



INSUFFICIENZA MITRALICA DEGENERATIVA DIAGNOSI E RIMEDI A CUORE CHIUSO

Definizione diagnostica dell'insufficienza mitralica degenerativa con Eco2DColorDoppler.

Gli elementi che dobbiamo fornire al cardiologo/cardiochirurgo interventista e che ci indirizzano verso una riparazione a cuore chiuso

Gloria Tamborini

Chi dovrebbe essere operato:



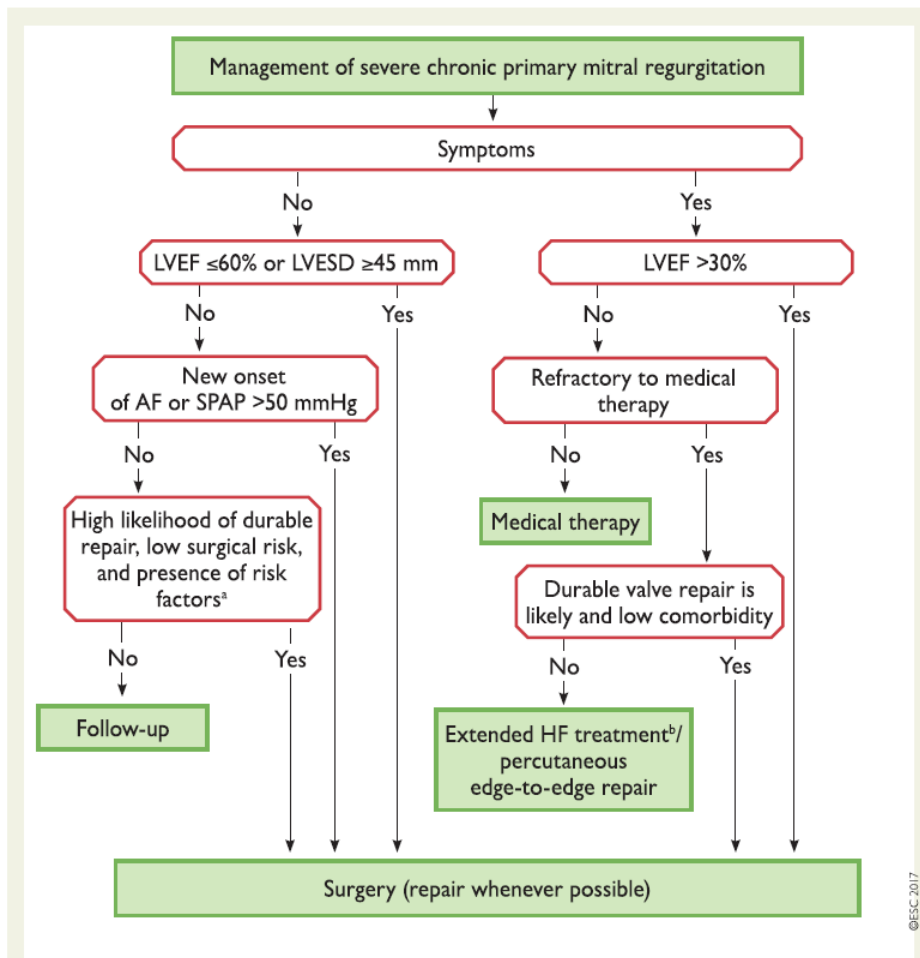
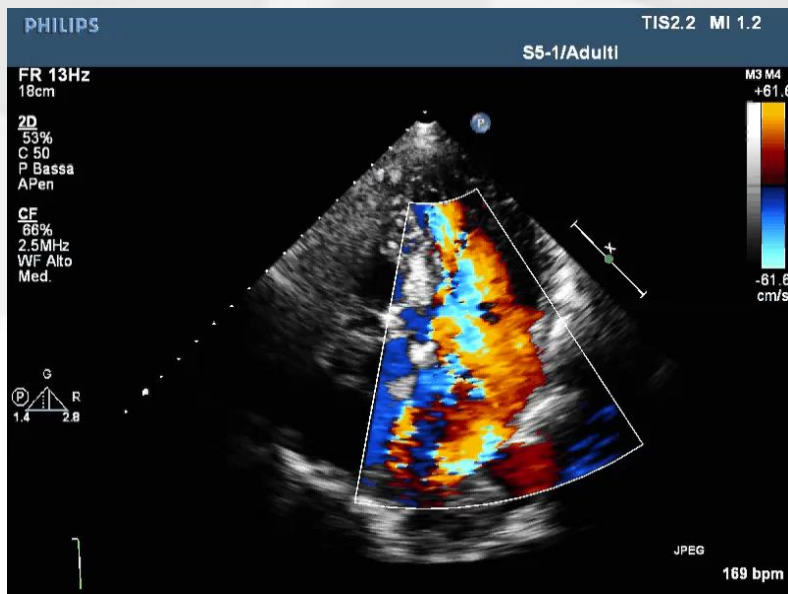
ESC
European Society
of Cardiology

European Heart Journal (2017) 00, 1–53
doi:10.1093/eurheartj/ehx391

ESC/EACTS GUIDELINES

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)



Chi dovrebbe essere operato, ma non lo è:



European Heart Journal (2007) 28, 1358–1365
doi:10.1093/eurheartj/ehm001

Clinical research
Valvular heart disease

What are the characteristics of patients with severe, symptomatic, mitral regurgitation who are denied surgery?

Mariana Mirabel¹, Bernard Lung^{1*}, Gabriel Baron², David Messika-Zeitoun¹, Delphine Détaint¹, Jean-Louis Vanoverschelde³, Eric G. Butchart⁴, Philippe Ravaut², and Alec Vahanian¹

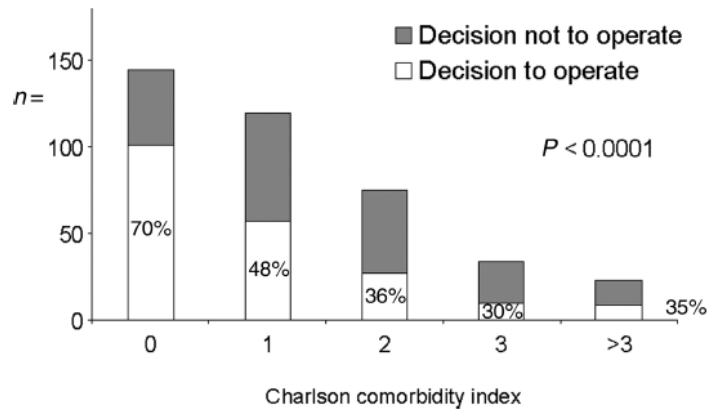


Figure 3 Decision to operate according to the Charlson comorbidity index.

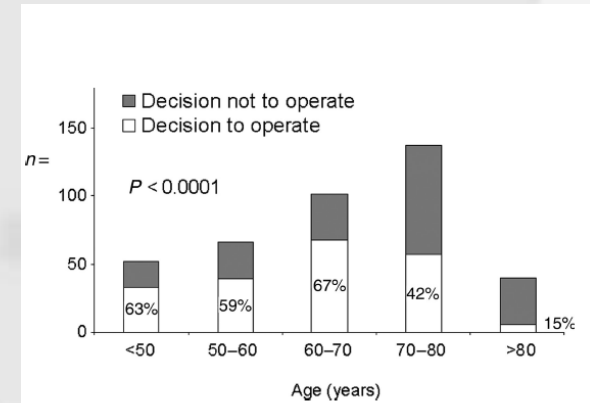
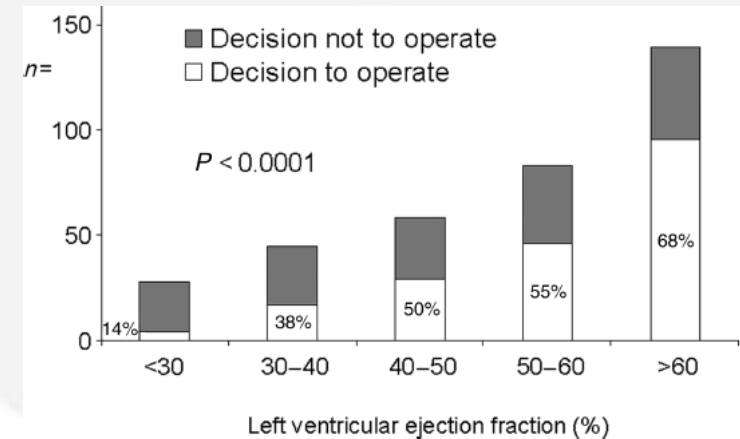


Figure 2 Decision to operate according to age range.



FDA Approved MitraClip for Organic (Degenerative) Mitral Regurgitation

- Transcatheter reduction of significant symptomatic mitral regurgitation ($\geq 3+$) due to organic (degenerative) mitral regurgitation in patients determined to be at prohibitive risk for mitral valve surgery.
- Prohibitive risk includes ≥ 1 of the following:
 - STS $\geq 8\%$ for mitral valve replacement or $\geq 6\%$ for mitral valve repair
 - Porcelain aorta
 - Frailty
 - Hostile chest
 - Severe liver disease
 - Severe pulmonary hypertension
 - Other

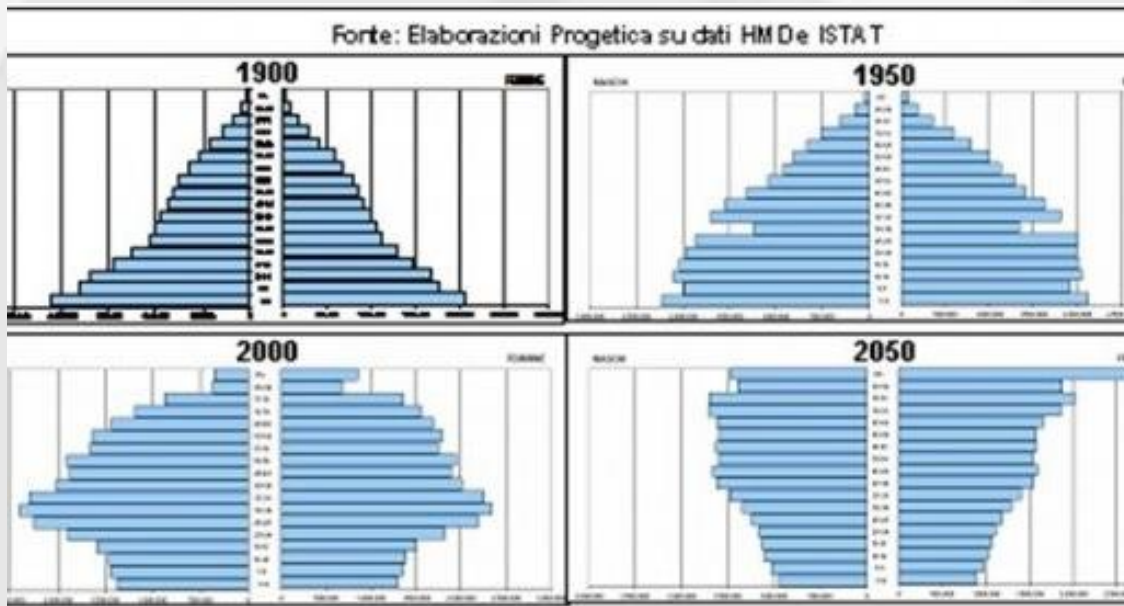
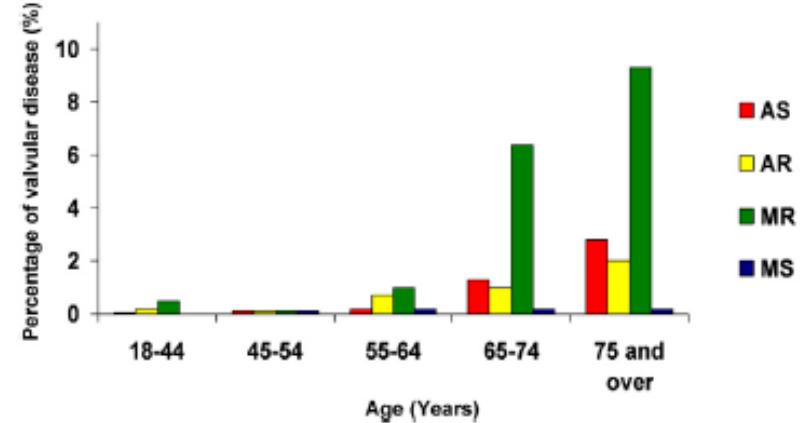
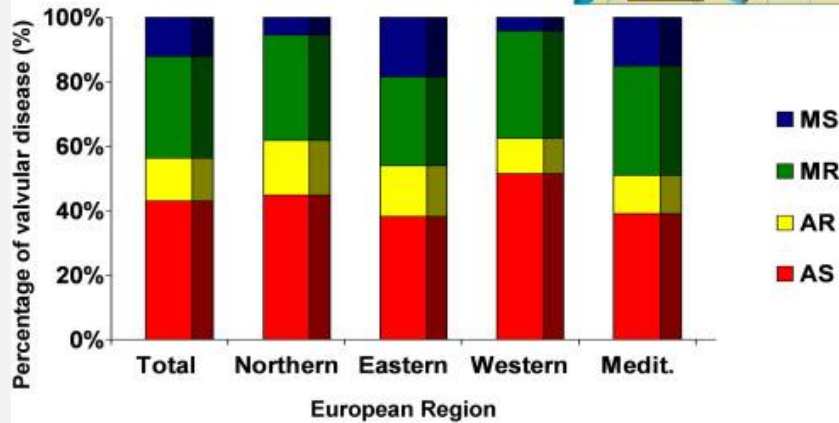


Review

Epidemiology of Acquired Valvular Heart Disease

Bernard Jung, MD, and Alec Vahanian, MD

Cardiology Department, Bicêtre Hospital, and Paris 7 Diderot University, Paris, France



Clinical update

The future of transcatheter mitral valve interventions: competitive or complementary role of repair vs. replacement?

