



Conoscere⁸
e Curare
il Cuore
2018

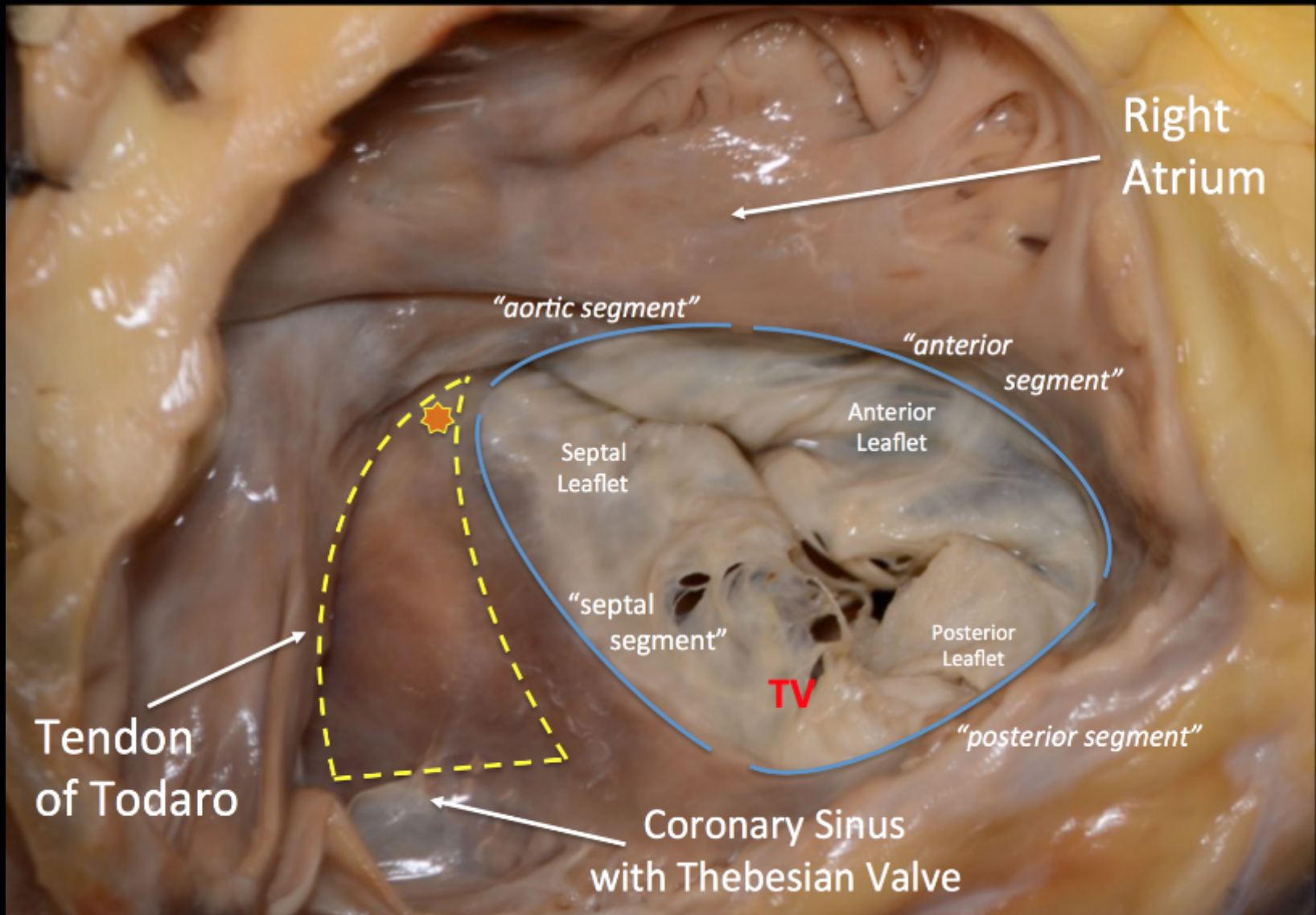
VENERDI' 16 MARZO

IL TRATTAMENTO PERCUTANEO DELLA TRICUSPIDE NELLO SCOMPENSO DESTRO REFRATTARIO

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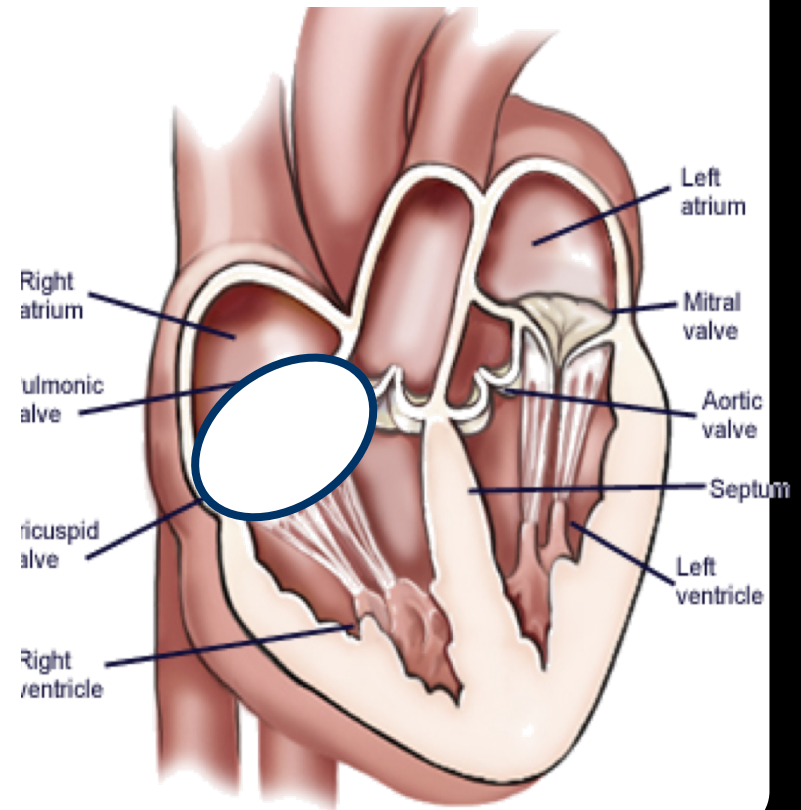




The Forgotten Valve

TR Etiology

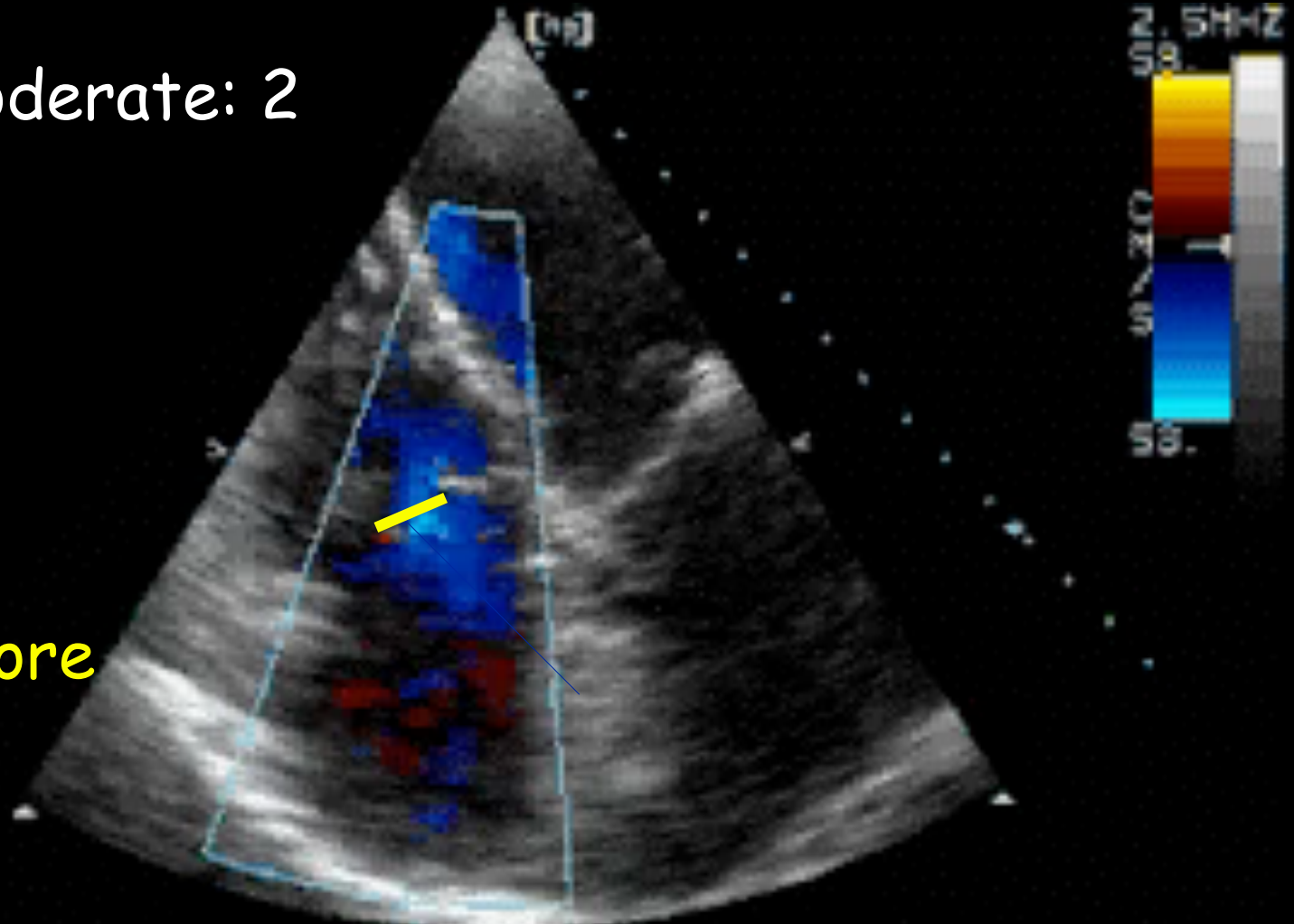
- Isolated primary (organic) TR
- Secondary (functional) TR in patients undergoing left-sided valve surgery
- Late TR following left-sided valve surgery



