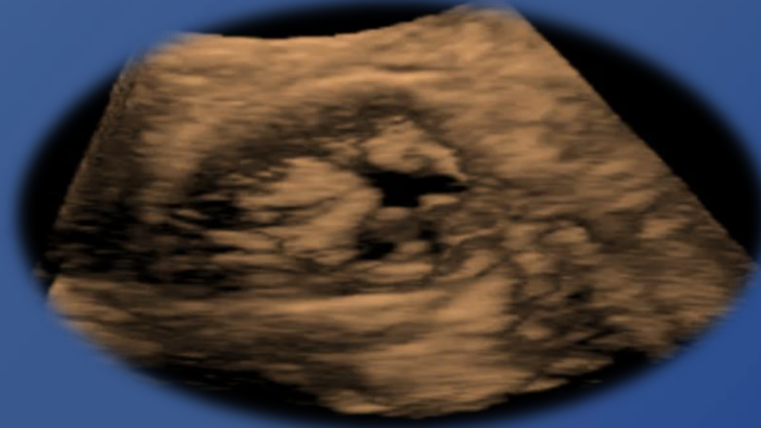




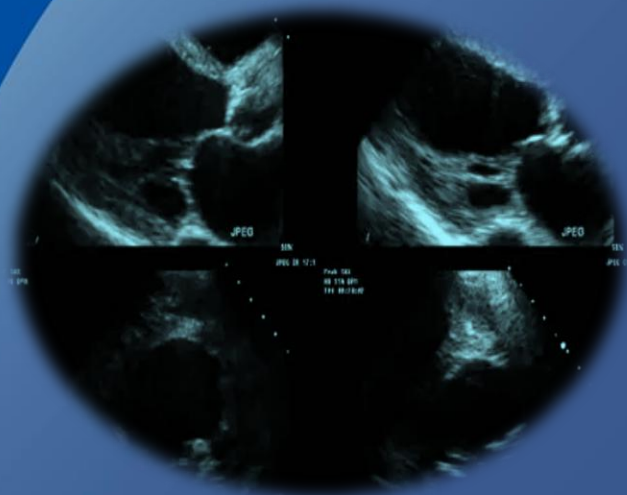
LIV Jornadas SOLACI
Ciudad de Panamá



Estenosis aórtica Bajo flujo/Bajo gradiente.



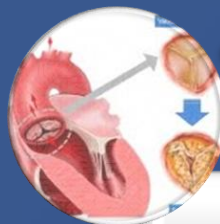
Dra Cleisy Clarivel Díaz De León
Cardióloga.
Mayo, 2026.



Señalar la importancia de otras técnicas de imagen.



Mencionar errores en la Cuantificación.



Describir los principales fenotipos.

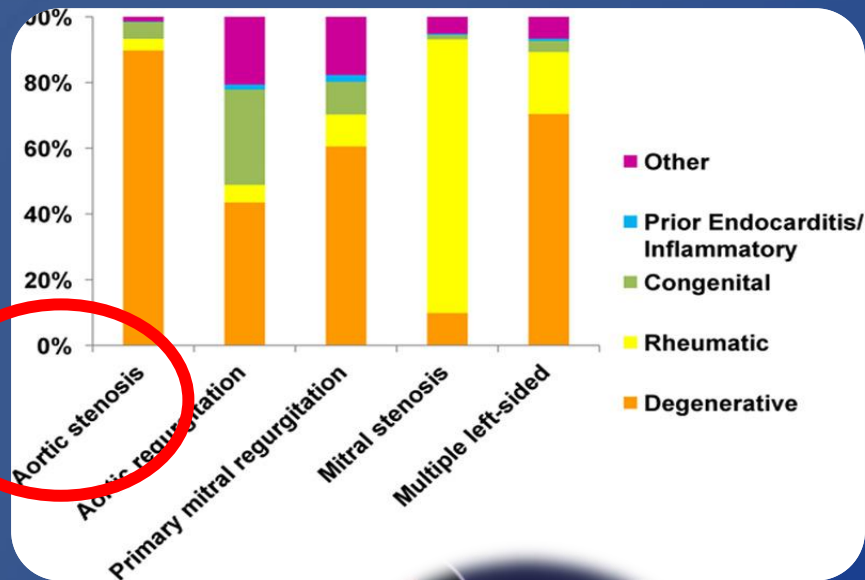


Generalidades de estenosis aortica BF/BG.