Francesco Maisano^{1*}, Ottavio Alfieri², Shmuel Banai³, Maurice Buchbinder⁴, Antonio Colombo², Vollmar Falk⁵, Ted Feldman⁶, Olaf Franzen⁷, Howard Herrmann⁸, Saibal Kar⁹, Karl-Heinz Nicolai¹⁰, Mark R Larsen¹¹, Lars Søndergaard⁷, Greg Vahanian²⁰, John W

Device name and therapy type	Device structure	Status international	Design
MitraClip (Abbot Vascular) Edge-to-edge repair		CE Mark approval gained FDA approved	D
NeoChord (NeoChord DS 1000) Chordal repair		CE Mark approval gained	D
V-Chordal-Off Pump (Valtech) Chordal repair		First-in-man study complete	D
CARILLON (Cardiac Dimensions) Indirect Annuloplasty		CE Mark approval gained IDE submitted for pivotal study	D
GDS Accucinch (GDS) Direct Annuloplasty		International feasibility trial underway	D
MitraSign Bident (MitraSign) Direct annuloplasty		CE Mark trial completed US feasibility trial planned	D
Cardioband TF (Valtech) Direct annuloplasty		CE Mark trial underway	D
Millipede Ring (Millipede) Direct annuloplasty		Preclicinals underway	N
Cardica Mitral Repair (Cardica) Edge-to-edge repair		Intellectual property developed	C

Table 1 **WIKIHEART**

Device name and therapy type	Device structure	Status international	Design
MISTRAL (Mitrafix) Chordal repair		Preclicinals underway	D
V-Chordal-Transfemoral (Valtech) Chordal repair		Preclicinals underway	D
Kardium MR (Kardium) Direct annuloplasty		Intellectual property developed	D
PS3 (MVRix) Annuloplasty		First-in-man study underway	D
MitraFlex (TransCardac) Edge-to-edge		Preclicinals underway	D
ValCare MV Repair (ValCare) Direct annuloplasty		Preclicinals underway	D
Mitra-Spacer-Transapical (Cardosolutions) Enhanced coaptation		First-in-man study underway	D

Table 2 **Transcatheter mitral valve implantation technology**

Device name	Device structure	Status international	Design
Fortis (Edwards Lifesciences)		First-in-man study underway	D
Tiara (Neovasc)		First-in-man study underway	D
TMVI-TA (CardIAQ)		First-in-man study completed	D
TMVI-TF (CardIAQ)		First-in-man study completed	D
Caisson TMVR (Caisson)		Preclicinals underway	D
MitraCath (Emory University)		In development	D
HighLife Mitral Valve Replacement (HighLife)		Preclicinals underway	D
Medtronic TMVR (Medtronic)		Preclicinals underway	D
MitraAssist Valve (MitraAssist)		Preclicinals underway	D
Navigate TMVR (NCSI)		Clinical implants have occurred	D

Table 2 Continued

Device name	Device structure	Status international	Design
Tendyne/Lutter TMVR (Tendyne)		First-in-man study underway	D
Cardiovalve (Valtech)		Preclicinals underway	D

TABLE 1. MITRAL REPAIR TECHNOLOGIES AND REGULATORY STATUS*

Device	Manufacturer	Investigational?	CE Mark Approved?	FDA Approved?
AccuCinch	Ancora Heart, Inc.	Yes	No	No
Amend mitral valve repair annuloplasty ring	Valcare Medical	Yes	No	No
Arto system	MVRx, Inc.	Yes	No	No
Cardioband	Edwards Lifesciences	—	Yes	No
Carillon mitral contour system	Cardiac Dimensions, Inc.	—	Yes	No
Iris complete	Millipede, Inc.	Yes	No	No
MitraClip	Abbott Vascular	—	Yes	Yes
Mitralign	Mitralign, Inc.	—	Yes	No
NeoChord	NeoChord, Inc.	—	Yes	No
PASCAL mitral repair system	Edwards Lifesciences	Yes	No	No
TSD-5 device	Harpoon Medical, Inc.	Yes	No	No
VenTouch system	Mardil Medical	Yes	No	No



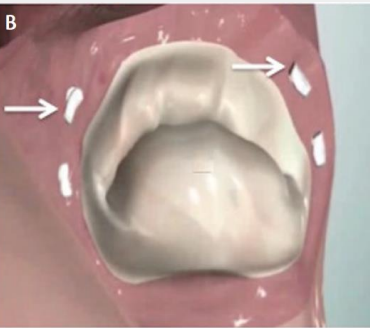
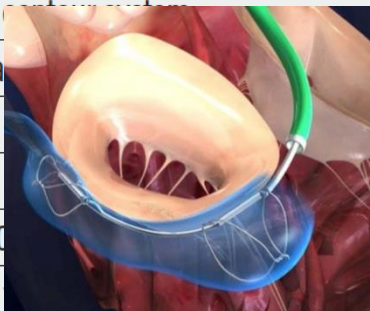
*As of July 2017.

Abbreviation: FDA, US Food and Drug Administration.

Sharma R et al. Cardiac Interventions 2017

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Carillon mitral	Cardiac Dimensions, Inc.	—	Yes	No
Iris complete a	Millipede, Inc.	Yes	No	No
MitraClip	Abbott Vascular	—	Yes	Yes
Mitralign	Mitralign, Inc.	—	Yes	No
NeoChord DS10	NeoChord, Inc.	—	Yes	No
PASCAL mitral	Edwards Lifesciences	Yes	No	No
TSD-5 device	Harpoon Medical, Inc.	Yes	No	No
VenTouch sys	Mardil Medical	Yes	No	No



*As of July 2017.
Abbreviation: FL

Sharma R et al. Cardiac Interventions 2017

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MitraClip	Abbott Vascular	—	Yes	Yes
Mitralign	Mitralign, Inc.	—	Yes	No
NeoChord DS1000	NeoChord, Inc.	—	Yes	No
PASCAL mitral valve repair system	Edwards Lifesciences	Yes	No	No
TSD-5 device	Harpoon Medical, Inc.	Yes	No	No
VenTouch system	Mardil Medical	Yes	No	No



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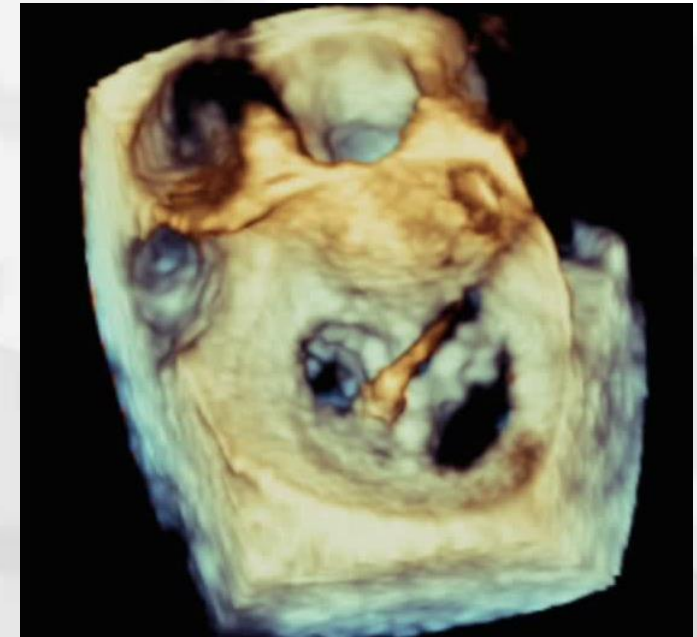
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2017 ESC/EACTS Guidelines for the management of valvular heart disease

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Indications for intervention in severe primary mitral regurgitation

Recommendations	Class ^a	Level ^b
Mitral valve replacement may be considered in symptomatic patients with severe LV dysfunction (LVEF <30% and/or LVESD >55 mm) refractory to medical therapy when the likelihood of successful repair is low and comorbidity low.	IIb	C
Percutaneous edge-to-edge procedure may be considered in patients with symptomatic severe primary mitral regurgitation who fulfil the echocardiographic criteria of eligibility and are judged inoperable or at high surgical risk by the Heart Team, avoiding futility.	IIb	C

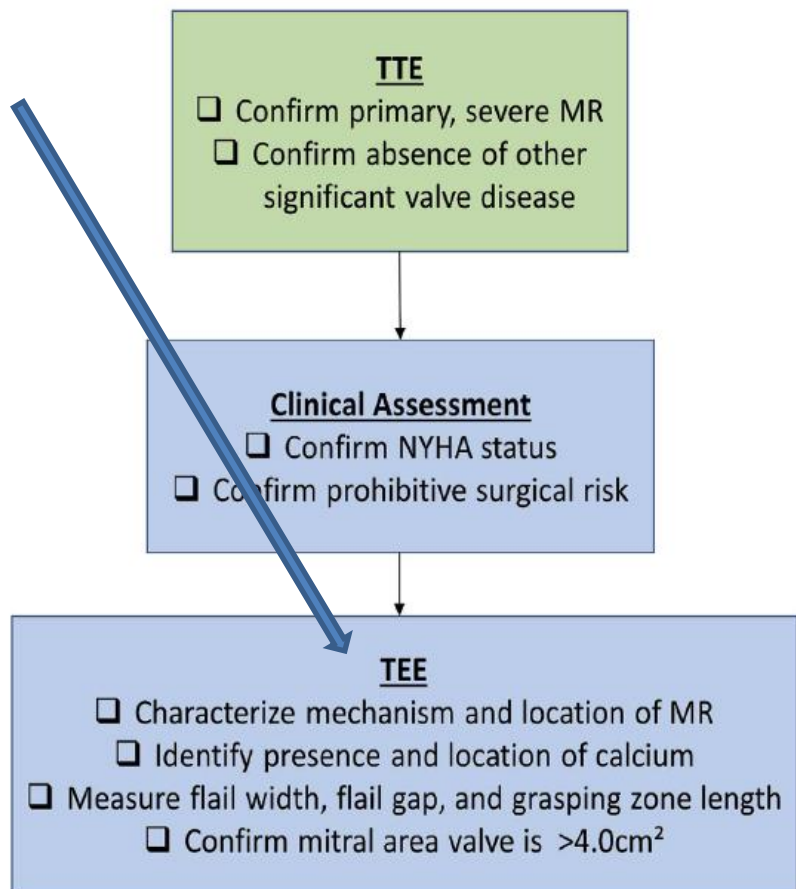


EXPERT CONSENSUS DECISION PATHWAY

2017 ACC Expert Consensus Decision Pathway on the Management of Mitral Regurgitation

A Report of the American College of Cardiology Task Force on
Expert Consensus Decision Pathways

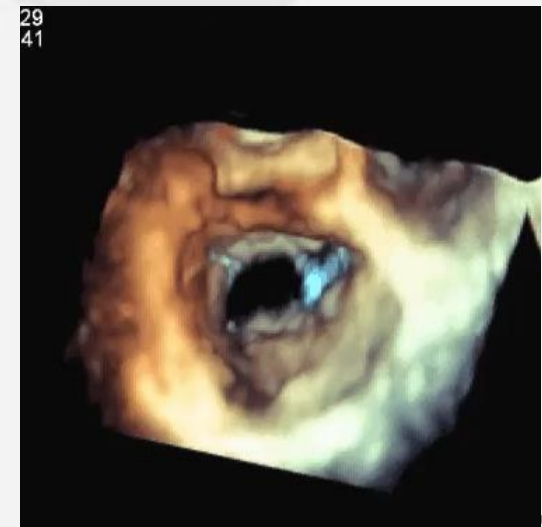
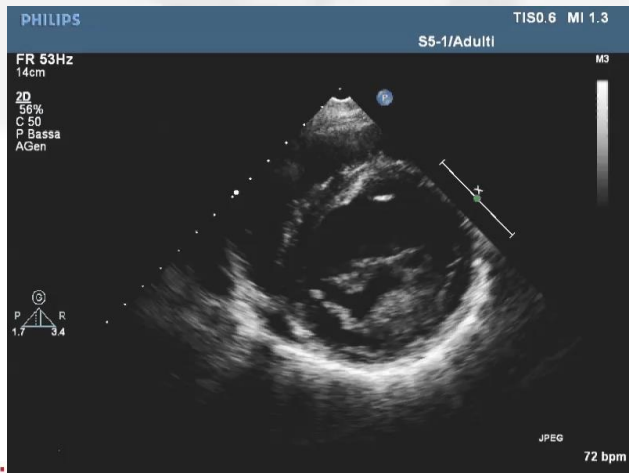
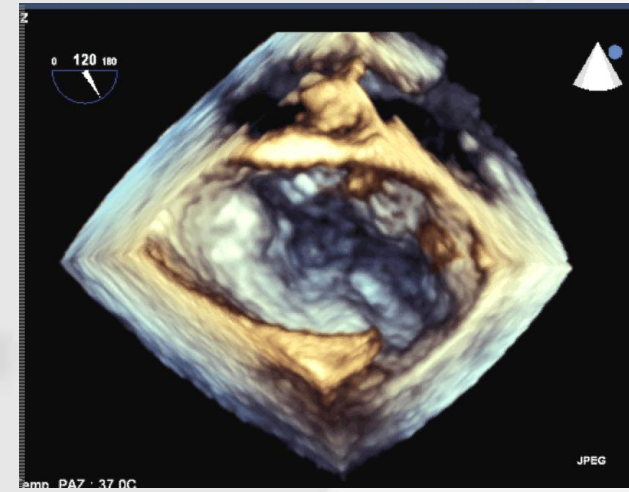
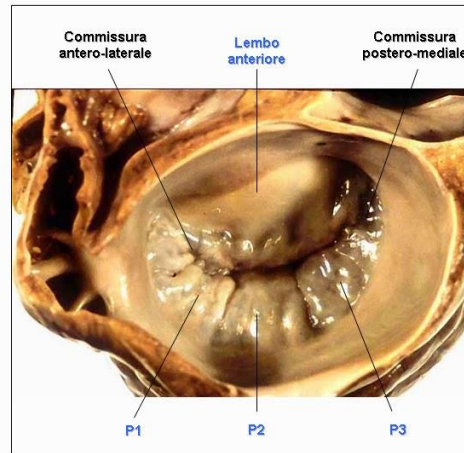
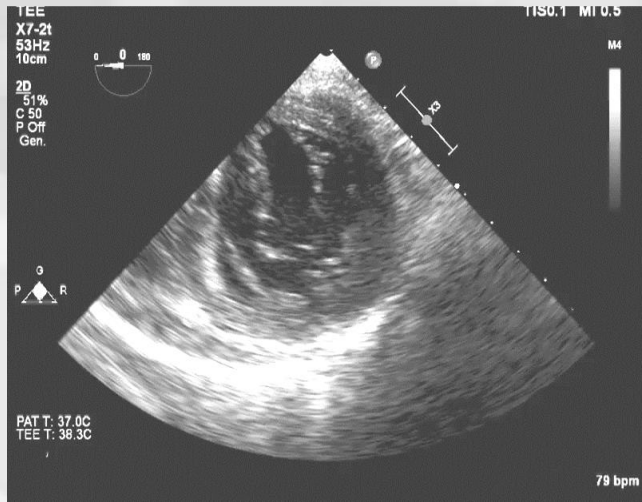
FIGURE 12 Algorithm for Determining Eligibility for Transcatheter Edge-to-Edge Mitral Valve Clip



Note: Transcatheter edge-to-edge clip repair not approved in US for patients with functional MR

Abbreviations: MR = mitral regurgitation; NYHA = New York Heart Association; TEE = transesophageal echocardiography; TTE = transthoracic echocardiography

TEE... ma non solo

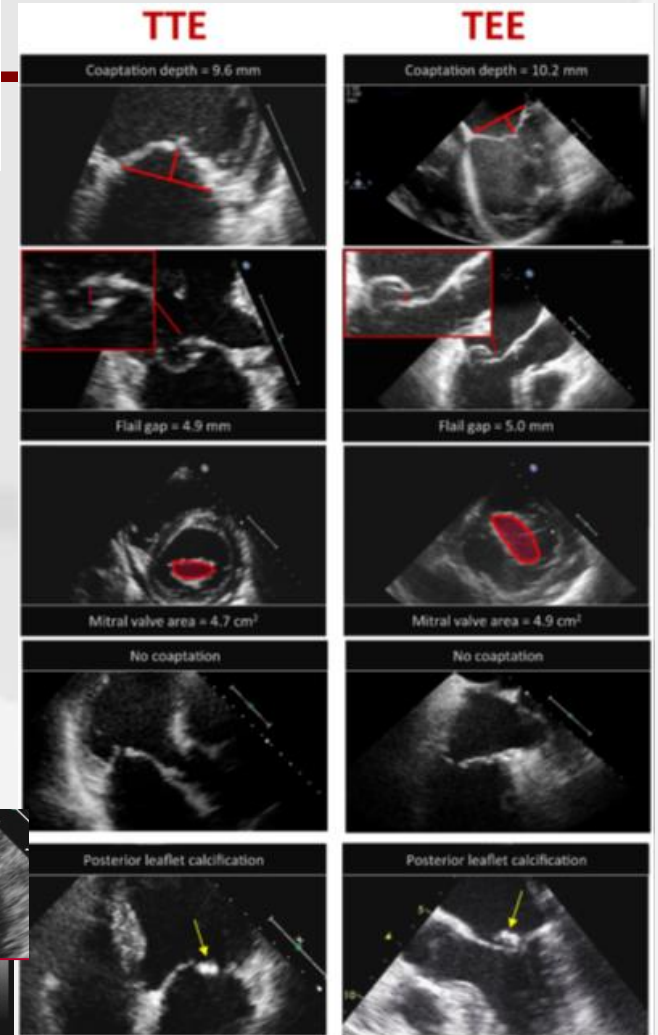


Patients selection for MitraClip: Time to move to transthoracic echocardiographic screening?