Mild: 1

Moderate: 2

SEVERE:3
Vena
Contracta
7mm or more

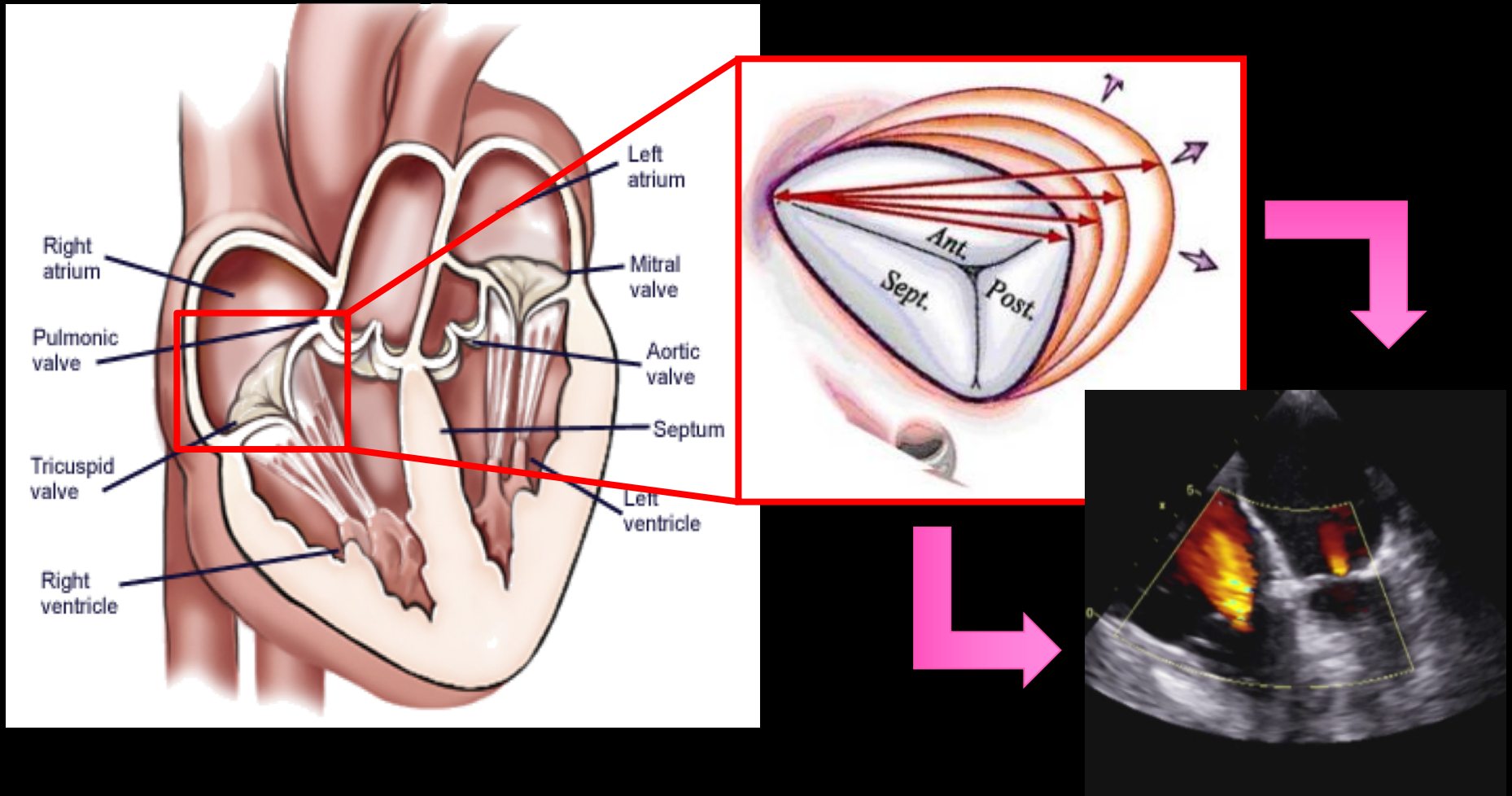


The Tricuspid annulus is dilated when over 40mm



Functional Tricuspid Regurgitation failure mode

Annular dilatation, inducing an increase of the septo-lateral distance resulting in lack of leaflets coaptation and consequent TR.



Clinical Presentation of TR

Decreased CO

Fatigue, decreased exercise tolerance

“Right-sided” Heart Failure

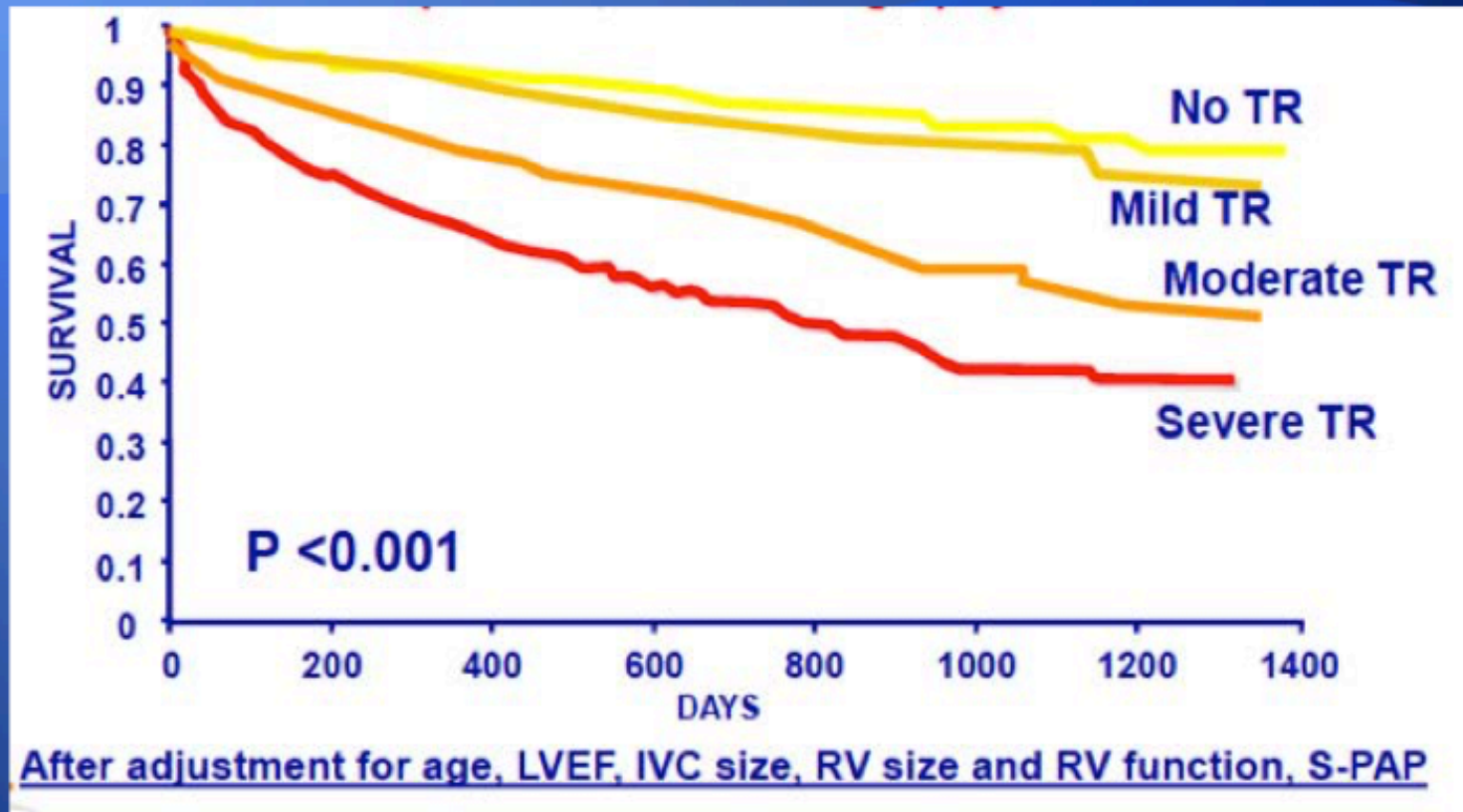
Ascites, edema, decreased appetite, abdominal fullness

...Patients feel terrible

Valve repair for functional tricuspid valve regurgitation:
anatomical and surgical considerations