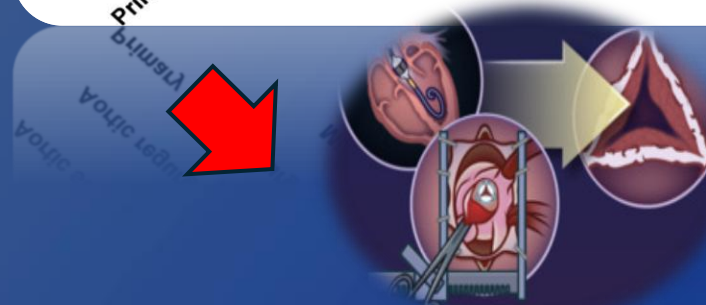
Generalidades.

- Más de 7,5 millones entre adultos mayores de 75 años

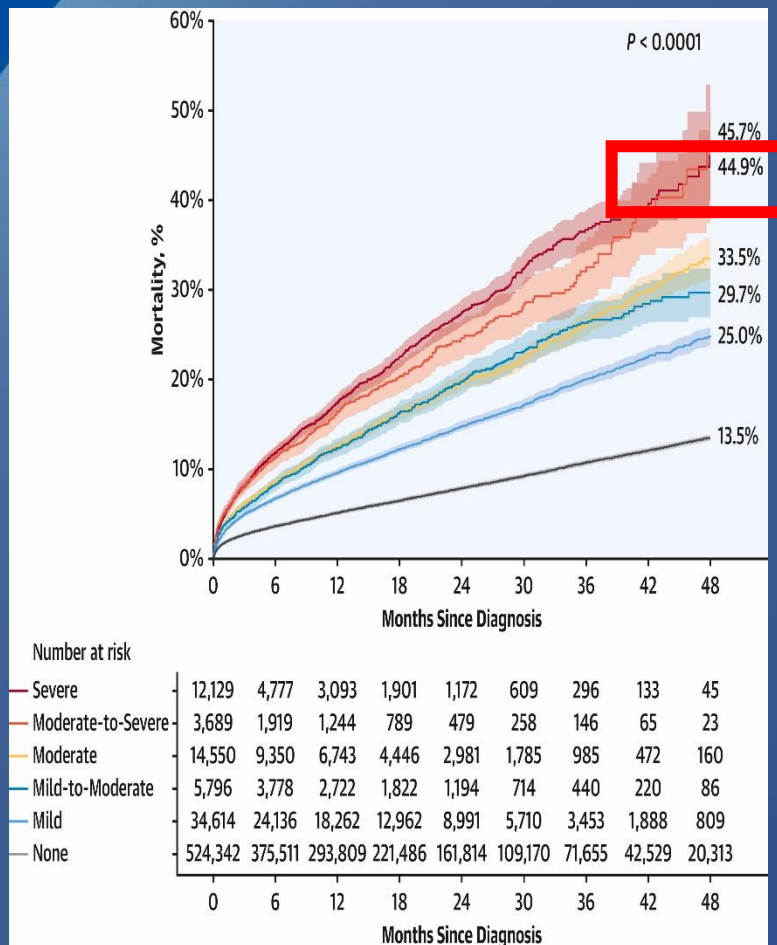
7247 pacientes Con estenosis valvular severa o intervenida previamente.
Media de edad: 71 años.



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Circulation, Volume 140, Issue 14, 1 October 2019; Pages 1156-1169



- 595,120 pacientes con estenosis aórtica.
- Mayor tasa de mortalidad en todos los grados.

AS Severity	AS Severity		4-Year Treatment Rates With AVR	4-Year Mortality Without AVR
	ACC/AHA Dx	Intermediate Dx		
595,120 Patients With AS Assessment				
No AS: 524,342 (88.1%)				
AS Dx: 70,778 (11.9%)				
Mild AS	61,293 (86.6%)	9,485 (13.4%)	1.0%	25.0%
Mild AS	34,614 (48.9%)			
Mild-to-Moderate AS			4.2%	29.7%
Mild-to-Moderate AS	14,550 (20.6%)		11.4%	33.5%
Moderate-to-Severe AS			36.7%	45.7%
Moderate-to-Severe AS	3,689 (5.2%)			
Severe AS			60.7%	44.9%
Severe AS	12,129 (17.1%)			

Généreux P. et al. J Am Coll Cardiol. 2023;82(22):2101-2109.

Estenosis aórtica severa.

Recommendations for Standard Clinical Practice

(Level 1 Recommendation = appropriate in all patients with AS).