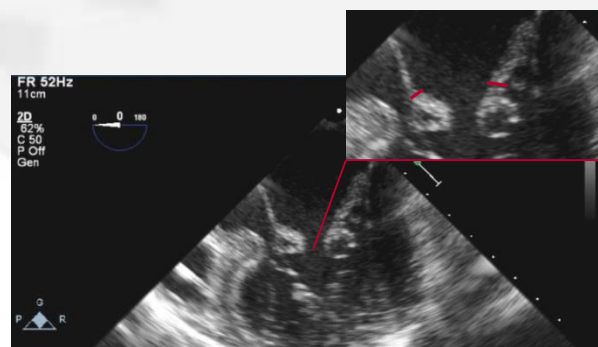
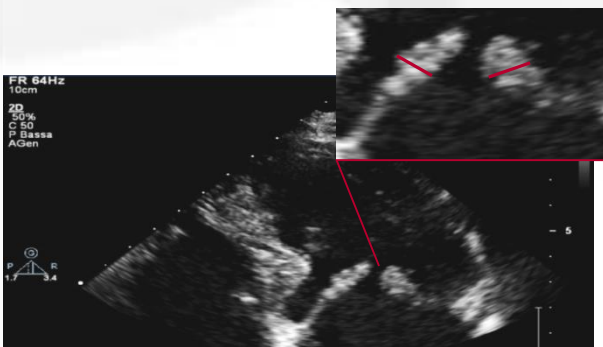
Paola Gripari ^{a,1}, Francesco Maffessanti ^{a,*1}, Gloria Tamborini ^a, Manuela Muratori ^a, Laura Fusini ^a, Sarah Ghulam Ali ^a, Cristina Ferrari ^a, Francesco Alamanni ^{a,b}, Antonio L. Bartorelli ^{a,b}, Cesare Fiorentini ^{a,b}, Mauro Pepi ^a

	TTE	TEE	TTE vs TEE p-value
Quantitative parameters			
Valvular area 2D (cm ²)	5.6 ± 1.1	6.5 ± 1.3	<0.01
Valvular area 3D (cm ²)	5.5 ± 1.1	5.7 ± 1.2	0.17
Coaptation			
Length (mm)	4.3 ± 1.3	4.1 ± 1.2	0.32
Depth (mm)	10.8 ± 2.3	10.6 ± 2.4	0.26
Flail gap (mm)	5.9 ± 2.6	5.8 ± 2.6	0.45
Leaflet length			
Anterior (mm)	23 ± 3	23 ± 4	0.14
Posterior (mm)	14 ± 4	14 ± 4	0.81
Leaflet thickness			
Anterior (mm)	3.2 ± 1.1	2.6 ± 1.1	<0.01
Posterior (mm)	3.7 ± 1.4	3.0 ± 1.2	<0.01
Jet width (mm)	10.9 ± 3.1	10.5 ± 3.2	0.69



TTE

TEE



*Ma la TEE è
indispensabile....*



MitraClip: Secondary Assessment Considerations

The following criteria should be considered when deciding to perform catheter based repair of the mitral valve with an implantable device:

- Severe mitral annular calcification.
- Need for emergency surgery for any reason.
- Prior mitral valve leaflet surgery.
- Intracardiac mass, thrombus or vegetation.
- Active endocarditis or rheumatic heart disease.
- Active infections requiring current antibiotic therapy.
- Patients in whom transesophageal echocardiography (TEE) is contraindicated.
- Pacemaker or pacing leads

*Ma la TEE è
indispensabile....*

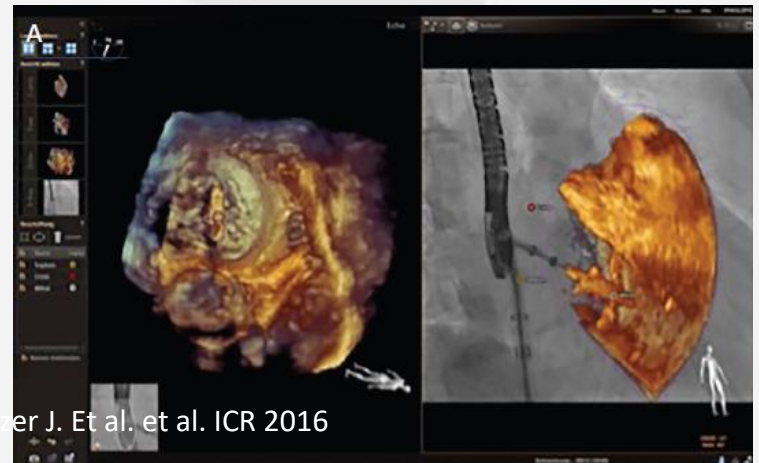
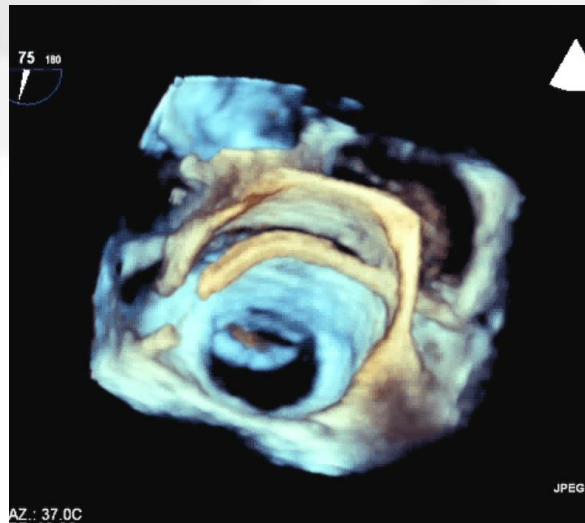
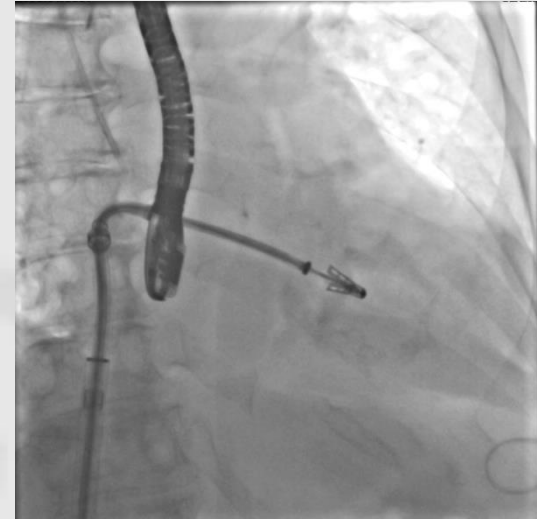


MitraClip: Primary Assessment Considerations

The following criteria should be considered when deciding to perform catheter based repair of the mitral valve with an implantable device:

- Severe mitral annular calcification.
- Need for emergency surgery for any reason.
- Prior mitral valve leaflet surgery.
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Mitraclip procedure



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FIGURE 13 Transcatheter Edge-to-Edge Mitral Valve Clip

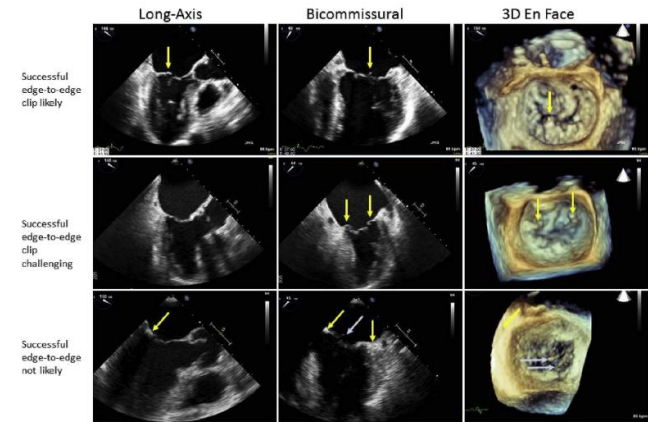


TABLE 6 Feasibility of Transcatheter Edge-to-Edge Clip Repair

	Ideal Echo Features	Challenging Echo Features	Relative Echo Contraindications
Location of pathology	<ul style="list-style-type: none"> Segment 2 	<ul style="list-style-type: none"> Segments 1 or 3 	<ul style="list-style-type: none"> Body of leaflet (i.e., perforation or cleft/deep fold)
Calcification	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Mild, outside grasping zone Extensive annular calcification 	<ul style="list-style-type: none"> Severe calcification at site of grasping zone
Mitral valve area/gradient	<ul style="list-style-type: none"> >4 cm² ≤4 mm Hg 	<ul style="list-style-type: none"> >3.5 and <4 cm² with small BSA or very mobile leaflets ≥4 mm Hg 	<ul style="list-style-type: none"> <4.0 cm² >5 mm Hg Especially if severe MAC
Grasping zone Length	<ul style="list-style-type: none"> >10 mm 	<ul style="list-style-type: none"> 7-10 mm 	<ul style="list-style-type: none"> <7 mm
Functional MR	<ul style="list-style-type: none"> Normal thickness and mobility Coaptation depth <11 mm 	<ul style="list-style-type: none"> Carpentier IIIB (restricted) Coaptation depth >11 mm 	<ul style="list-style-type: none"> Carpentier IIIA (rheumatic thickening and restriction)
Degenerative MR	<ul style="list-style-type: none"> Flail width <15 mm Flail gap <10 mm Leaflet separation <2 mm 	<ul style="list-style-type: none"> Flail width <15 mm with large valve area and option for >1 MitraClip Flail gap >10 mm with possibility of adjunctive measures 	<ul style="list-style-type: none"> Barlow's disease with significant regurgitation in segments 1-3
Other pathology		<ul style="list-style-type: none"> Annuloplasty ring with adequate mitral valve area and leaflet length HOCM with systolic anterior motion Extreme disease (markedly dilated annulus or EROA ≥70.8 mm²) 	

Note: Transcatheter edge-to-edge clip repair is approved for use in the United States only for patients with primary MR, severe symptoms, and high or prohibitive operative risk. Adapted from Hahn (96).

BSA = body surface area; EROA = effective regurgitant orifice area; HOCM = hypertrophic obstructive cardiomyopathy; MAC = mitral annular calcification.

Criteria anatomici di selezione per impianto percutaneo di Neochorde

Type A “Ideal” Patient:

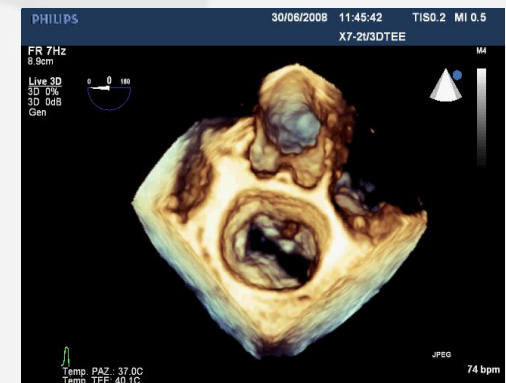
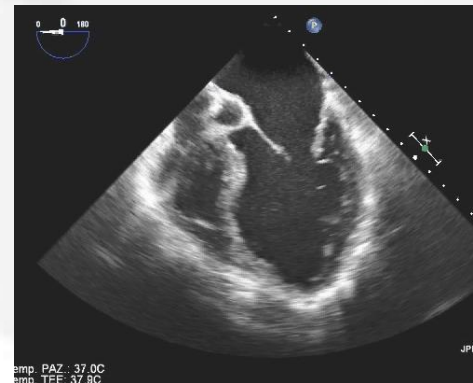
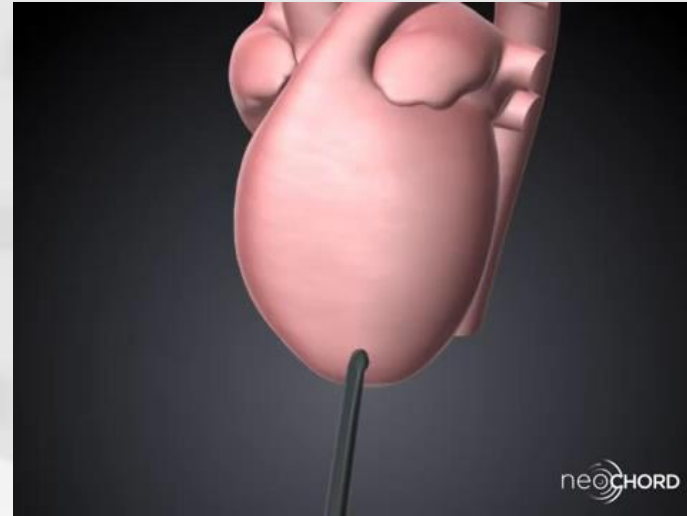
- Central P2 prolapse
- >8mm predicted coaptation length with repair

Type B “Adequate” Patient:

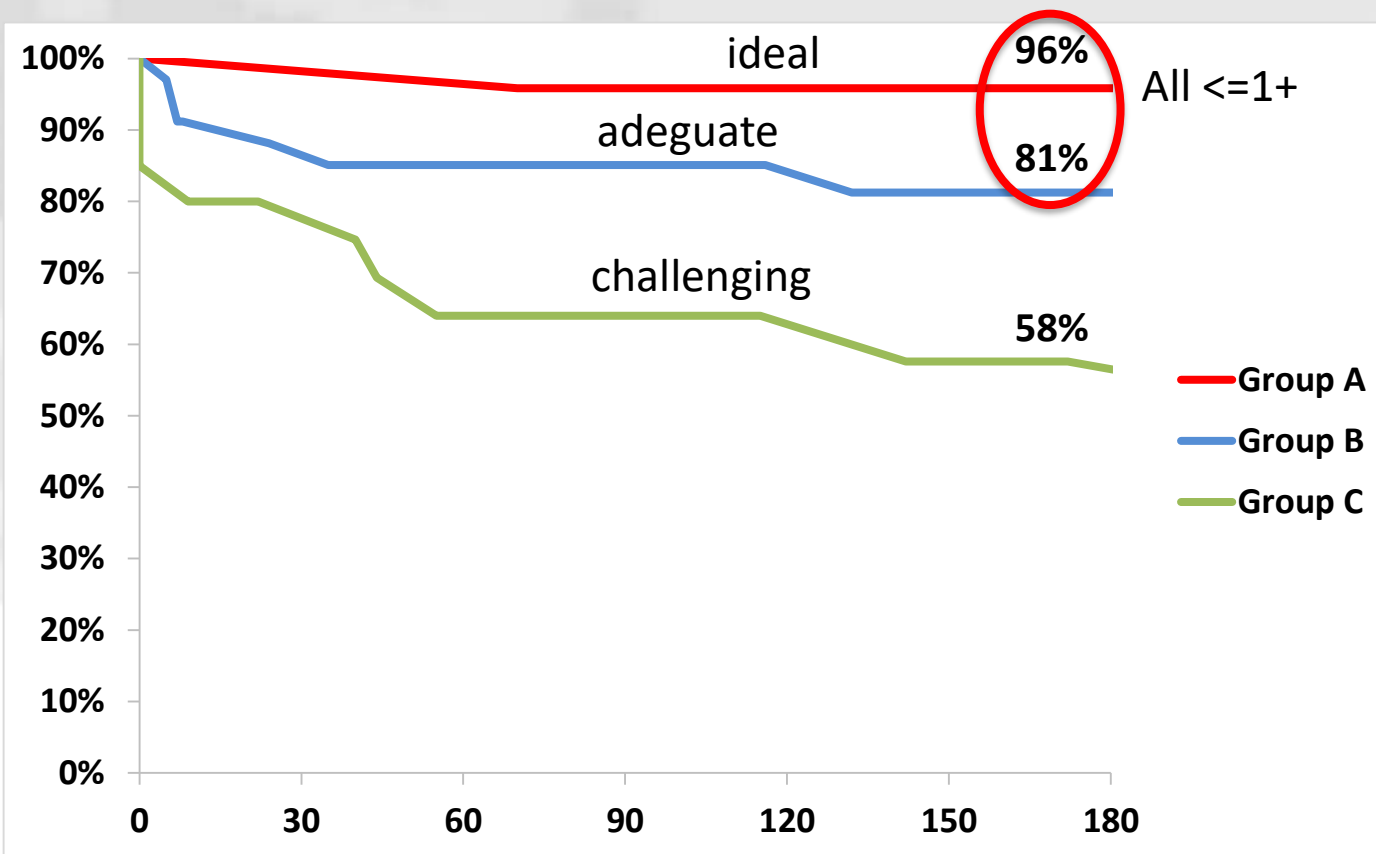
- Less than 8 mm coaptation length
- Prolapse extending to portions of P1 or P3

Type C “Challenging” Patient:

- Prolapse involving commissures or anterior leaflet
- LV dilatation with tethering of leaflets
- Central regurgitant jet component
- Calcified leaflet segments



Freedom From Return of MR By Patient Group



At Risk:	Group A	Group B	Group C
0	24	34	20
30	24	29	15
180	18	15	7

Speziali G.

10° CONGRESSO NAZIONALE ECOCARDIOCHIRURGIA

X CONGRESSO NAZIONALE ECOCARDIOCHIRURGIA 2018

da un'idea di Antonio Mantero
MILANO, 9-11 APRILE 2018

PROGRAMMA AVANZATO

PRESIDENTE ONORARIO
GIUSEPPE TARELLI

PRESIDENTE
ANTONIO MANTERO

DIRETTORI
FRANCESCO ALAMANNI
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ANDREA BELLONE
EMANUELE CATENA
CORRADO LETTIERI

CENTRO CONGRESSI
PALAZZO BELLE STELLINE
CORSO MAGENTA, 61
20123 MILANO

SEGRETARIA ORGANIZZATIVA
VICTORY PROJECT CONGRESSI
VIA C. POMI, 2 - 20129 MILANO
TEL: 02 89105 35 24
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INFO@VICTORYPROJECT.IT

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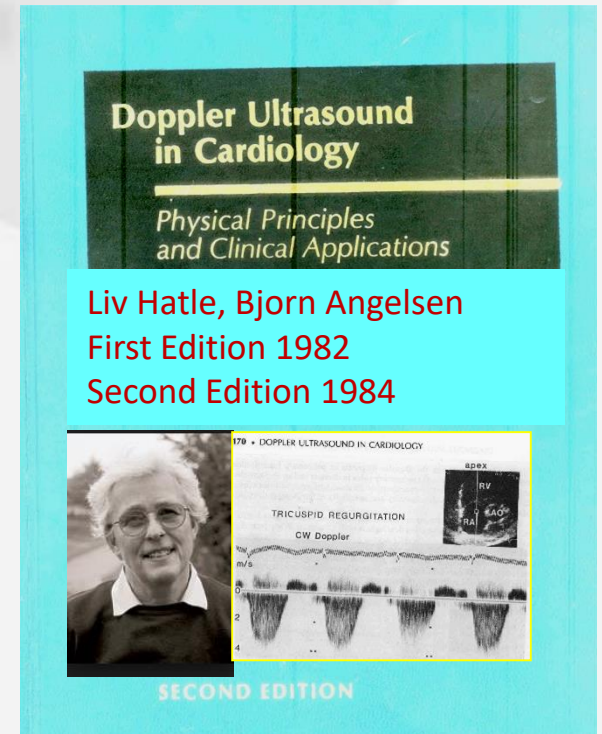
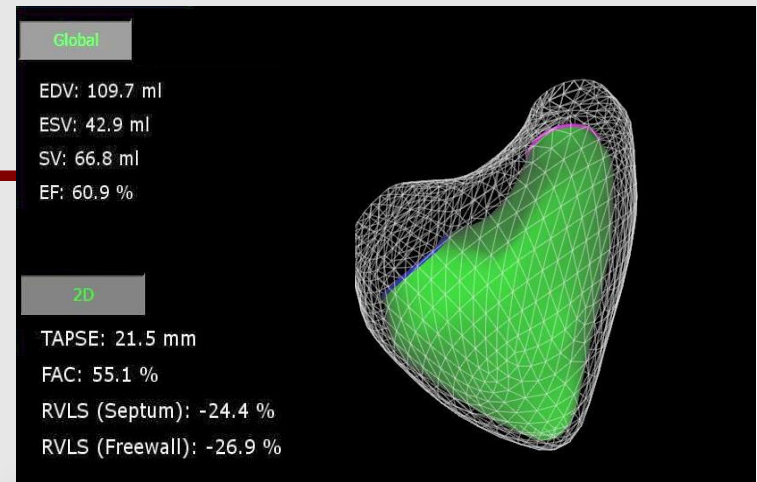
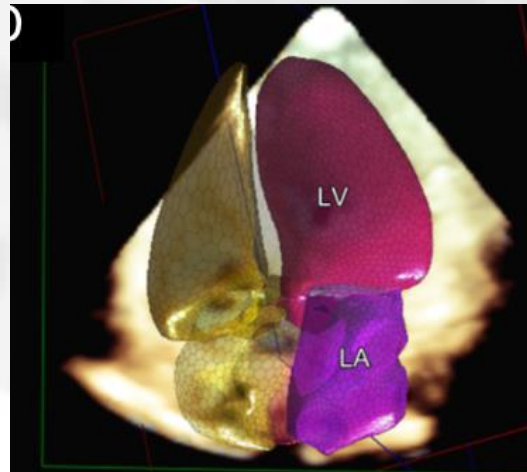
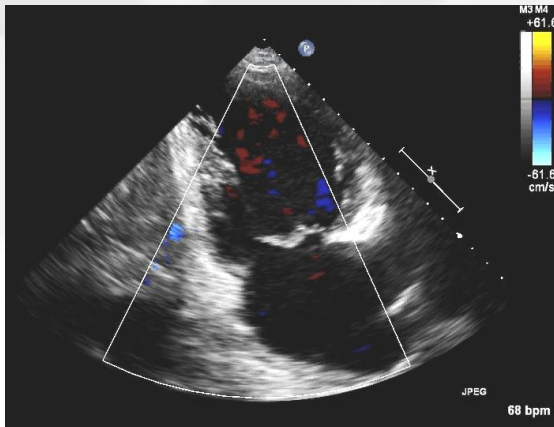
Definizione diagnostica dell'insufficienza mitralica
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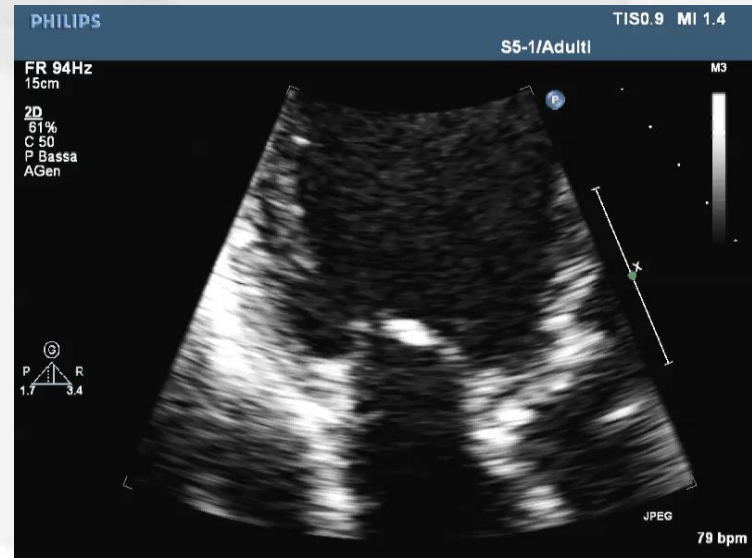
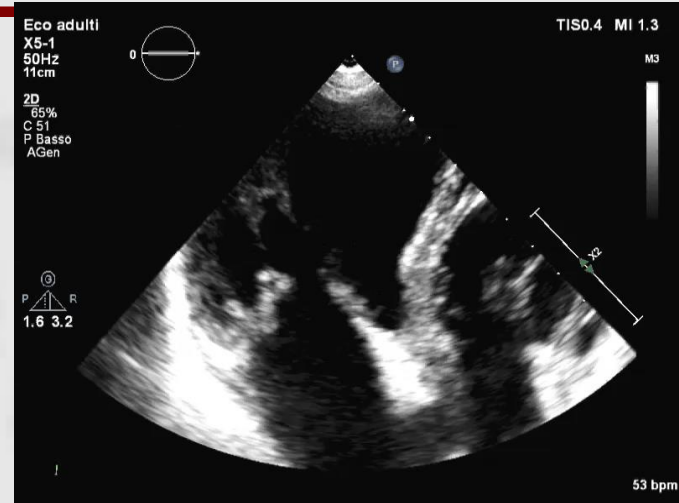
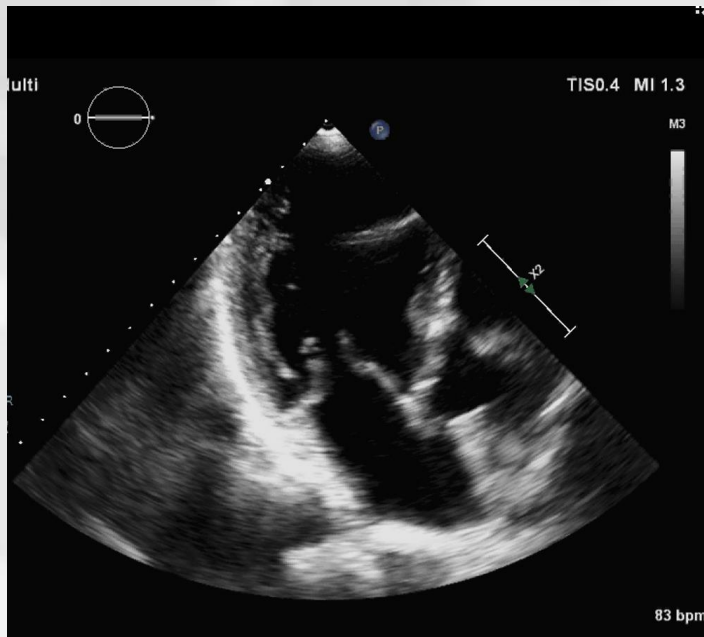
- *Considerazioni generali*
- *Analisi dei lembi*
- *Analisi dell'anello*
- *Morfologia del prolasso*

➤ Considerazioni generali

- *Quantificazione del rigurgito*
- *Dimensioni del VSX*
- *Funzione del VSX*
- *Funzione del ventricolo destro*
- *Pressioni polmonari*

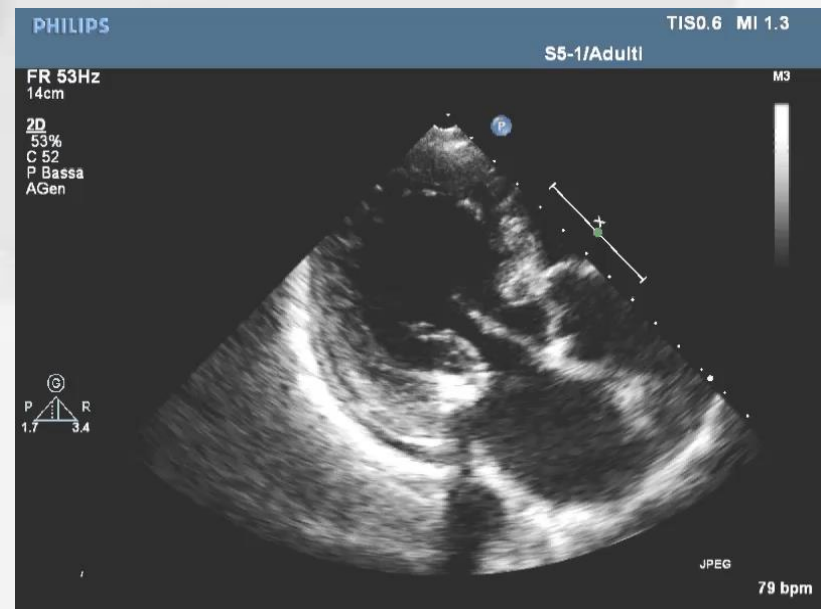
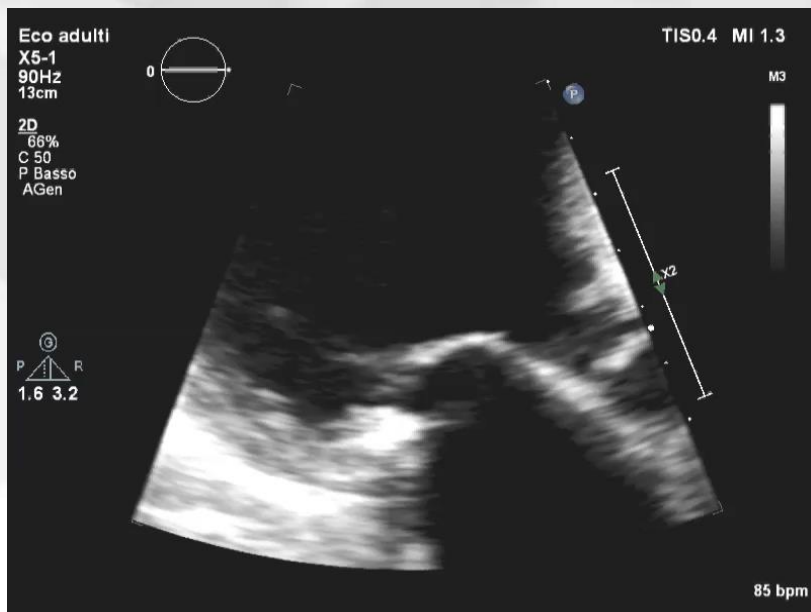