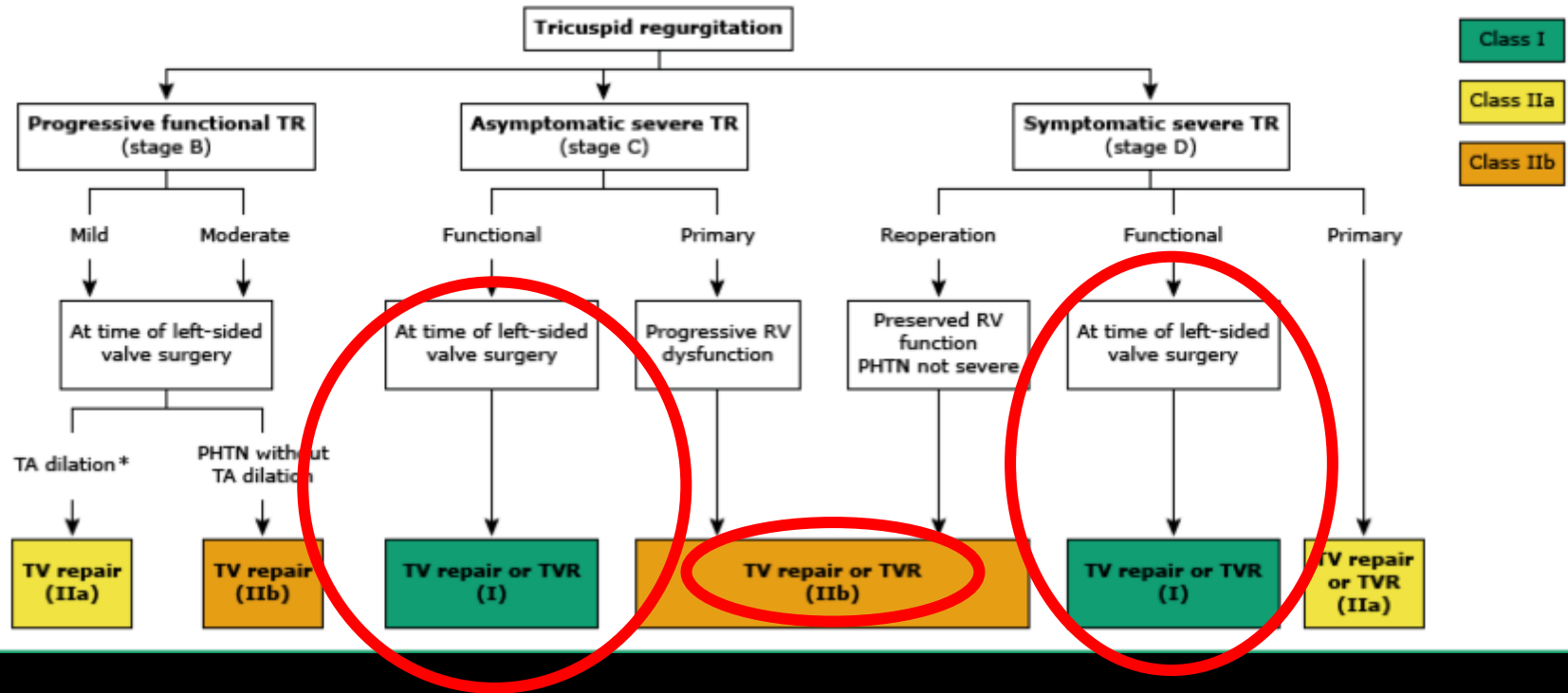
Rogers JH, Bolling SF Semin Thorac Cardiovasc Surg. 2010 ;22(1):84-9

...and they die! TR Increases Mortality !



5223 subjects : Mod-Sev TR increased mortality independent of PASP, LVEF, IVC size, RV size/ function.

Indications for surgery for TR



Nishimura RA, et al. 2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease: A. J Am Coll Cardiol 2014; 63:e57.

When it is better not to intervene

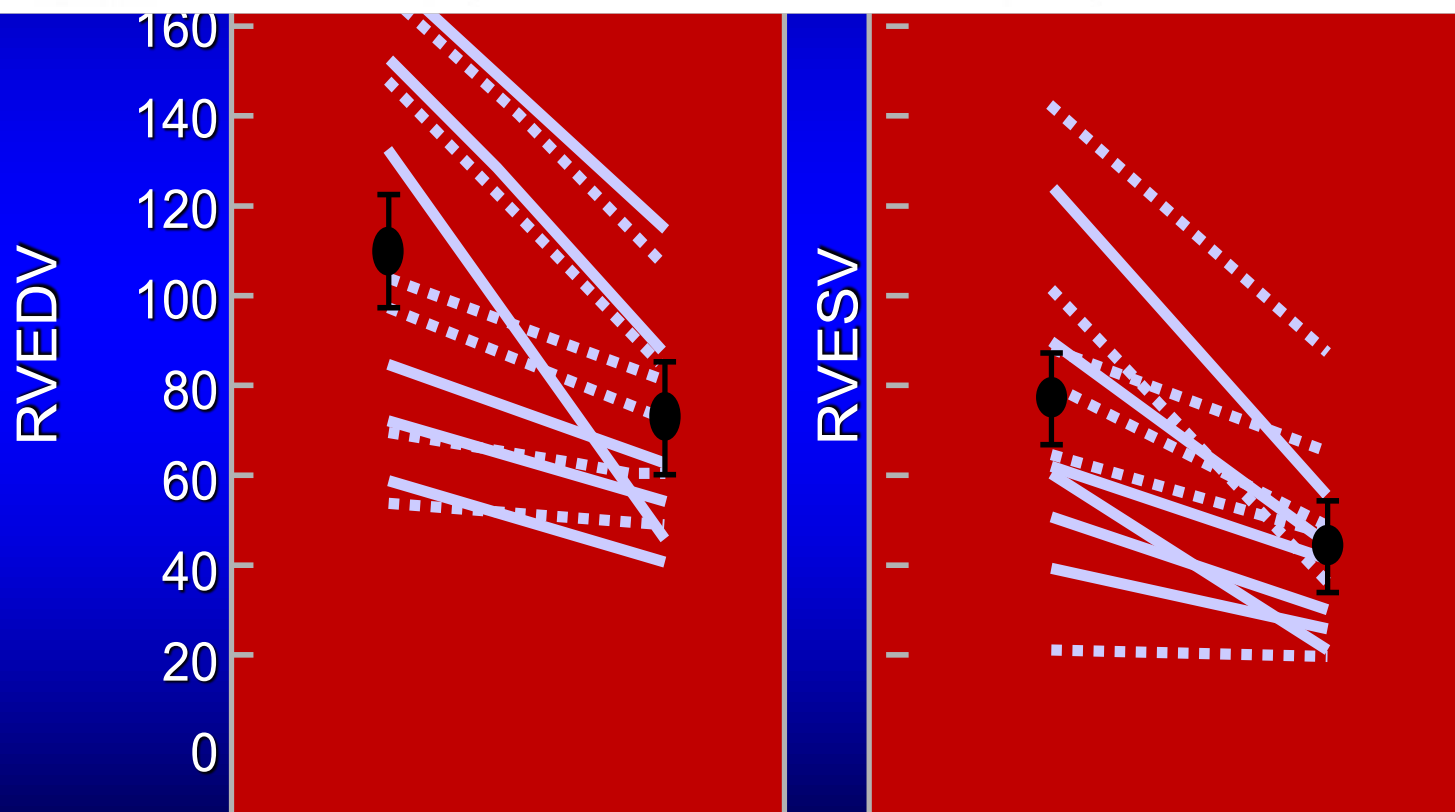
Severe right ventricular dysfunction

Severe pulmonary hypertension (>60 mmHg)

Severe disease of a left sided valve that cannot be treated

Improvement in Right Ventricular Systolic Function After Surgical Correction of Isolated Tricuspid Regurgitation

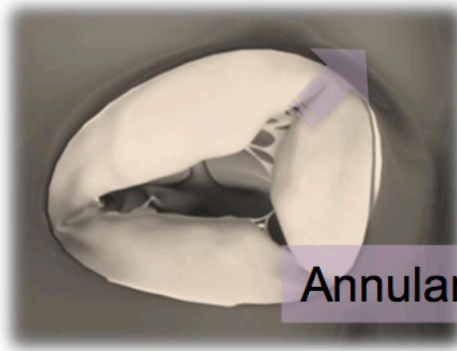
Debabrata Mukherjee, MD, Simone Nader, MD, Arrel Olano, MD, Mario J. Garcia, MD, and Brian P. Griffin, MD, *Cleveland, Ohio*



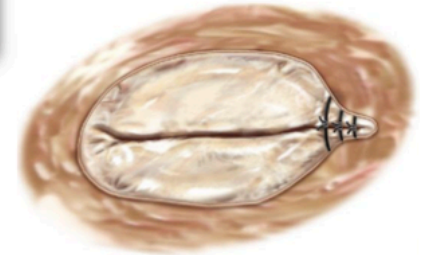
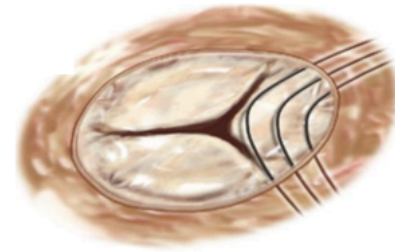
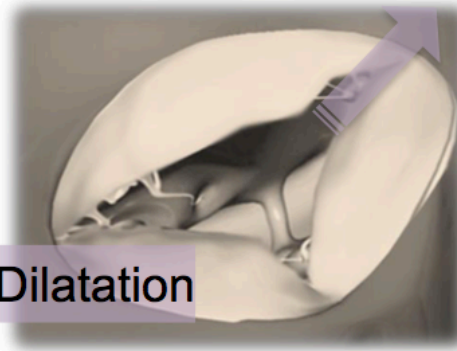
Surgical Treatment options