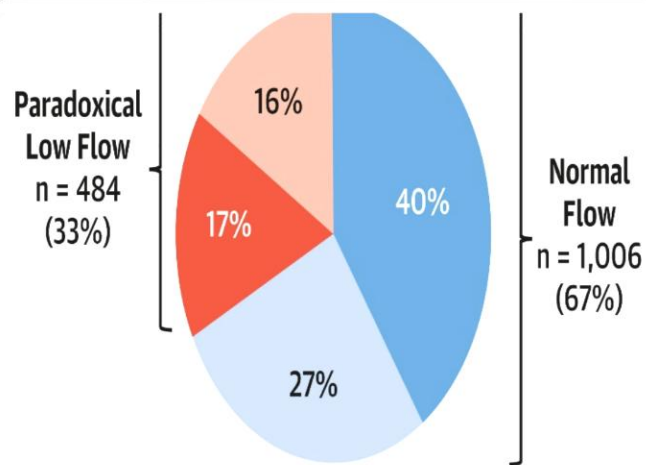
The primary haemodynamic parameters recommended for clinical evaluation of AS severity are:

- AS peak jet velocity.
- Mean transvalvular pressure gradient.
- Aortic valve area by continuity equation.

Table 3 Recommendations for grading of AS severity

	Aortic sclerosis	Mild	Moderate	Severe
Peak velocity (m/s)	≤2.5 m/s	2.6–2.9	3.0–4.0	≥4.0
Mean gradient (mmHg)	–	<20	20–40	≥40
AVA (cm ²)	–	>1.5	1.0–1.5	<1.0
Indexed AVA (cm ² /m ²)	–	>0.85	0.60–0.85	<0.6
Velocity ratio	–	>0.50	0.25–0.50	<0.25

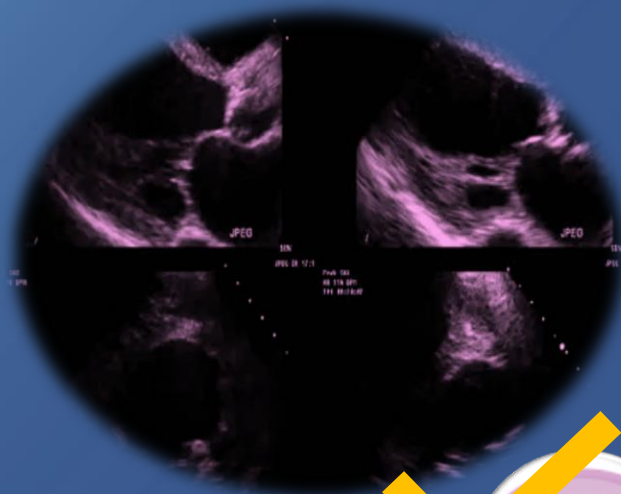
1490 pacientes incluidos en el estudio, 1006 (67%) estaban en el grupo NF



■ Normal Flow - High Gradient ■ Normal Flow - Low Gradient
■ Low Flow - High Gradient ■ Low Flow - Low Gradient

Autores, año	Tipo de estudio (número de pacientes)	Características de los pacientes	Tipo de EAo n (%)	Resultados	Limitaciones
Hachicha et al ¹ , 2007	Retrospectivo (512)	Sintomáticos y asintomáticos	EAo BF 181 (35%)	Peor pronóstico que EAo de flujo normal, sobre todo si se someten a tratamiento médico	Presencia de enfermedad coronaria y otra comorbilidad No se especifican criterios para indicar cirugía No se especifica la causa de la muerte (causa cardiovascular solo en el 50% de los casos)
Lancellotti et al ² , 2012	Prospectivo (150)	Asintomáticos	EAo BF/BG 11 (7%)	Peor pronóstico para el subgrupo BF/BG comparado con el resto de los subgrupos	Bajo número de pacientes BF/BG que puede limitar la interpretación de los datos
Jander et al ⁴ , 2011	Prospectivo (1.525)	Asintomáticos	EAo BG 435 (29%)	Similar pronóstico que la EAo moderada	Estudio diseñado para otro propósito Población más joven, menos HTA y con menor HVI Solo el 51% de EAo BG tenía BF No se indexa el AVA por superficie corporal
Clavel et al ³ , 2012	Retrospectivo (1.589)	Sintomáticos y asintomáticos	EAo BF/BG 223 (14%)	Peor pronóstico comparado con EAo de gradiente elevado o EAo moderada Se benefician de la cirugía	Presencia de enfermedad coronaria y otra comorbilidad No se especifican criterios para indicar cirugía (EAo asintomática pero necesidad de otra intervención, necesidad de intervención no cardíaca, EAo moderada sintomática, etc.) No se especifica la causa de muerte (35% muerte de causa no cardiovascular)
Tribouilloy et al ⁵ , 2015	Retrospectivo (809)	Sintomáticos y asintomáticos	BF/BG 57 (7%)	Similar pronóstico que la EAo moderada No se benefician de la cirugía	Presencia de enfermedad coronaria y otra comorbilidad No se especifican criterios para indicar cirugía Se excluyen pacientes intervenidos en los primeros 3 meses postdiagnóstico

Galian, A. Evangelista / Rev Esp Cardiol. 2015;68(8):649-652



Señalar la importancia de otras técnicas de imagen.