➤ *Analisi del lembo*

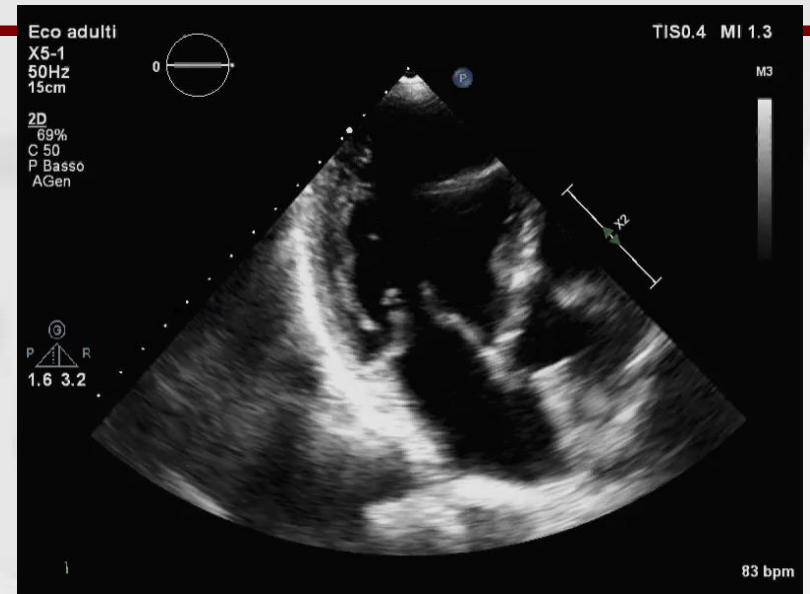
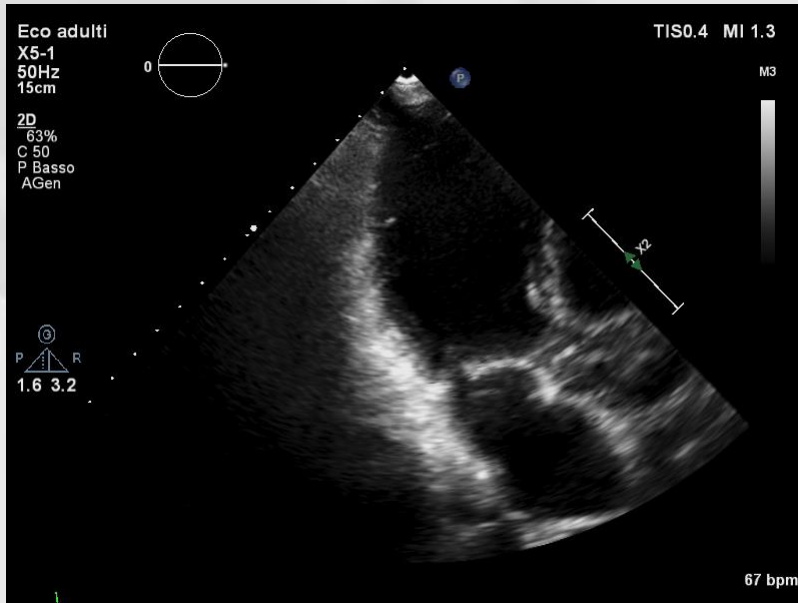


- **Lunghezza**
- **Spessore**
- **Uniformità**

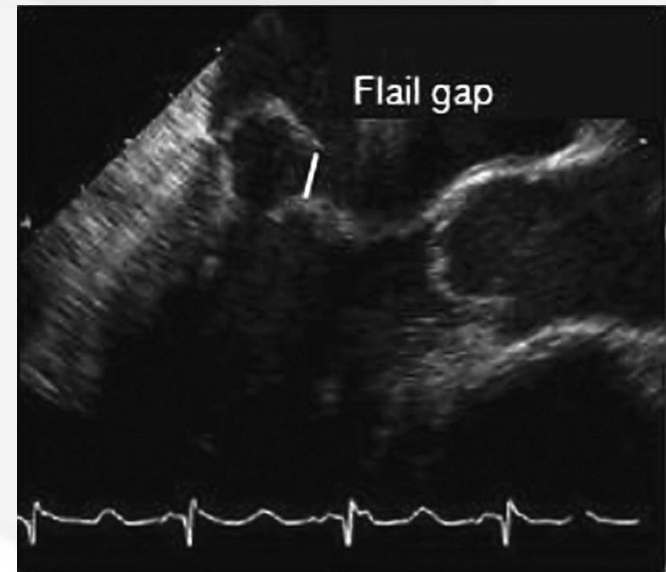
➤ *Analisi del lembo: **Calcificazioni***



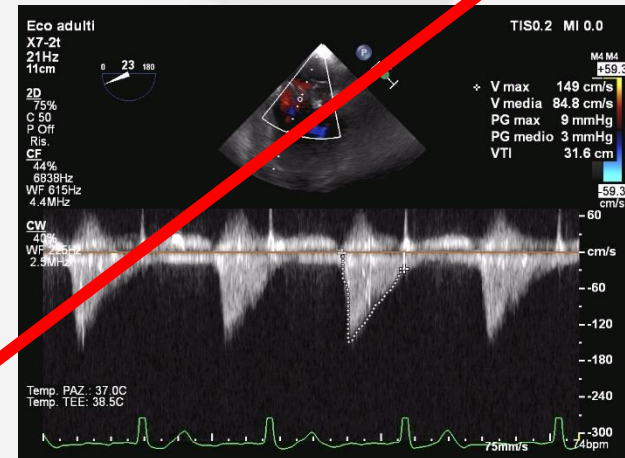
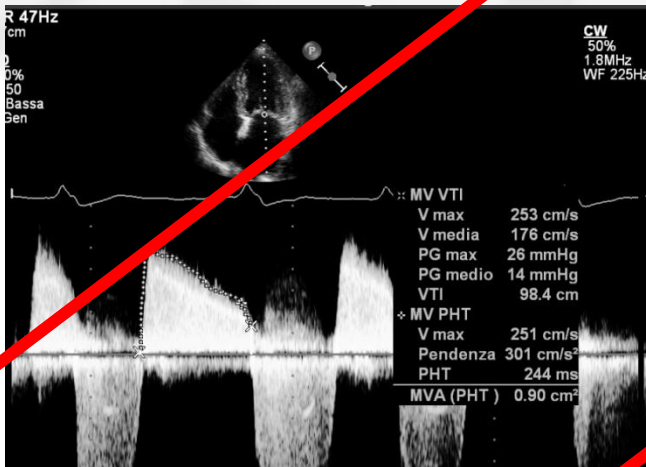
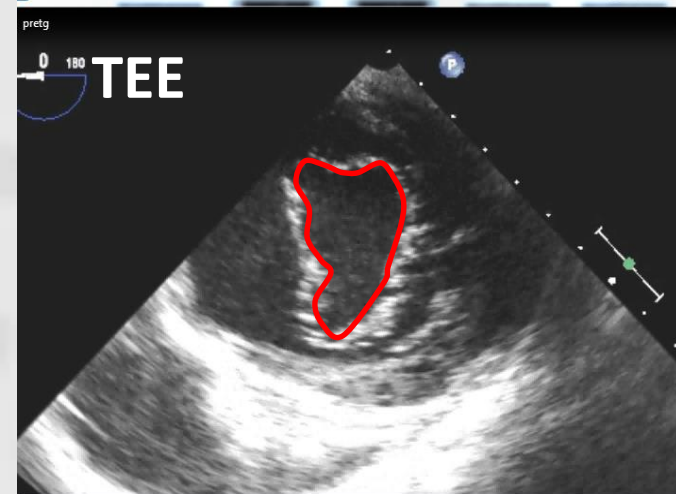
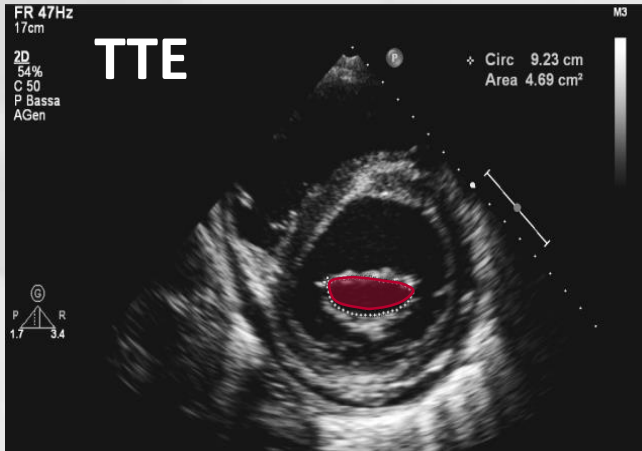
➤ *Analisi del lembo*



La dinamica dei lembi
Il flail gap



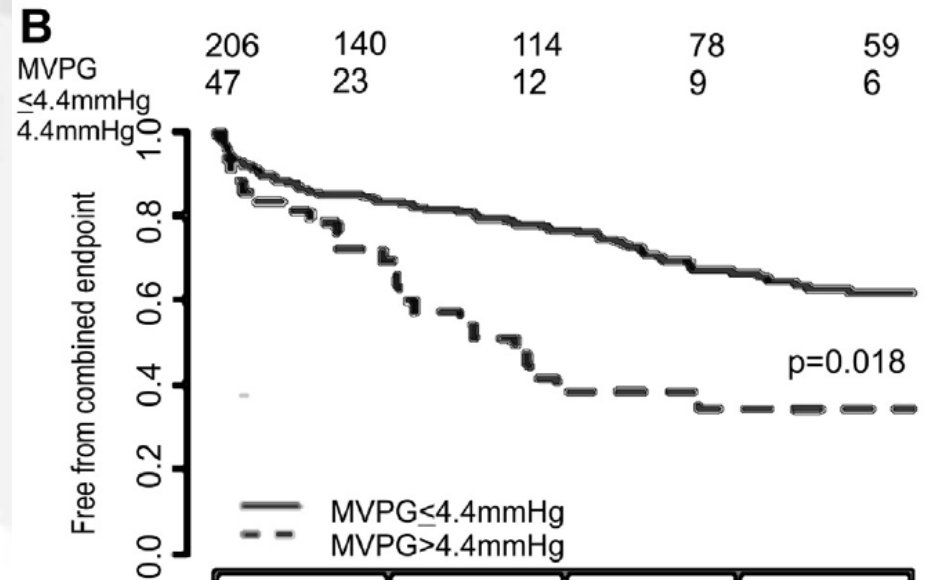
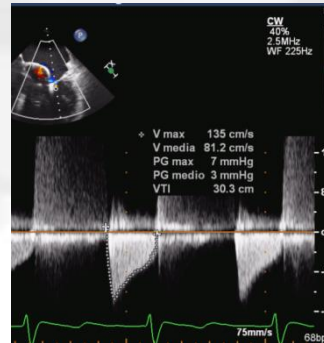
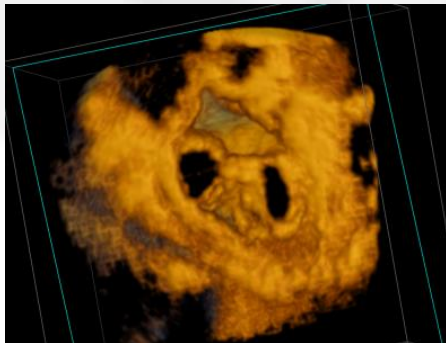
➤ Analisi dell'area



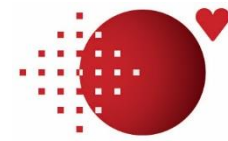
➤ Analisi dell'area



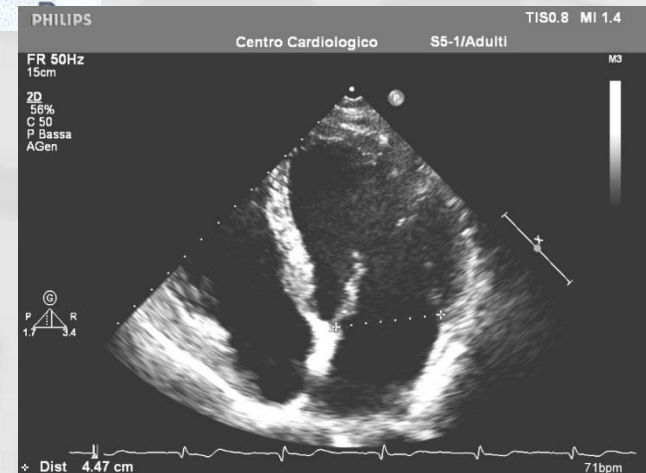
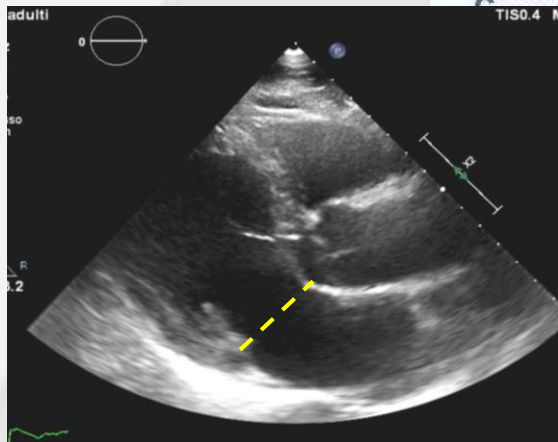
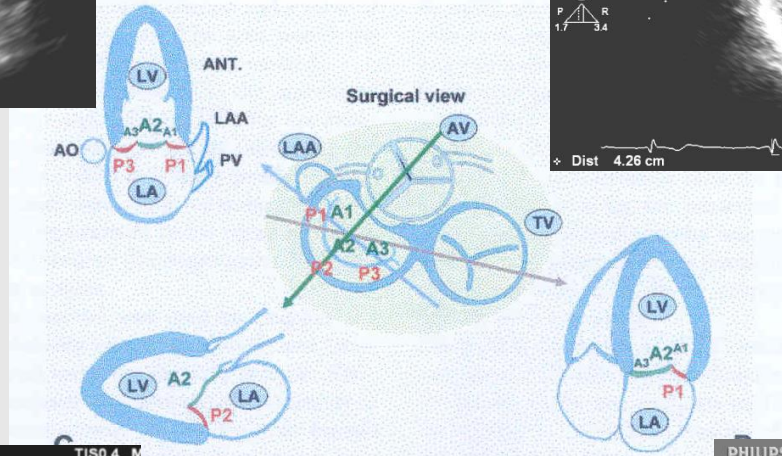
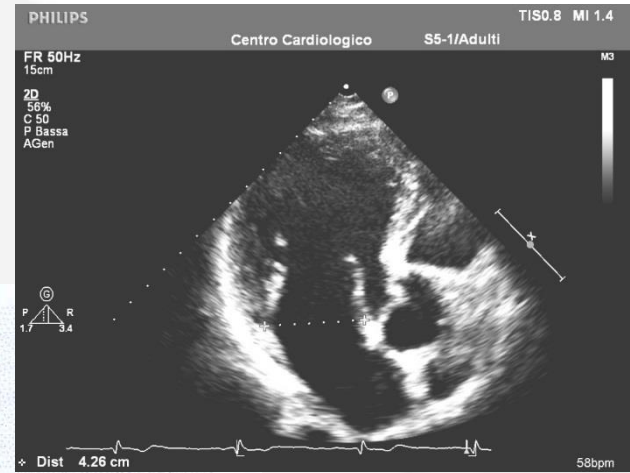
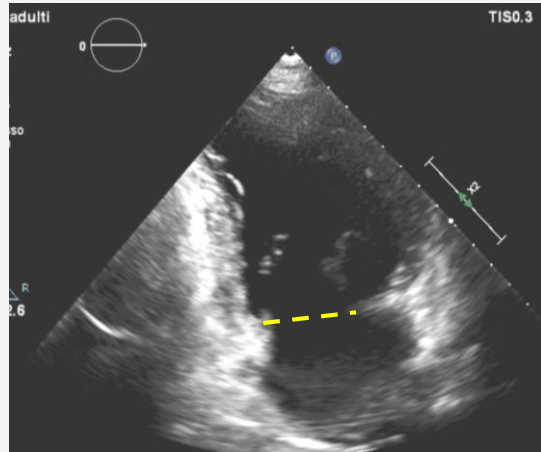
Dopo Mitraclip