Annuloplasty



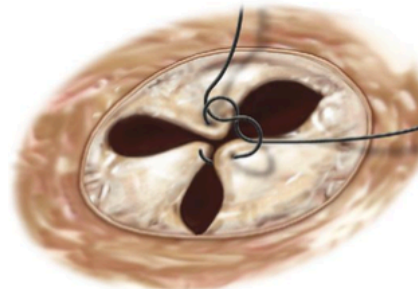
Annular Dilatation



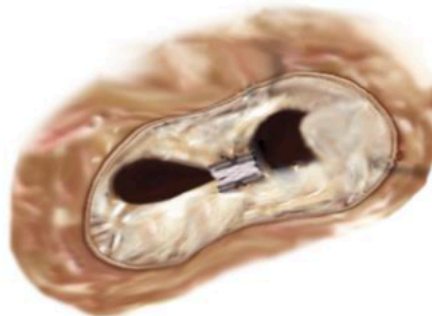
Kay Repair
Technique



De Vega Repair

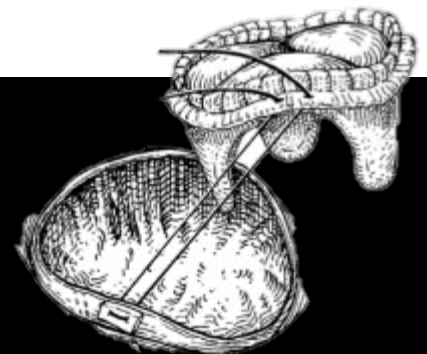


Clover Technique

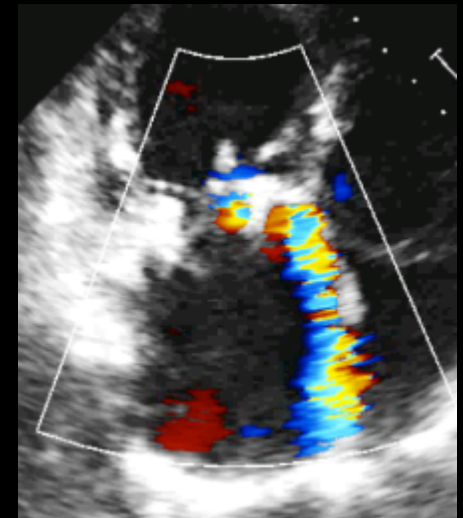
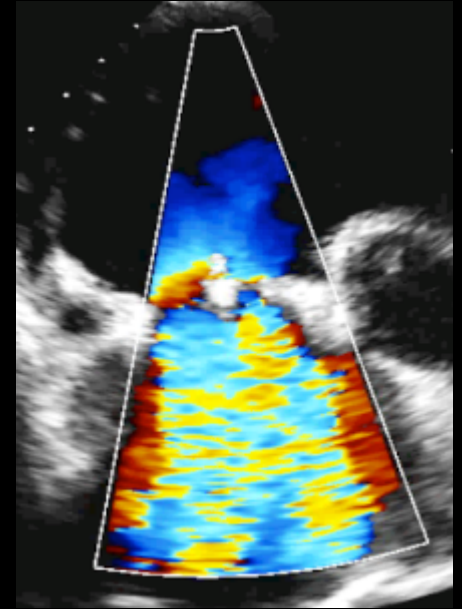
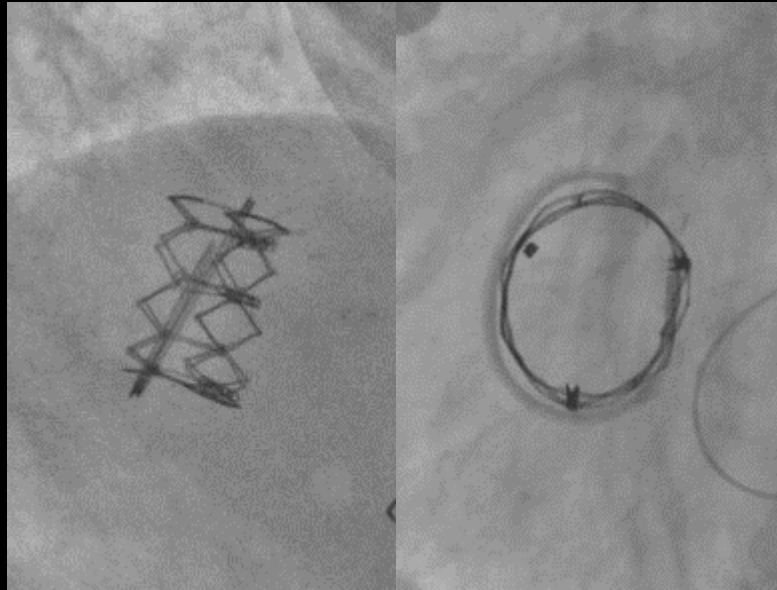
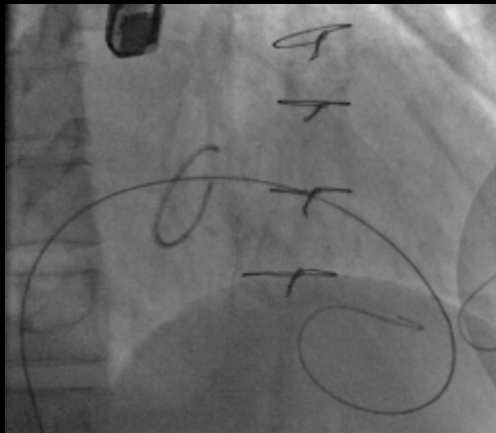


Hetzer Repair

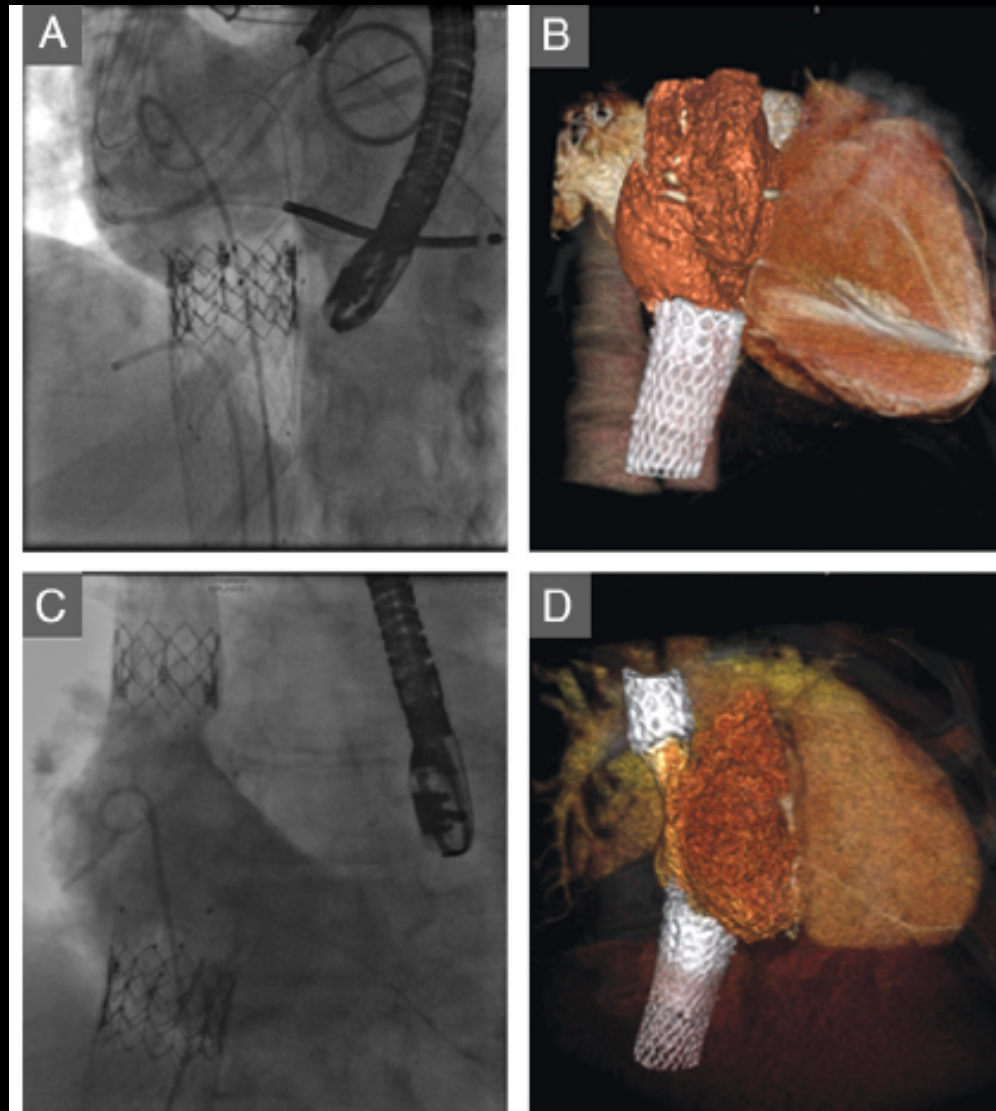
**In-hospital mortality post-cardiac
surgery for TR can go up to 37%**



Valve in Ring



Heterotopic Valve Implantation



(Laule et al. J Am Coll Cardiol 2013;62:B41-2.)

