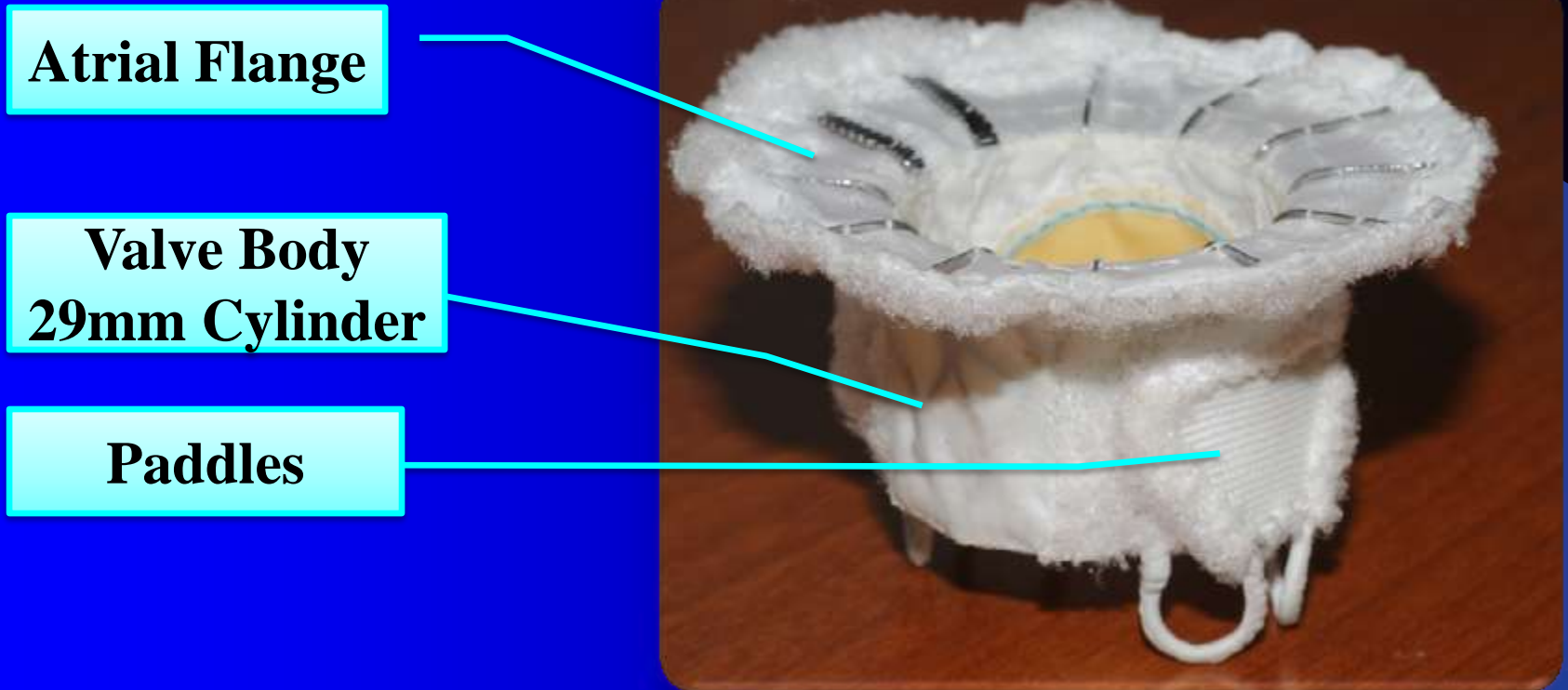


# Tensioned Chordae and Corrected Prolapse



# Valve Replacement

## Edwards FORTIS Transcatheter Mitral Valve



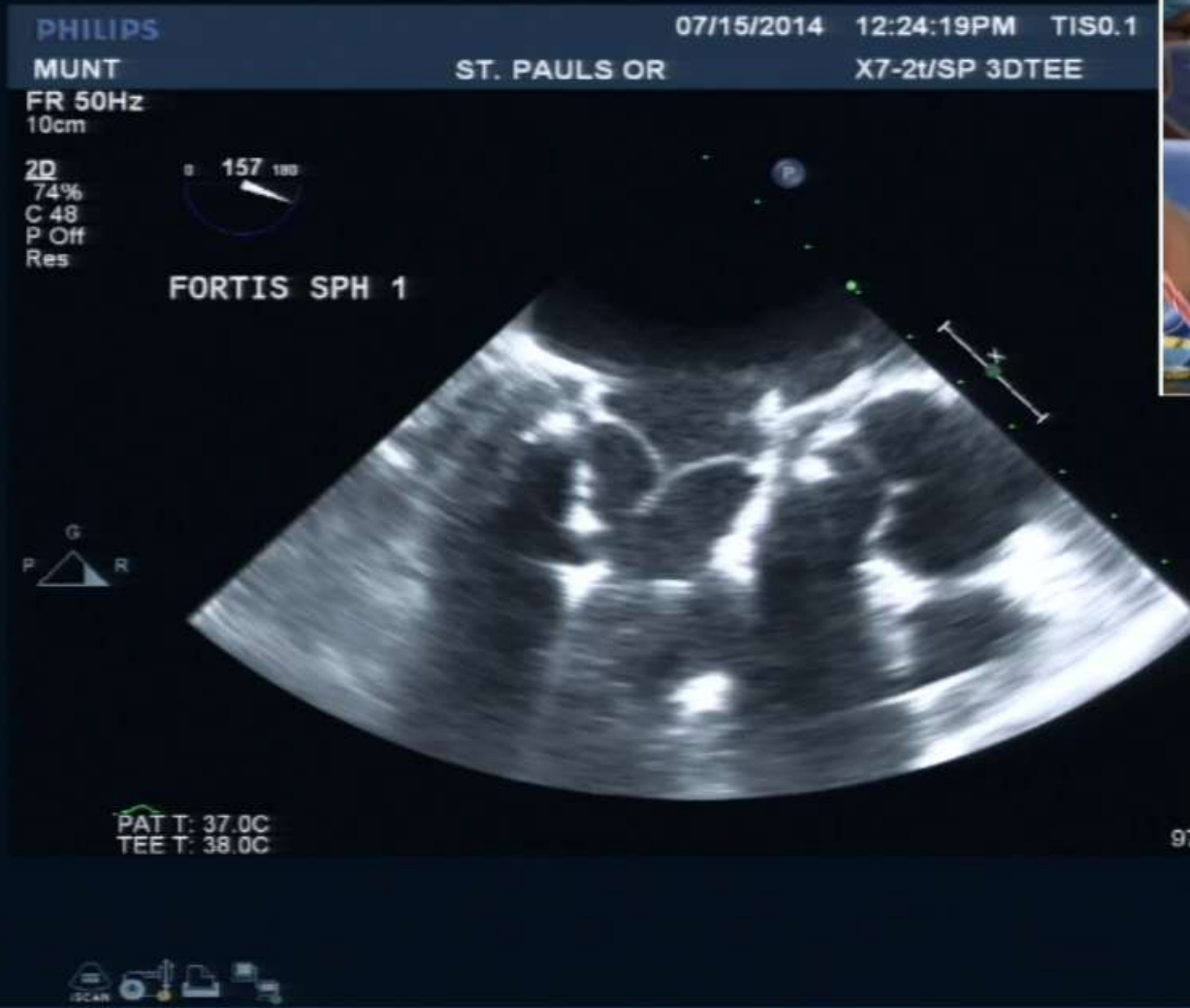
# FORTIS Valve Implantation



DATE: JUL 15/14 TIME: 12:23:22 PAT: MUNT PROB: X7-2t/SP 3DTEE	CASE: 1 JULY 15/14
111.6KV FL 512.2mA 15.0µs	A
P-Cath: SP_2t/14	W FL: 3040
I/O: 00:10:04	41%
00:00	