➤ *Analisi dell'anello*



Centro Cardiologico
Monzino



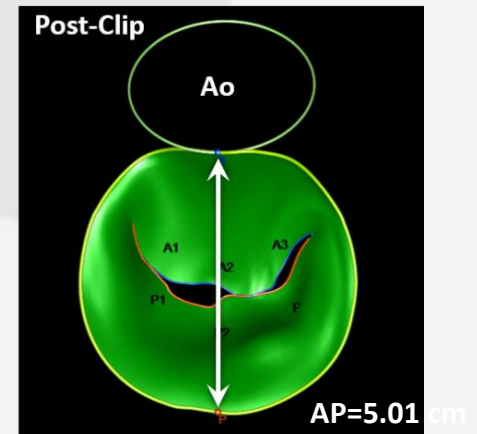
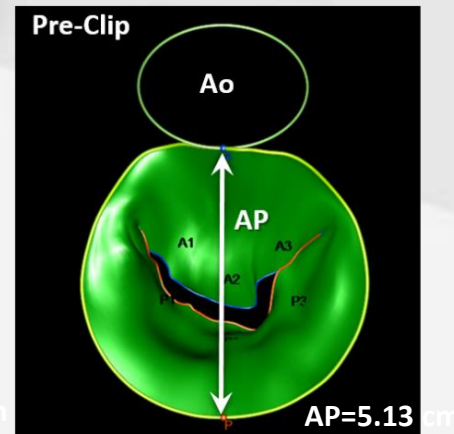
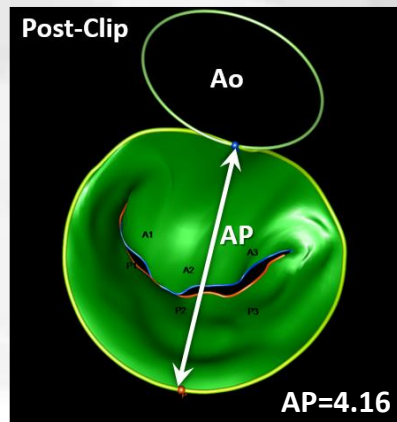
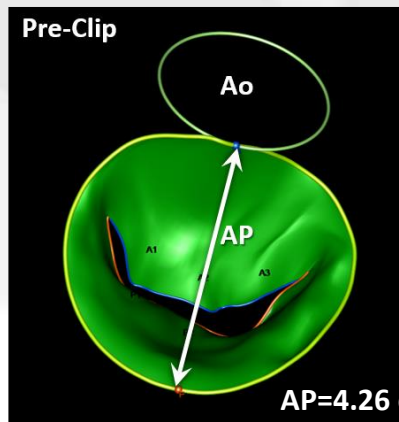
Comprehensive assessment of mitral valve geometry and cardiac remodeling with three-dimensional echocardiography after percutaneous mitral valve repair: correlations between mitral valve shape and mid-term outcome
Mantegazza V. Tamborini G. et al. Under review

Optimal showed significantly smaller:

- Pre-operative MVA (antero-posterior diameter 4.05 ± 0.59 vs. 4.43 ± 0.68 cm; anterolateral-posteromedial diameter 4.38 ± 0.56 vs. 4.70 ± 0.73 cm; MVA area: 14.8 ± 3.9 vs. 17.4 ± 5.3 cm²),
- Lower sphericity index and non-planar angle compared to Suboptimal.
- At 6MFU only Optimal patients showed significant decrease in left ventricular volumes and in pulmonary artery systolic pressure.

Optimal result = Δ regurgitation > 2+

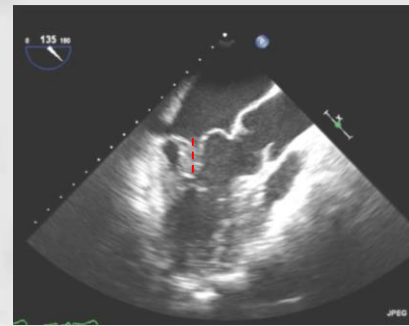
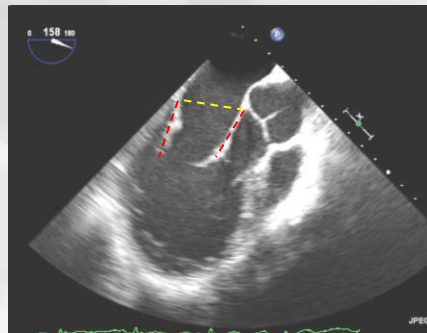
Suboptimal result = Δ regurgitation \leq 2+



Conclusions. : Remarkable changes in MVA geometry are observed in patients after MitraClip implantation and favorable LV remodeling is detected in patients with procedural success at 6MFU. A preprocedural antero-posterior diameter <4.44cm seems to be a potential predictor of mid-term optimal result.

ANELLO/LEMBI:

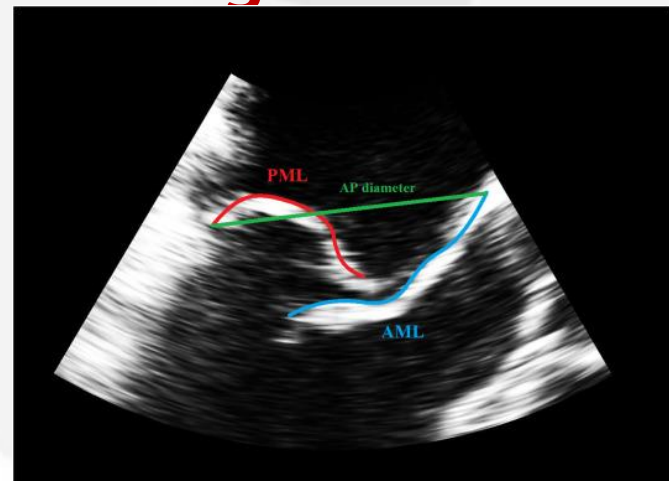
- **Lunghezza prevedibile di coaptazione =
Somma Lunghezza dei lembi - Larghezza anello**



- **Indice lembi/anello : Somma Lunghezza dei
lembi/Larghezza anello**

Logistic regression analysis identified LAI as positive prognostic predictor of MR≤mild for values >1.35 at 3months, 1.30 at 6months and 1.25 at 1year.

Colli A. et al. Int J cardiol April 2018

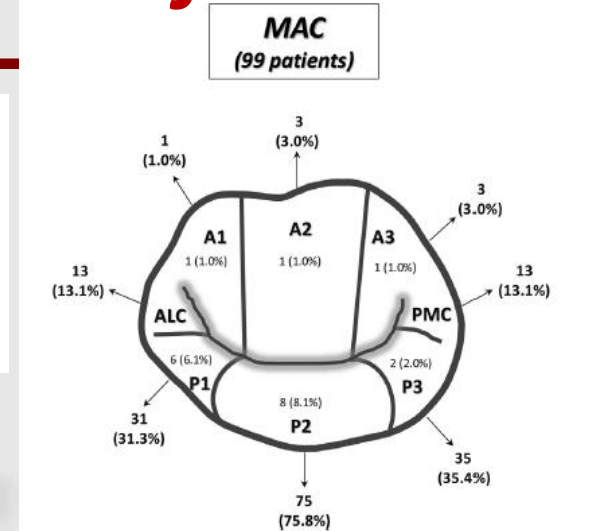


➤ **Analisi dell'anello: Le calcificazioni**

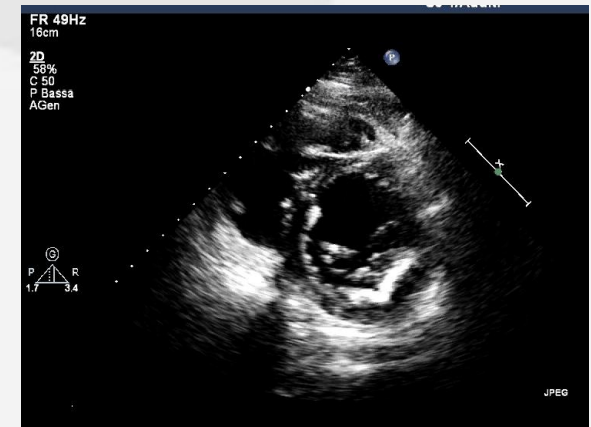
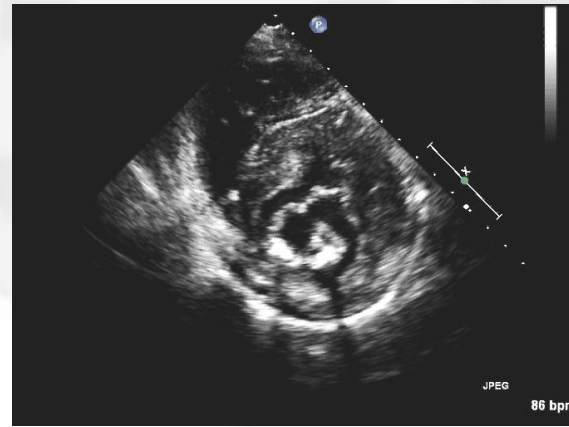
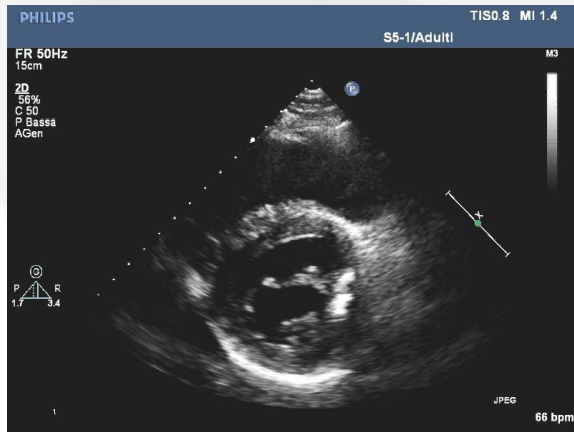
(Am J Cardiol 2014;113:1867–1873)

Prevalence of Calcification of the Mitral Valve Annulus in Patients Undergoing Surgical Repair of Mitral Valve Prolapse

Laura Fusini, MS^{a,*}, Sarah Ghulam Ali, MD^a, Gloria Tamborini, MD^a, Manuela Muratori, MD^a, Paola Gripari, MD^a, Francesco Maffessanti, PhD^a, Fabrizio Celeste, MD^a, Marco Guglielmo, MD^a, Claudia Cefalù, MD^a, Francesco Alamanni, MD^{a,b}, Marco Zanobini, MD^a, and Mauro Pepi, MD^a



Mitral annulus calcification were present in 99/410 patients (24%)



Cardioband, a transcatheter surgical-like direct mitral valve annuloplasty system: early results of the feasibility trial

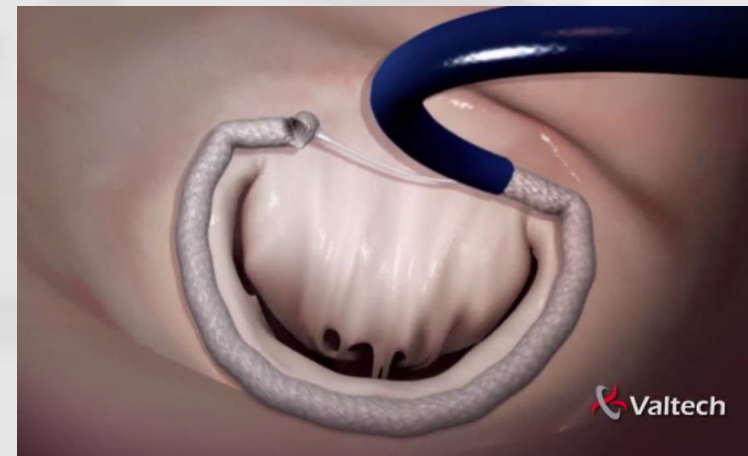
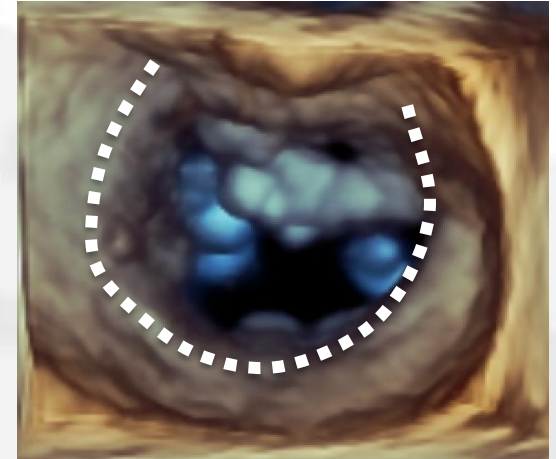
Francesco Maisano^{1*}, Maurizio Taramasso¹, Georg Nickenig², Christoph Hammerstingl², Alec Vahanian³, David Messika-Zeitoun³, Stephan Baldus⁴, Michael Huntgeburth⁴, Ottavio Alfieri⁵, Antonio Colombo⁵, Giovanni La Canna⁵, Eustachio Agricola⁵, Michel Zuber¹, Felix C. Tanner¹, Yan Topilsky⁶, Felix Kreidel⁷, and Karl-Heinz Kuck⁷

MAIN EXCLUSION CRITERIA

- Absence annular dilatation
- Calcification of the annulus
- LV ejection fraction $\leq 25\%$
- LV end-diastolic diameter ≥ 70 mm
- Eccentric jet orientation
- Mitral valve organic lesions:
>>> *DMR, Flail, Prolapse*

INCLUSION CRITERIA

- Freedom from vessels proximity

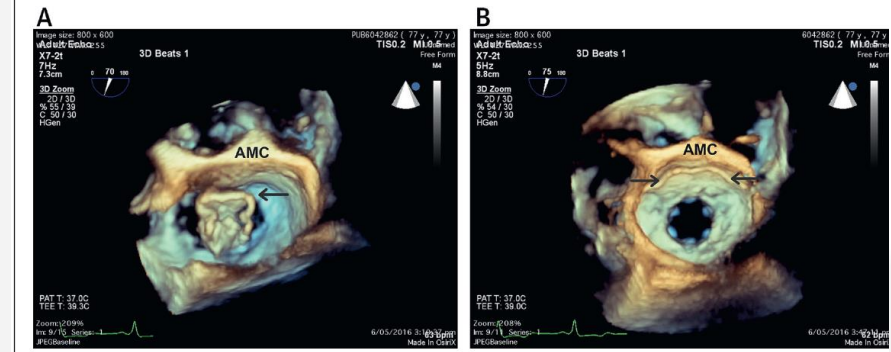




Transcatheter Mitral Valve Replacement for Patients With Symptomatic Mitral Regurgitation