Heterotopic Valve Implantation

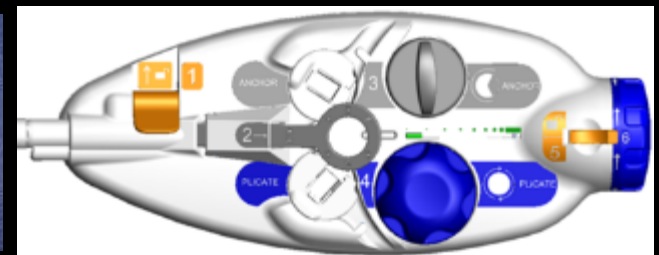
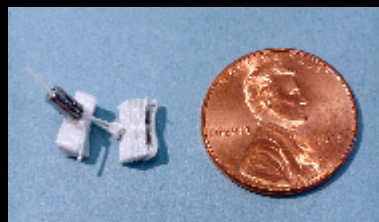
- 3 high-risk patients. EuroScore >40%
- 2 with Valve implantation in IVC, 1 in IVC+SVC
- At 30 days:
 - functional improvement
 - less peripheral oedema, ascites
 - mild decrease in RVEDV
 - stable RVEF

(Laule et al. J Am Coll Cardiol 2013;61:1929-1931)

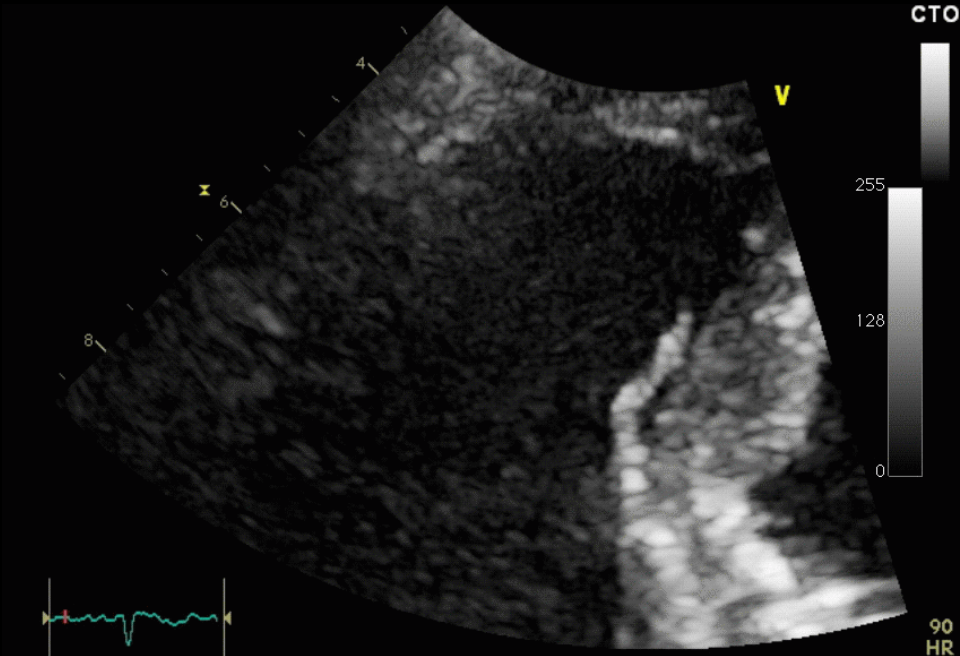
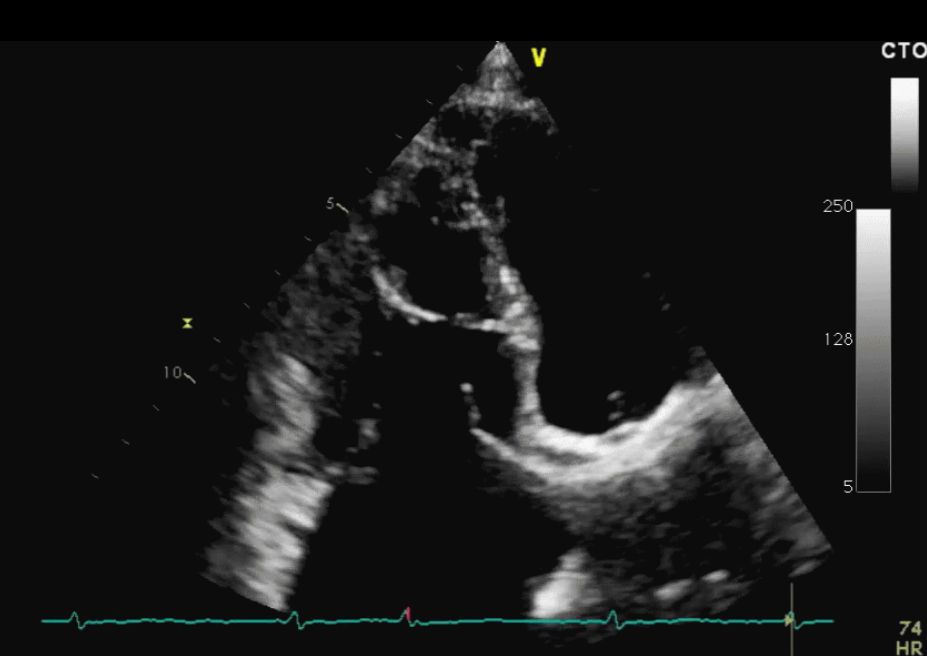
Mitralign System for tricuspid valve repair

Procedural Steps

- Jugular Access
- 40cm 14F Sheath
- Hook around wire delivery to deliver 1st pledget (anchor)
- Repeat wire delivery steps to deliver 2nd pledget (anchor)
- Cinch pledgets together to obliterate the posterior leaflet and deliver lock on atrial side