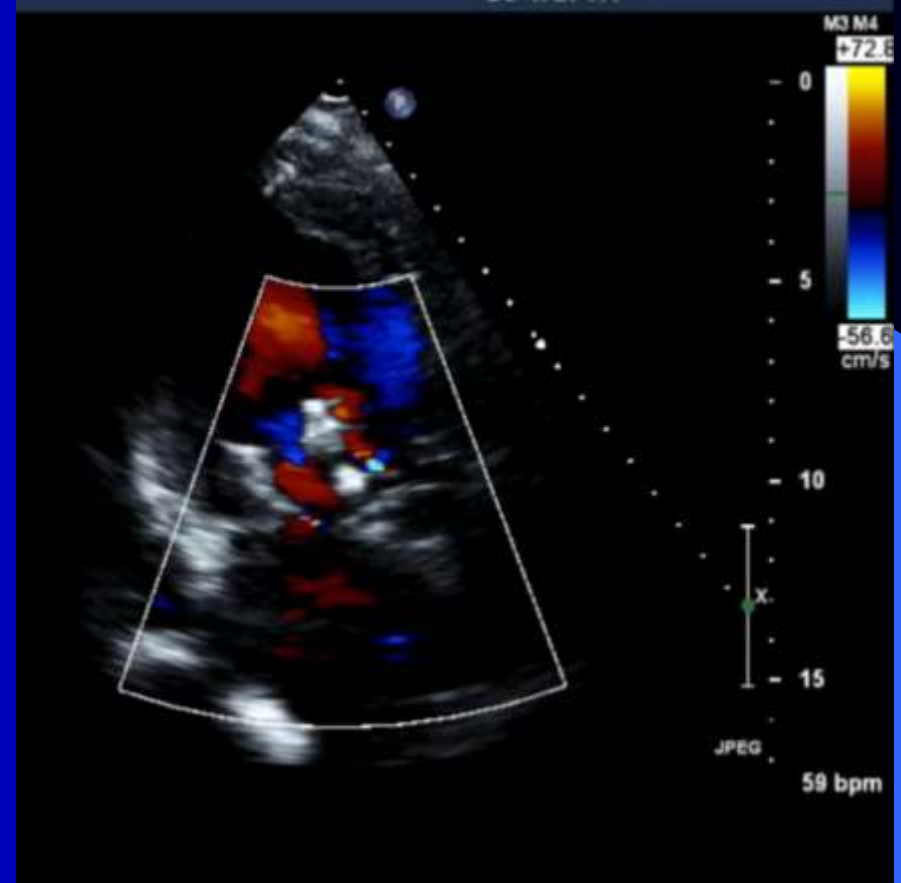
Cursor  
1440 x 1080

# Postop TEE





# 6-Month Follow-up Echo

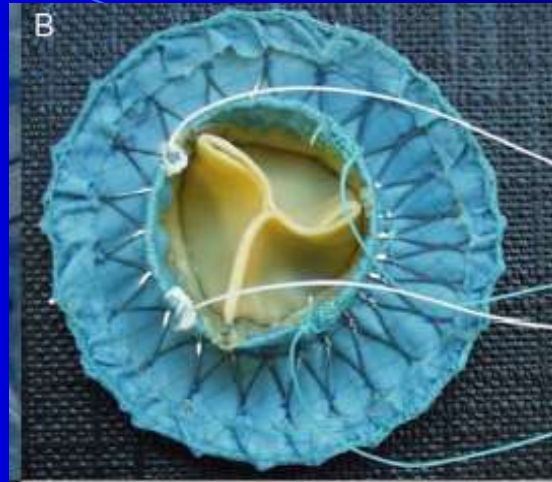




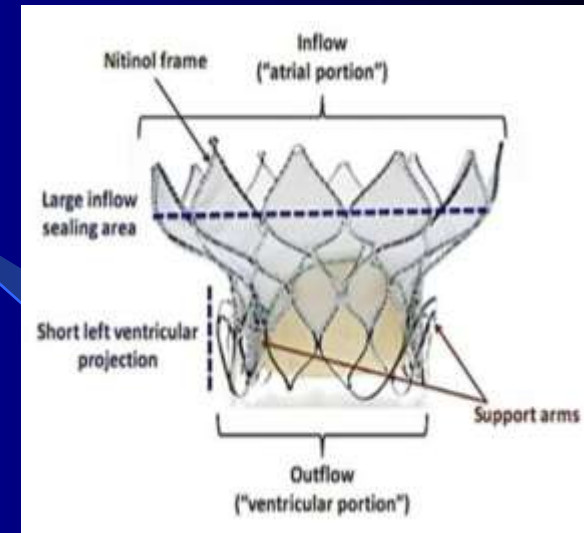
# Other Transcatheter Mitral Valve



**Endo Valve-Hermann**



**Lutter Valve**



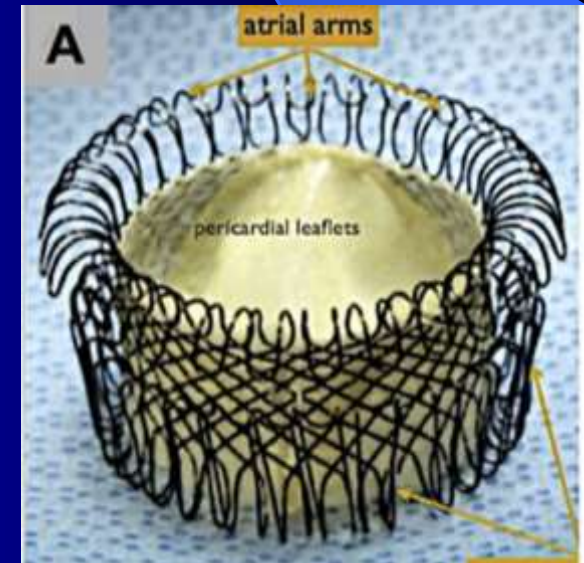
**Medtronic-TMV**



**CardiAQ valve**



**Tiara valve**



**Gorman device**

**Table 2. Overview of the Different TMVR Devices**

	Nitinol Frame	Trileaflet	Approach	Delivery System	Acute Animal	Chronic Animal	First-In-Human
CardiAQ	+	+	T-fem/T-ap	32F	+	+	+
Tiara	+	+	T-ap	32F	+	+	+
Tendyne	+	+	T-ap	30F	+	+	+
Medtronic	+	+	T-atr	NA	+	+	-
FORTIS	+	+	T-ap	NA	NA	NA	+
Cardiovalve	+	+	T-fem	26F	+	-	-
HighLife	+	+	T-atr	NA	+	-	-
Endovalve	+	+	T-ap	NA	+	-	-
Gorman	+	+	T-atr	30F	+	-	-
MitrAssist	+	-	T-ao	18F	+	+	-

NA indicates not available; T-ao, transaortic; T-ap, transapical; T-atr, transarterial; T-fem, transfemoral; and TMVR, transcatheter mitral valve replacement.

# Further Perspectives

- Mitral valve repair is complex, but a preferable therapy particularly for degenerative MR
- Combining individual transcatheter procedures in a single patient could achieve a maximal MR reduction and durability.
- Transcatheter MVR is challenging, but shows tremendous promise.
- With ongoing technological advancements in the field of transcatheter valve replacement, it could be expected that TMVR will become a valuable alternative to MV surgery for patients with severe MR and a high surgical risk in the near future.