A Global Feasibility Trial

David W.M. Muller, MBBS, MD,^a Robert Saeid Farivar, MD,^b Paul Jansz, MBBS, PhD,^a Richard Bae, MD,^b Darren Walters, MBBS, MPH,^c Andrew Clarke, MBBS,^c Paul A. Grayburn, MD,^d Robert C. Stoler, MD,^d Gry Dahle, MD,^e Kjell A. Rein, MD,^e Marty Shaw, MBBS,^a Gregory M. Scalia, MBBS,^c Mayra Guerrero, MD,^f Paul Pearson, MD,^f Samir Kapadia, MD,^g Marc Gillinov, MD,^g Augusto Pichard, MD,^h Paul Corso, MD,^h Jeffrey Popma, MD,ⁱ Michael Chuang, MD,^j Philipp Blanke, MD,^j Jonathon Leipsic, MD,^j Paul Sorajja, MD,^b
on behalf of the Tendyne Global Feasibility Trial Investigators

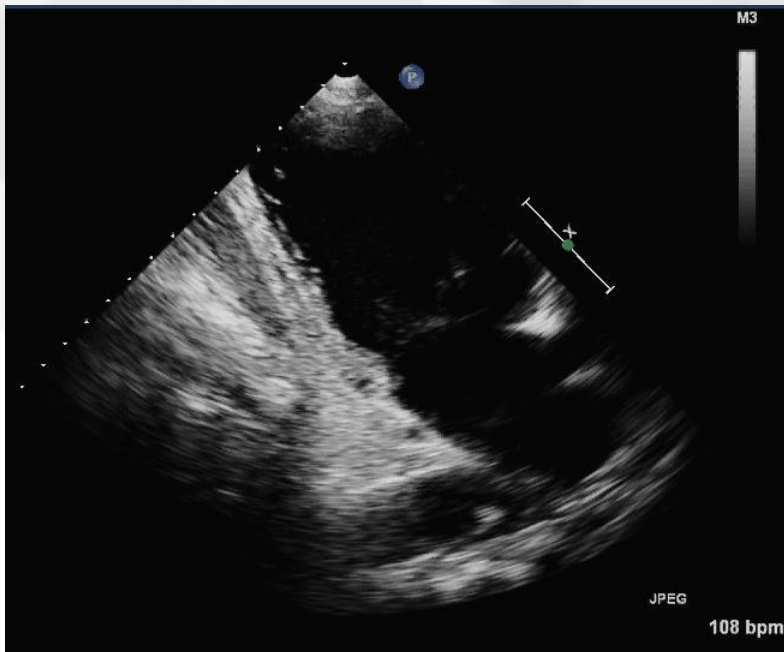
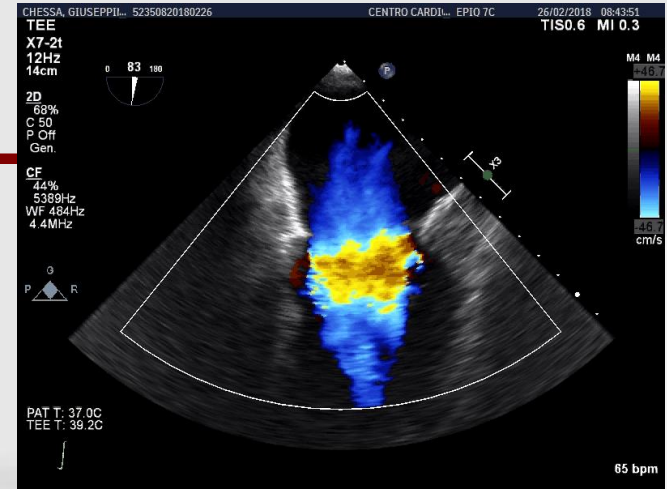


Left Ventricle Dimension
Left And Right Ventricular Function
Left Atrial Or Ventricular Thrombi
Severe Tricuspid Regurgitation
Papillary Muscles And Chordae Anatomy
Prior Mitral Or Aortic Valve Surgery,
Prior Transcatheter Mitral Intervention,
Artery Systolic Pressure >70mm Hg,
LVOT Dimensions And Orientation (Ct)
The presence of SAM

Navin Natarajan et al. *Cardiovasc Diagn Ther* 2016
Muller DVM et al *JACC* 2017

➤ *Analisi del prolasso:*

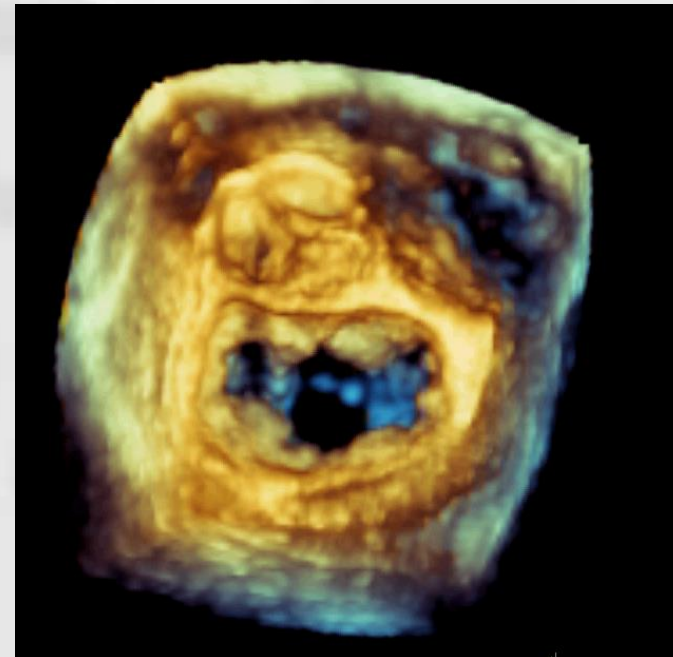
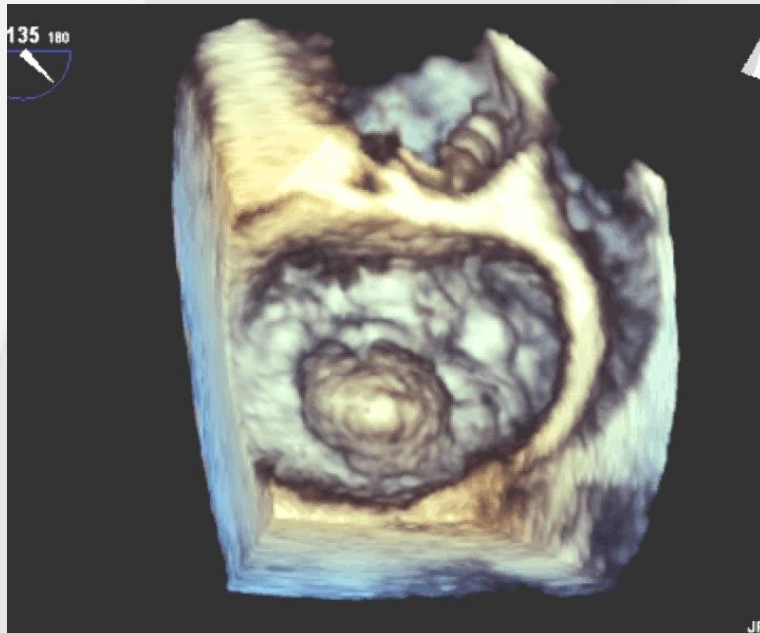
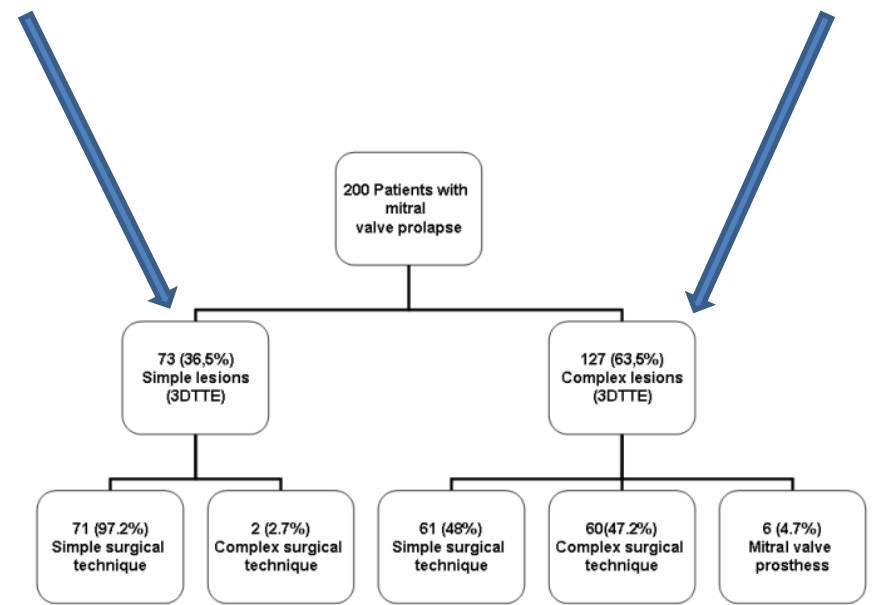
➤ *Sede ed ampiezza del prolasso/rigurgito (Barlow/FED)*





Pre-operative transthoracic real-time three-dimensional echocardiography in patients undergoing mitral valve repair: accuracy in cases with simple vs. complex prolapse lesions

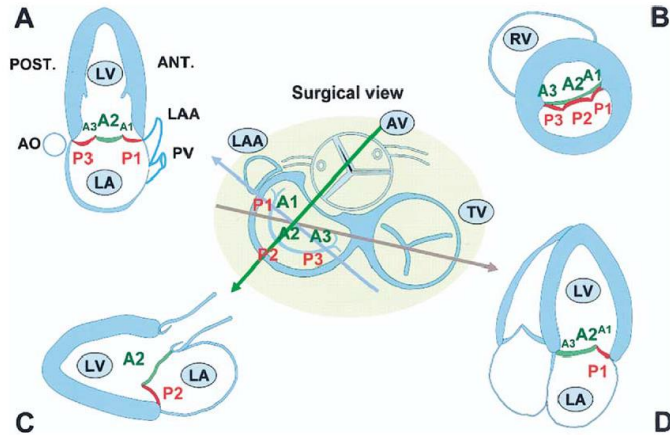
Gloria Tamborini*, Manuela Muratori, Anna Maltagliati, Claudia Agnese Galli, Moreno Naliato, Marco Zanobini, Francesco Alamanni, Luca Salvi, Erminio Sisillo, Cesare Fiorentini, and Mauro Pepi



Functional Assessment of Mitral Regurgitation by Transthoracic Echocardiography Using Standardized Imaging Planes

Diagnostic Accuracy and Outcome Implications

Jean-Luc Monin, MD,* Patrick Dehant, MD,† Cécile Roiron, MD,* Mehran Monchi, MD,‡
 Jean-Yves Tabet, MD,* Philippe Clerc, MD,† Guy Fernandez, MD,† Rémi Houel, MD,‡
 Jérôme Garot, MD, PhD,* Christophe Chauvel, MD,† Pascal Gueret, MD, FACC*

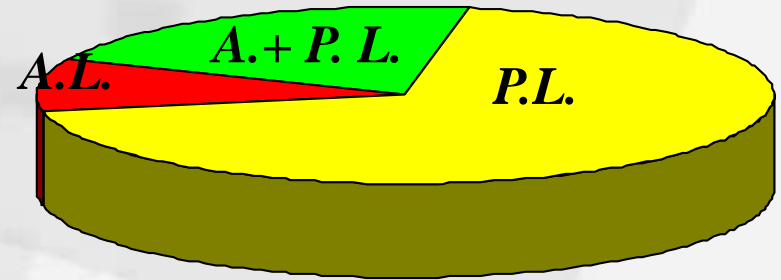


ACCURATEZZA v.s. CHIRURGIA	TTE	TEE
Complessiva	91%	93%
P2 (prolasso semplice)	95%	98%
Prolasso complesso (bilembo)	60%	67%

J Heart Valve Dis 2001 Jan;10(1):65-71

Transesophageal echocardiography as predictor of mitral valve repair.

Muratori M, Berti M, Doria E, Antona C, Alamanni F, Sisillo E, Salvi L, Pepi M

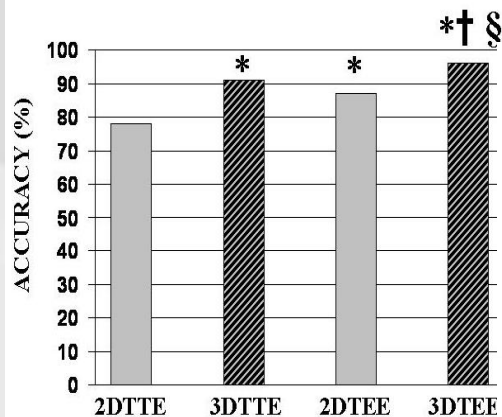


ACCURATEZZA v.s. CHIRURGIA	TEE
Lembo posteriore	97.5%
Lembo anteriore	95%
Prolasso complesso (bilembo)	96%

Head-to-Head Comparison of Two- and Three-Dimensional Transthoracic and Transesophageal Echocardiography in the Localization of Mitral Valve Prolapse

Mauro Pepi, MD, Gloria Tamborini, MD, Anna Maltagliati, MD, Claudia Agnese Galli, MD, Erminio Sisillo, MD, Luca Salvi, MD, Moreno Naliato, MD, Massimo Porqueddu, MD, Alessandro Parolari, MD, Marco Zanobini, MD, Francesco Alamanni, MD

Milan, Italy



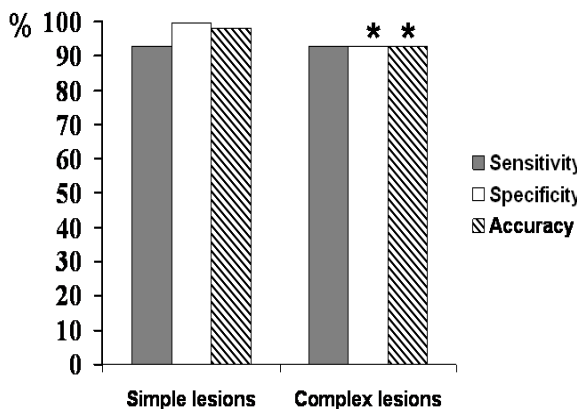
European Journal of Echocardiography Advance Access published May 20, 2010



European Journal of Echocardiography
 doi:10.1093/ejehocard/epq066

Pre-operative transthoracic real-time three-dimensional echocardiography in patients undergoing mitral valve repair: accuracy in cases with simple vs. complex prolapse lesions

Gloria Tamborini*, Manuela Muratori, Anna Maltagliati, Claudia Agnese Galli, Moreno Naliato, Marco Zanobini, Francesco Alamanni, Luca Salvi, Erminio Sisillo, Cesare Fiorentini, and Mauro Pepi



Int J Cardiovasc Imaging. 2018 Feb 26.