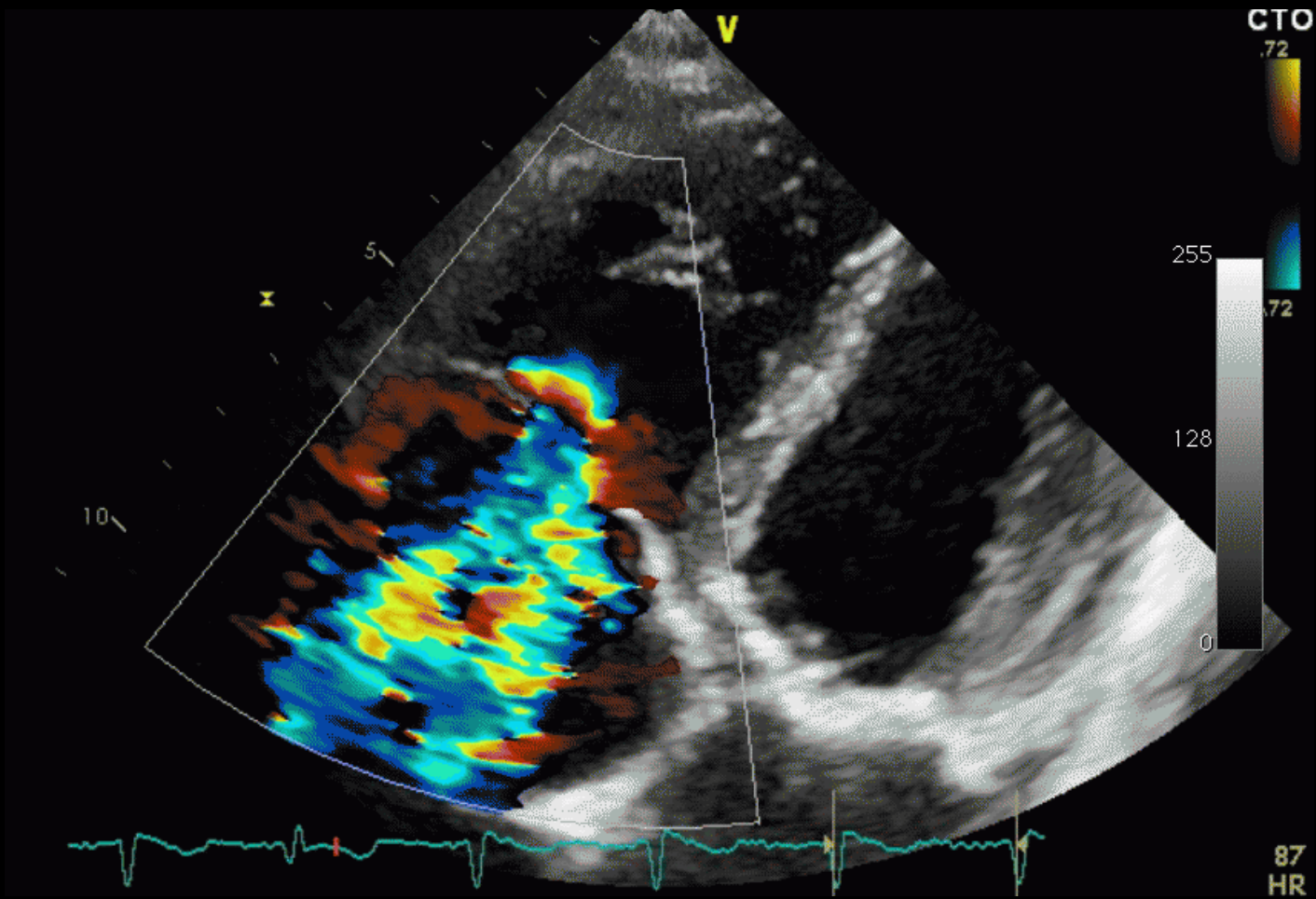


Case done in San Raffaele Hospital TEE Baseline



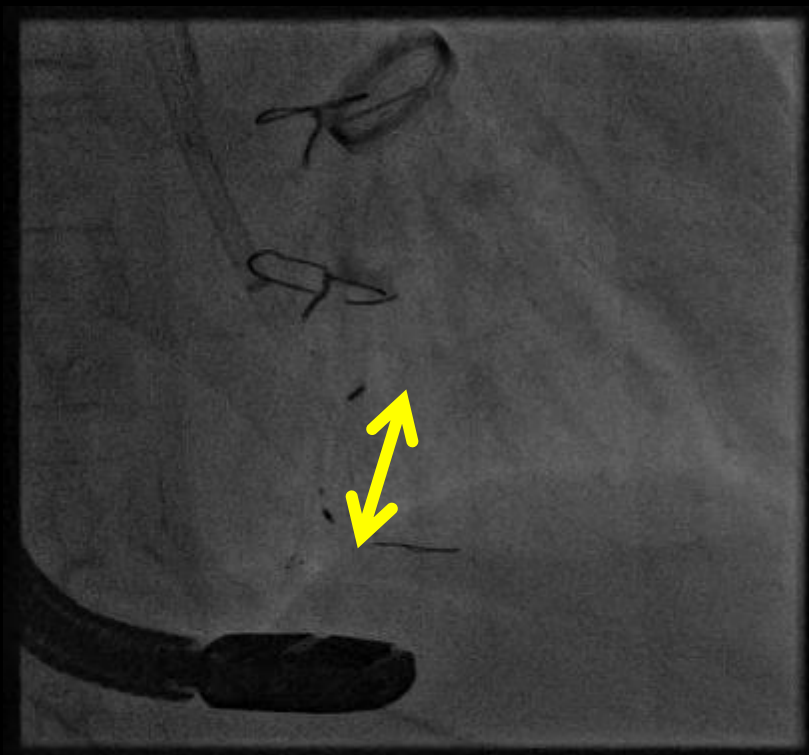
Note complete lack of coaptation!

Baseline Echo



Implant Fluoroscopy

Before treatment



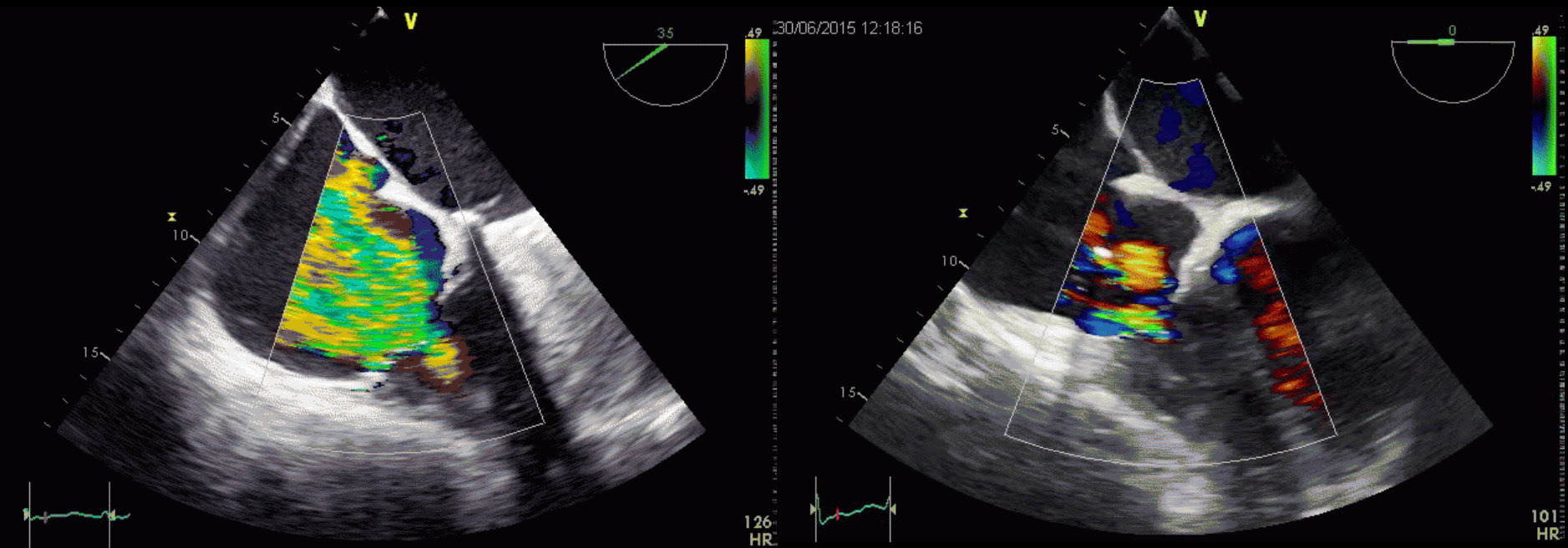
After treatment



**Before
plication**

**After
plication**

Tricuspid Regurgitation Comparison

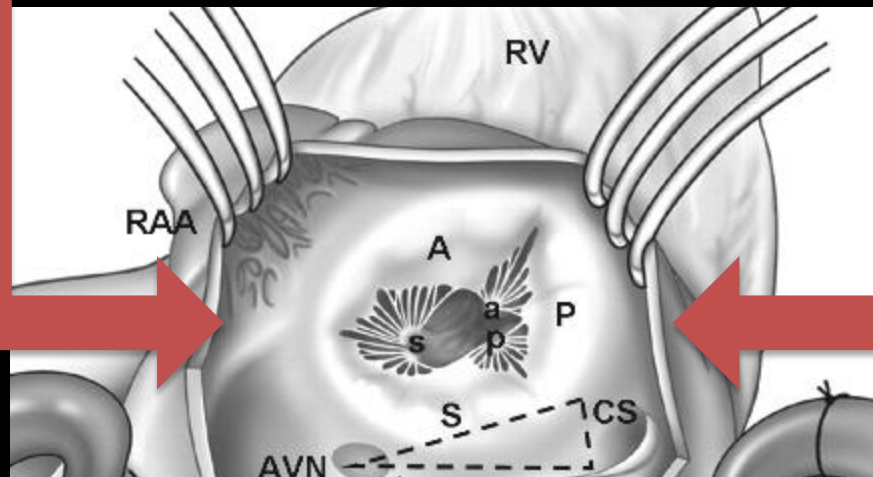
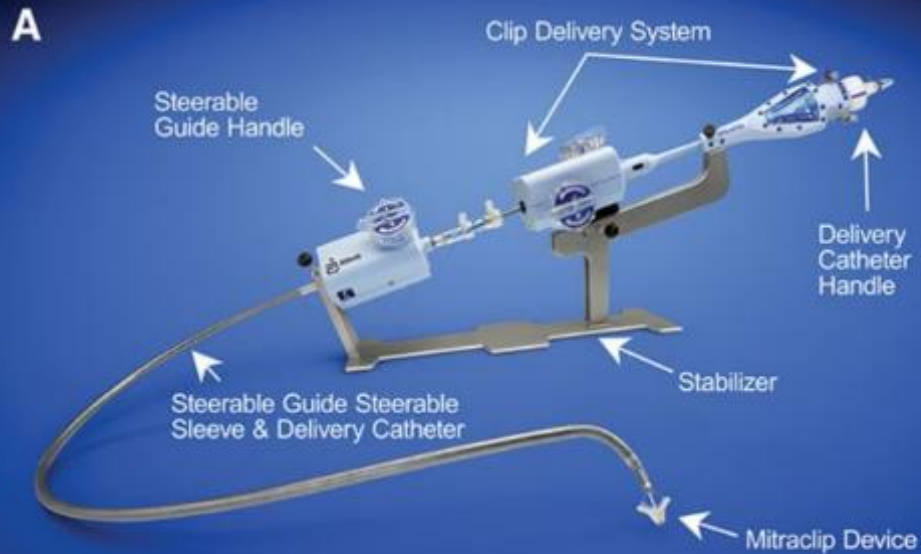


Before

After

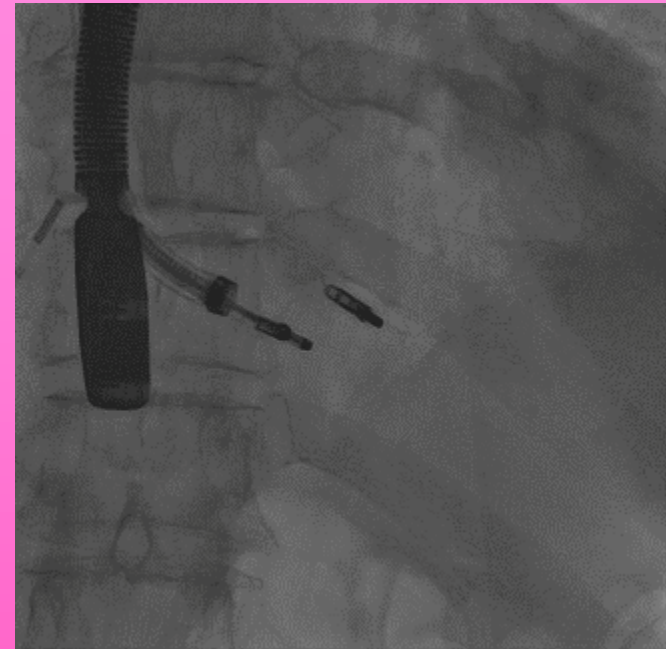
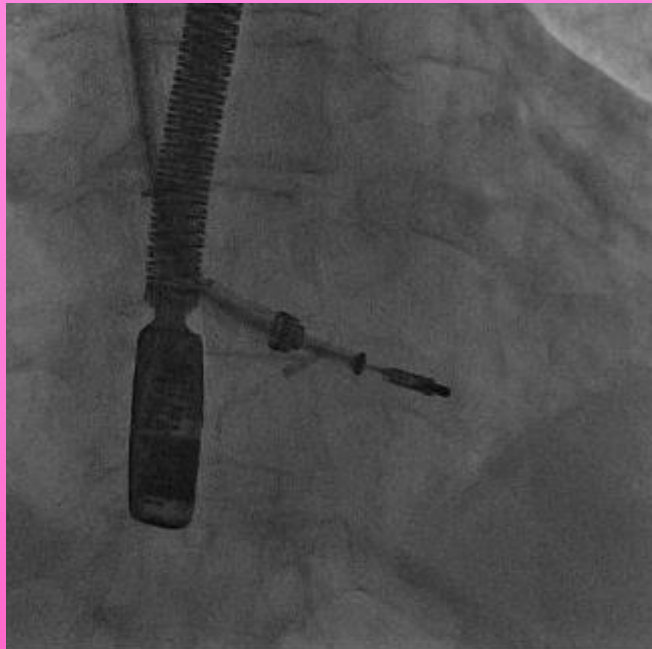
MitraClip on Tricuspid Valve