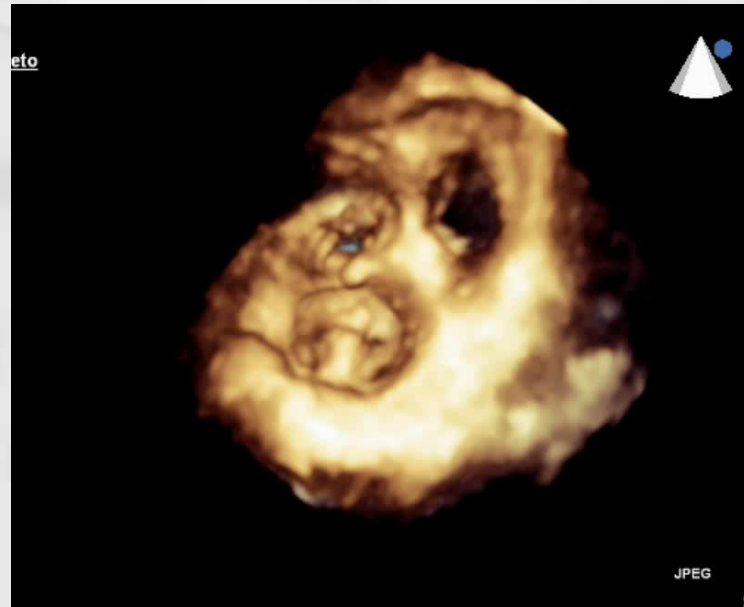
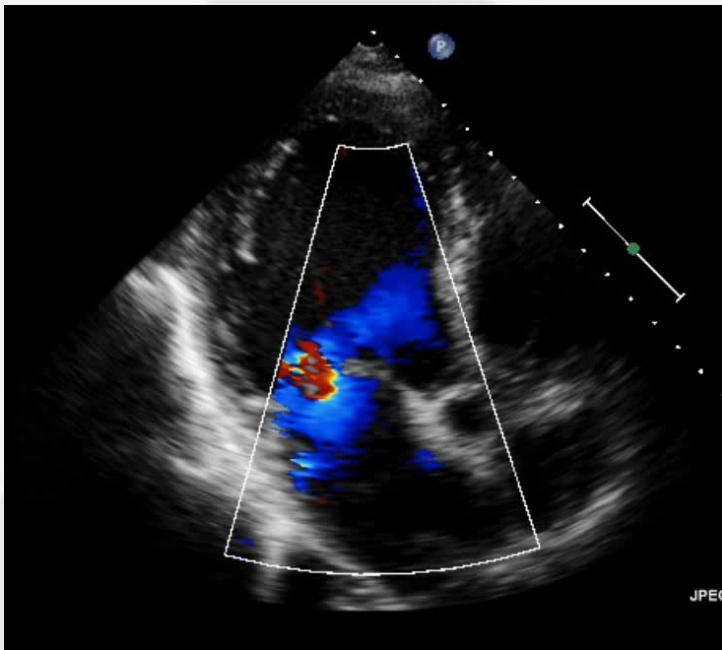
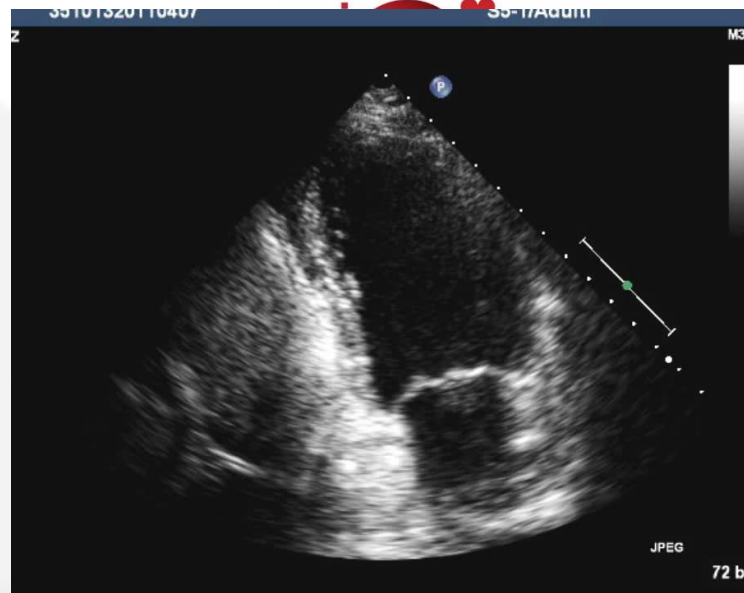
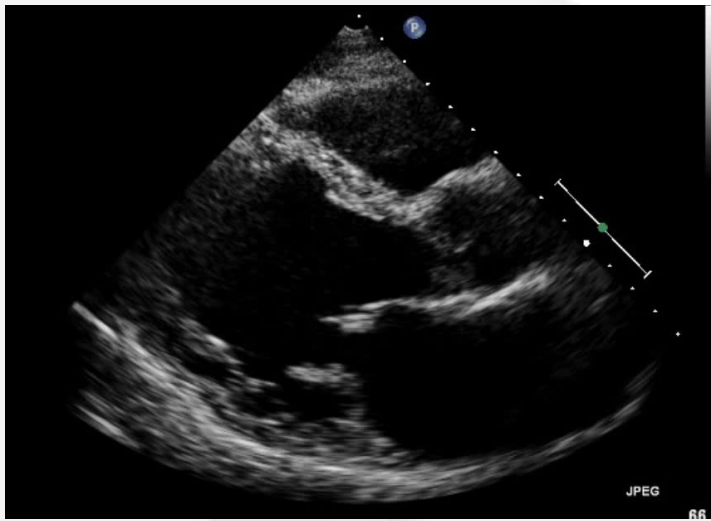
ORIGINAL PAPER

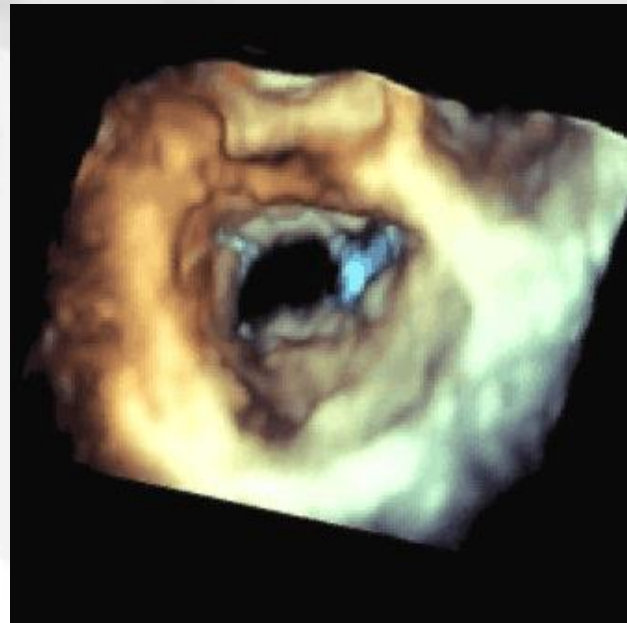
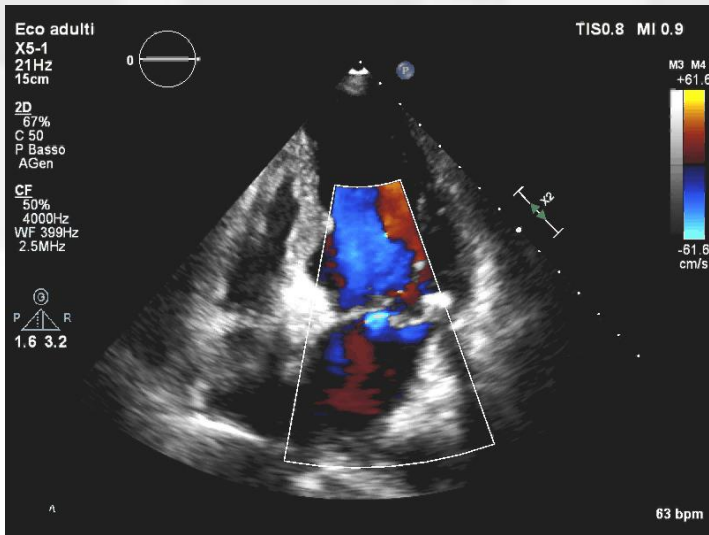
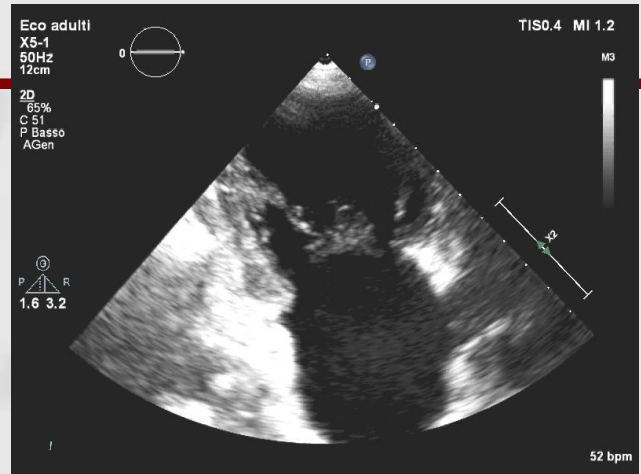
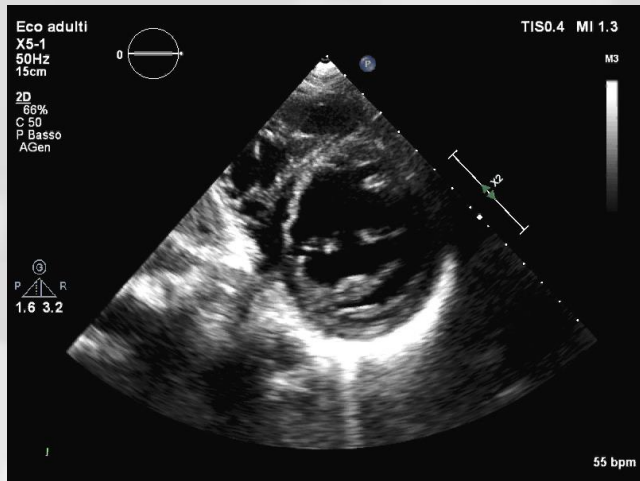


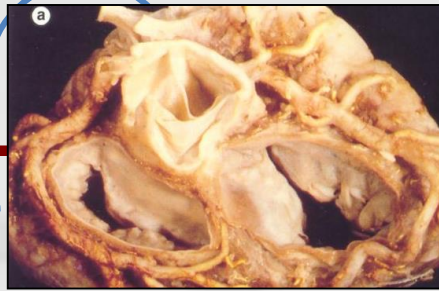
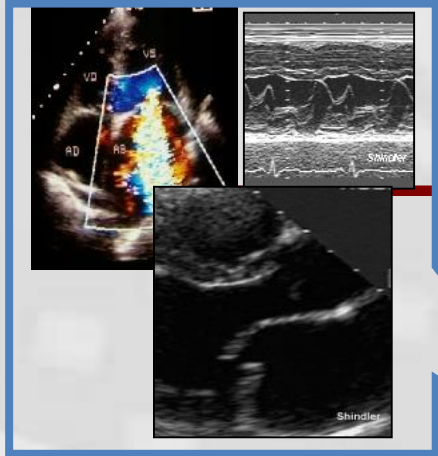
Transthoracic echocardiography in patients undergoing mitral valve repair: comparison of new transthoracic 3D techniques to 2D transoesophageal echocardiography in the localization of mitral valve prolapse

Paola Gripari¹ · Massimo Mapelli¹ · Ilaria Bellacosa¹ · Concetta Piazzese¹ · Maria Milo¹ · Laura Fusini¹ · Manuela Muratori¹ · Sarah Ghulam Ali¹ · Gloria Tamborini¹ · Mauro Pepi¹

	Accuracy		
	3DTTE (%)	2DTEE (%)	3DColour (%)
P1	93	92	94
P2	97	95	97
P3	87	88	89
PL	87	80	87
A1	98	98	98
A2	93	91	96
A3	92	94	94
AL	94	94	95
PMC	93#	87	95#
Overall	93#	91	94#







Int J Cardiovasc Imaging 2010

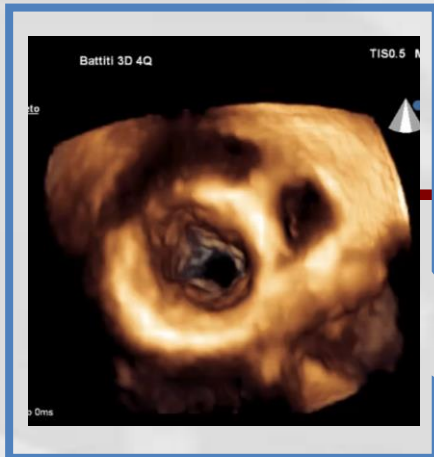
ORIGINAL PAPER

Real-time three-dimensional transoesophageal echocardiography: a new intraoperative feasible and useful technology in cardiac surgery

Paola Gripari · Gloria Tamborini · Paolo Barbier · Anna C. Maltagliati · Claudia A. Galli · Manuela Muratori · Luca Salvi · Erminio Sisillo · Francesco Alamanni · Mauro Pepi

Table 5 Detection of mitral valve pathology with 2D TEE and 3D TEE by a surgeon and an echocardiographer

	Surgeon	Echocardiographer	<i>P</i> -value
2D TEE accuracy	76%	88%	0.000
3D TEE accuracy	88%*	96%*	0.191



Int J Cardiovasc Imaging 2010

ORIGINAL PAPER

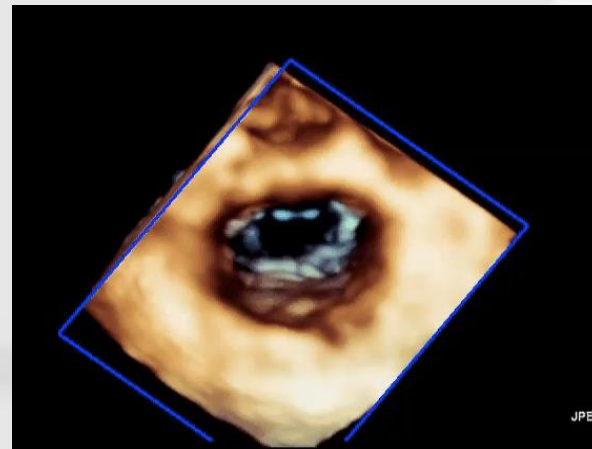
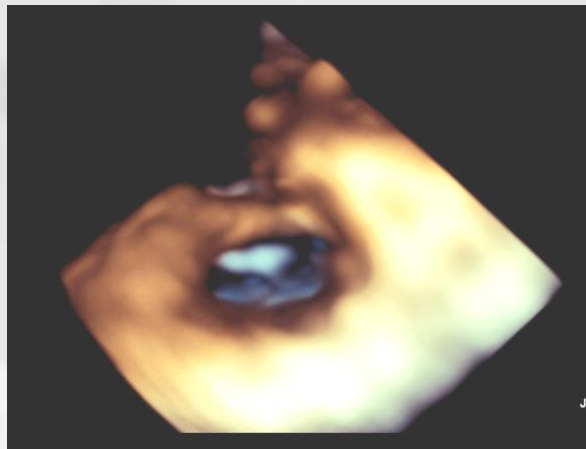
Real-time three-dimensional transoesophageal echocardiography: a new intraoperative feasible and useful technology in cardiac surgery

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Table 5 Detection of mitral valve pathology with 2D TEE and 3D TEE by a surgeon and an echocardiographer

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Qual è l'intruso?



41