More than 600 pts. treated world wide



Trans-jugular access, implantation of 2 Mitraclip

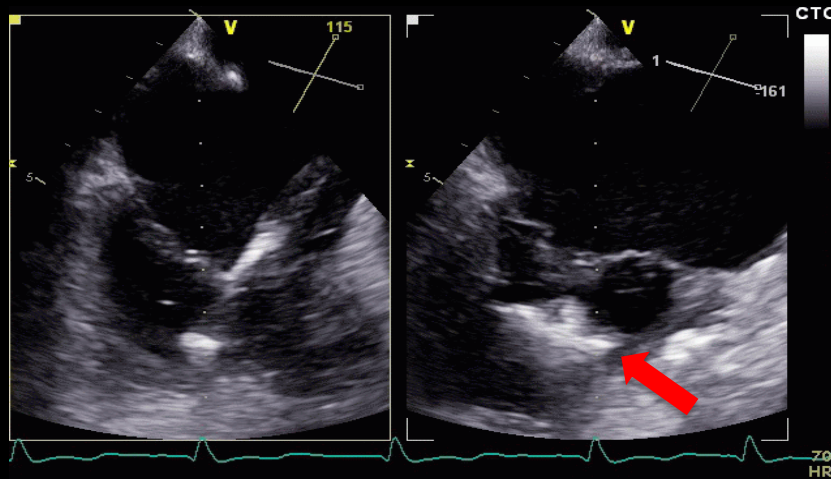
- **First clip:** antero-septal commissure
- **Second clip:** medial to previously implanted



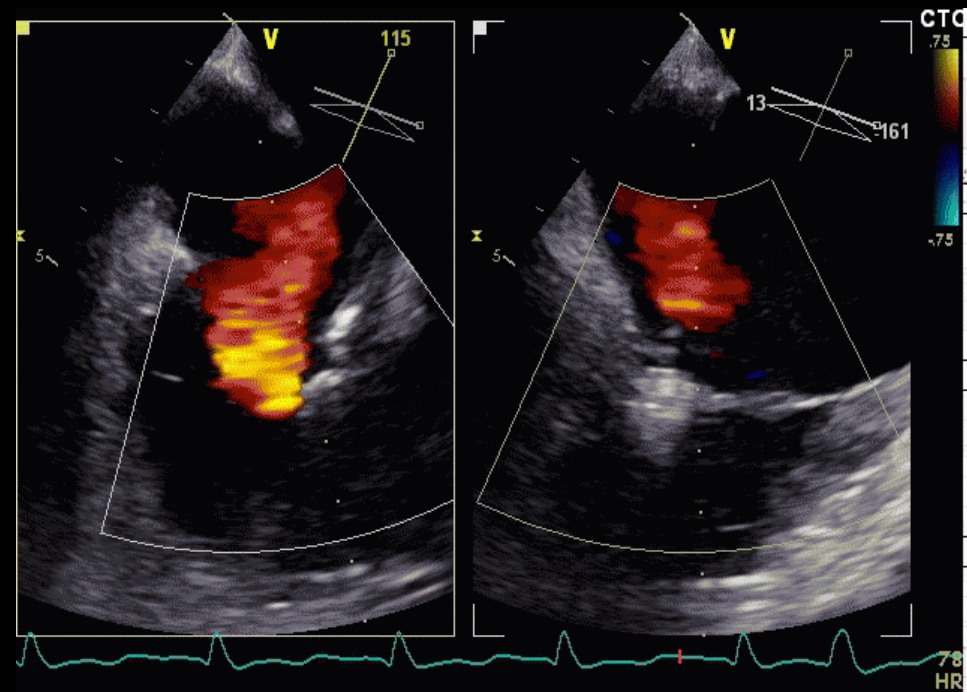
***Bicuspidalization of the valve with good echographic result
(residual moderate regurgitation)***

Intra-procedural TEE monitoring

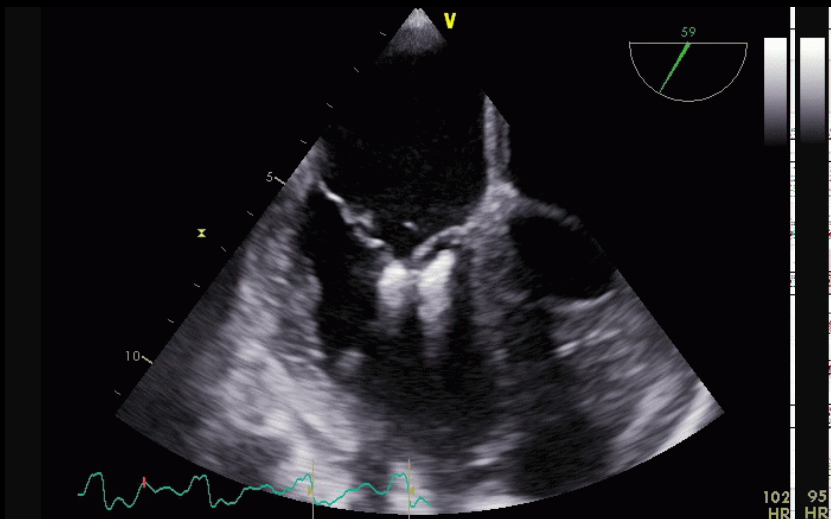
First Clip pre-grasping



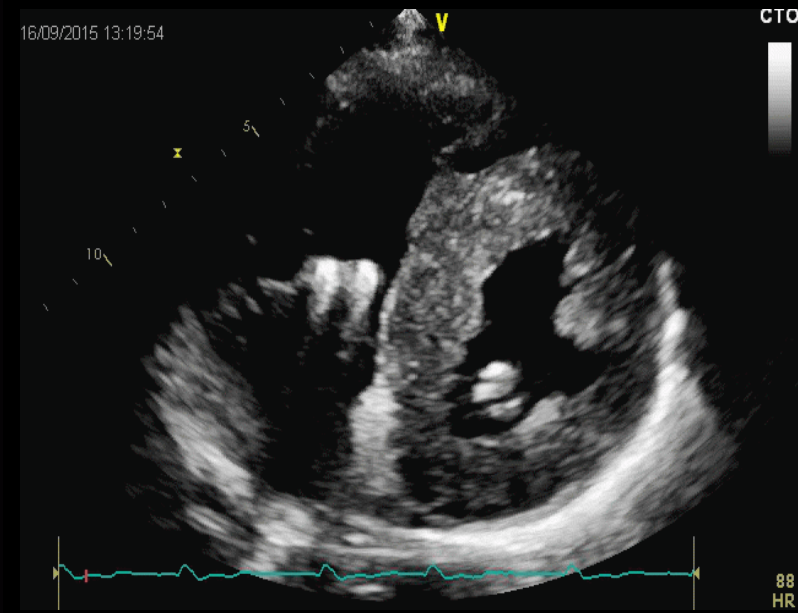
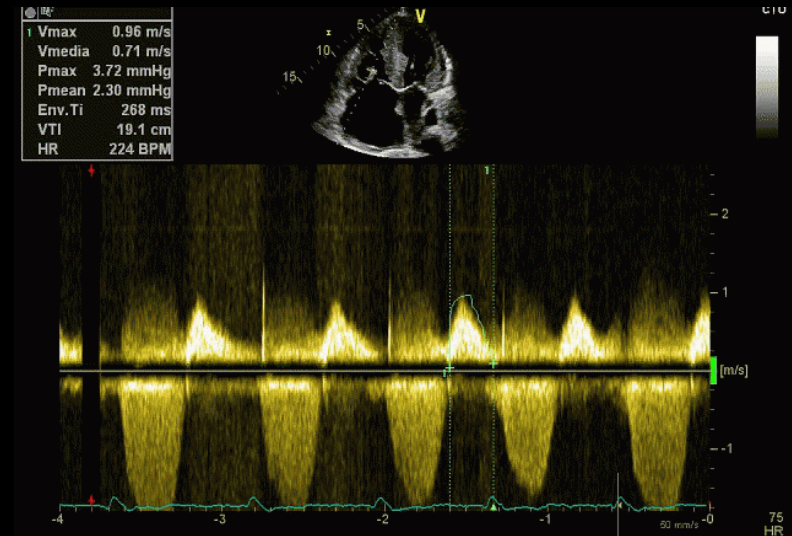
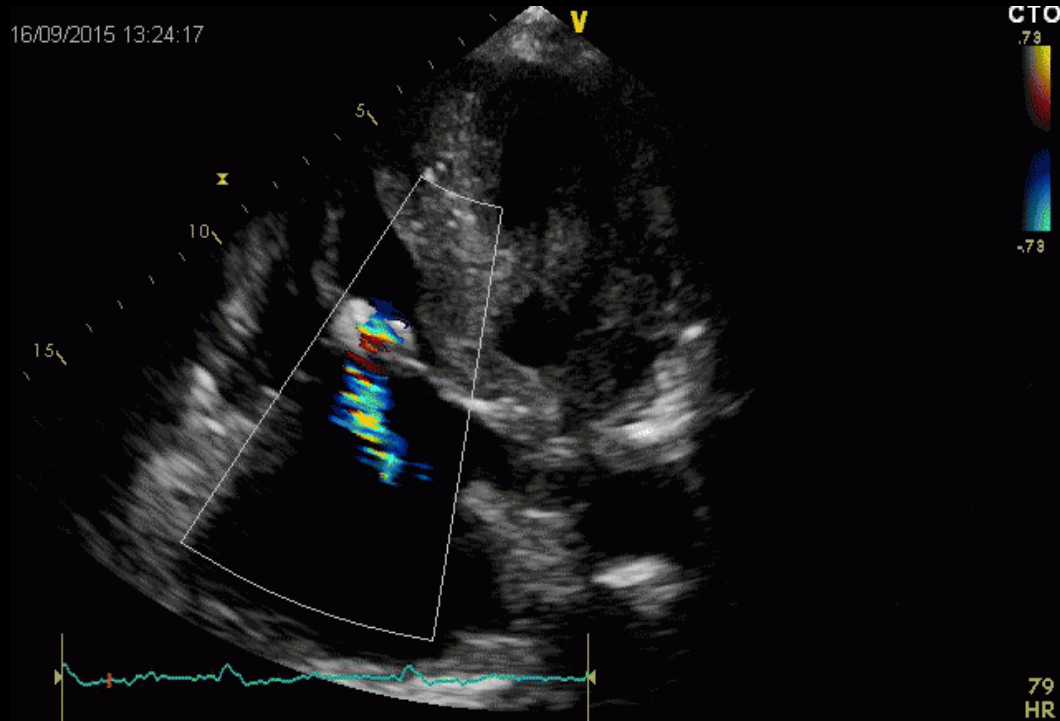
Final result with residual moderate regurgitation and no stenosis



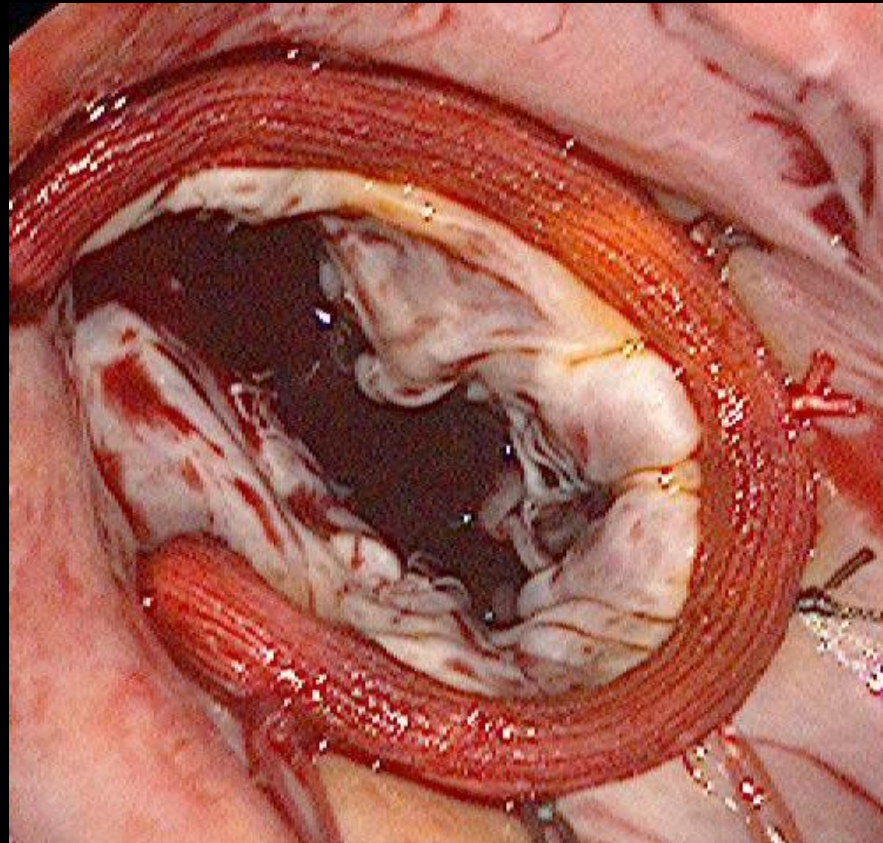
Second Clip implanted
First Clip implanted



- NYHA class II
- *Normal liver function*
- *moderate renal failure*

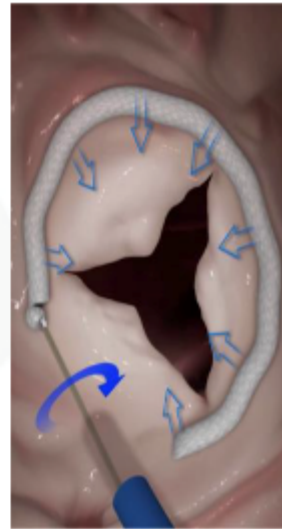
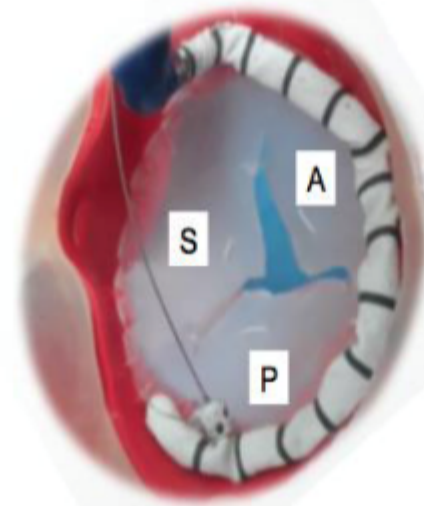
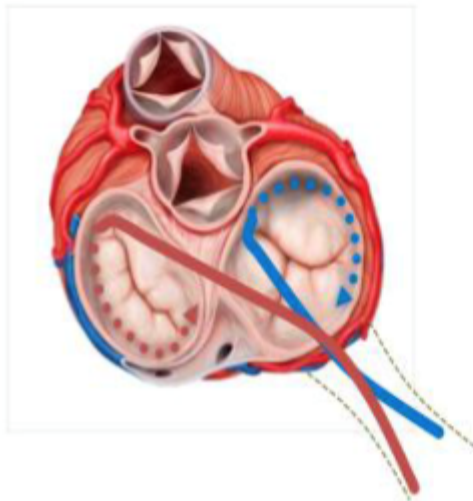


Gold standard surgical treatment: remodelling annuloplasty



Cardioband Tricuspid

- Cardioband Tricuspid is an adjusted Cardioband Trans Femoral (CBTF – CE approved for mitral regurgitation treatment).
- Proven safety and performance with over 90 mitral patients.
- Quick learning curve to CBTF users.
- Applying the surgical gold standard with a trans femoral approach.



Replacement: 11 human cases reported

BusinessWire
A Berkshire Hathaway Company

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NaviGate Cardiac Structures Inc. ("NCSI") Reports World's First Transcatheter Tricuspid Valved Stent is Successfully Implanted

December 30, 2016 01:04 PM Eastern Standard Time

LAKE FOREST, Calif.--(BUSINESS WIRE)--NaviGate Cardiac Structures Inc. ("NCSI") announced today that a novel valved stent that can capture the enlarged annulus in patients suffering from functional tricuspid regurgitation (FTR) was implanted in a patient presenting with massive incompetence of the tricuspid valve.

"This patient's annulus measured 49.7 millimeters in diameter, and there are currently no valved stents that can secure such a dimension without extending into any of the chambers and still provide valvular function, yet there are

The patient, a 64-year-old female with an extensive history of severe tricuspid regurgitation (TR 4+) that invariably results in right heart failure (RHF), a lethal condition, was successfully treated with the GATE™ tricuspid Atrioventricular Valved Stent (AVS) from NCSI. The cardiac team from the Cleveland Clinic, recognized as the number-one cardiac medicine center in the USA for 22 consecutive years, implanted the AVS with catheter-guided technique under a compassionate plea from the patient. (A compassionate plea allows a special

NaviGate

Tricuspid Valved Stent and Delivery Systems

Components Specifications



- Temperature Shape Memory NiTiNol Tapered Stent
- Height profile 21 mm, Truncated Cone configuration with a Diffuser Effect
- Annular Winglets for secure anchoring of TV annulus and tricuspid valve leaflet
- Sizes= 36mm, 40mm, 44mm, 48mm, and 52mm
- Chemically Preserved Xenogeneic Pericardium



Delivery System

- Presently 35F profile at the distal capsule
- 24F catheter shaft
- Two degrees of motion at tip
- 90° Articulation
- Controlled Valve Release
- The delivery use the same valve configuration

Take Home Message

- Tricuspid regurgitation is a frequent valvular disease
- Most of the patients with tricuspid regurgitation are left untreated (only medical therapy)
- Effective treatment improves RV dimensions and may affect survival
- Minimally invasive treatment may be instituted with low risk in early phase of Tricuspid Regurgitation with possible long term benefit