Mencionar principales errores en la medición.



Describir los principales fenotipos.



Generalidades de estenosis aortica BF/BG.

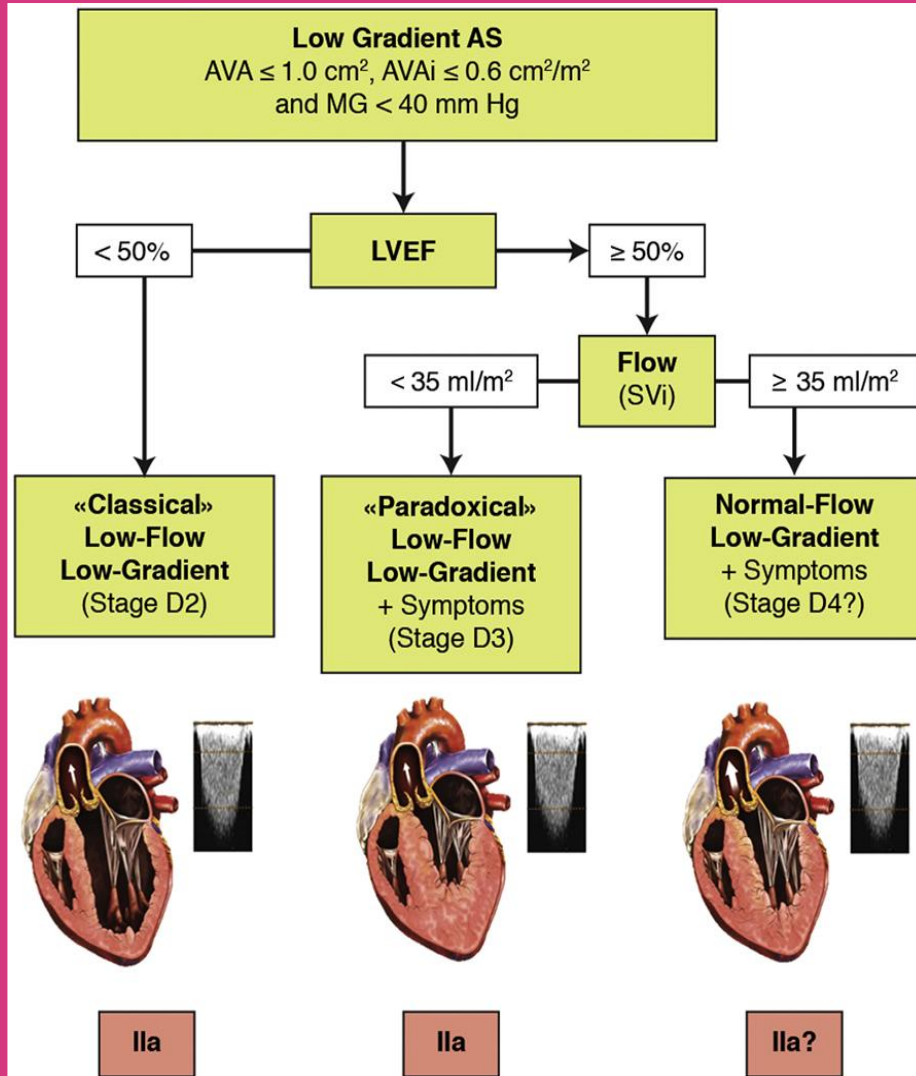
Criterios concordantes:

- La EA de alto gradiente [gradiente medio ≥ 40 mmHg, $V_{\max} \geq 4.0$ m/s, $AVA \leq 1 \text{ cm}^2$ ($0 \leq 0.6 \text{ cm}^2/\text{m}^2$)] se considera grave, independientemente de la función del VI y de las condiciones de flujo.

Criterios discordantes:

- EA de bajo flujo y bajo gradiente con FEVI reducida (gradiente medio < 40 mmHg, $AVA \leq 1 \text{ cm}^2$, $iVS \leq 35 \text{ mL}/\text{m}^2$, $FEVI < 50\%$).
- EA de bajo flujo y bajo gradiente con FEVI conservada (gradiente medio < 40 mmHg, $AVA \leq 1 \text{ cm}^2$, $iVS \leq 35 \text{ mL}/\text{m}^2$, $FEVI \geq 50\%$).
- EA de flujo normal y bajo gradiente con FEVI conservada (gradiente medio < 40 mmHg, $AVA \leq 1 \text{ cm}^2$, $iVS > 35 \text{ mL}/\text{m}^2$, $FEVI \geq 50\%$).
- EA de alto gradiente discordante (gradiente medio ≥ 40 mmHg, $AVA > 1 \text{ cm}^2$).

Guía ESC/EACTS 2025 sobre el manejo de las valvulopatías



Ila

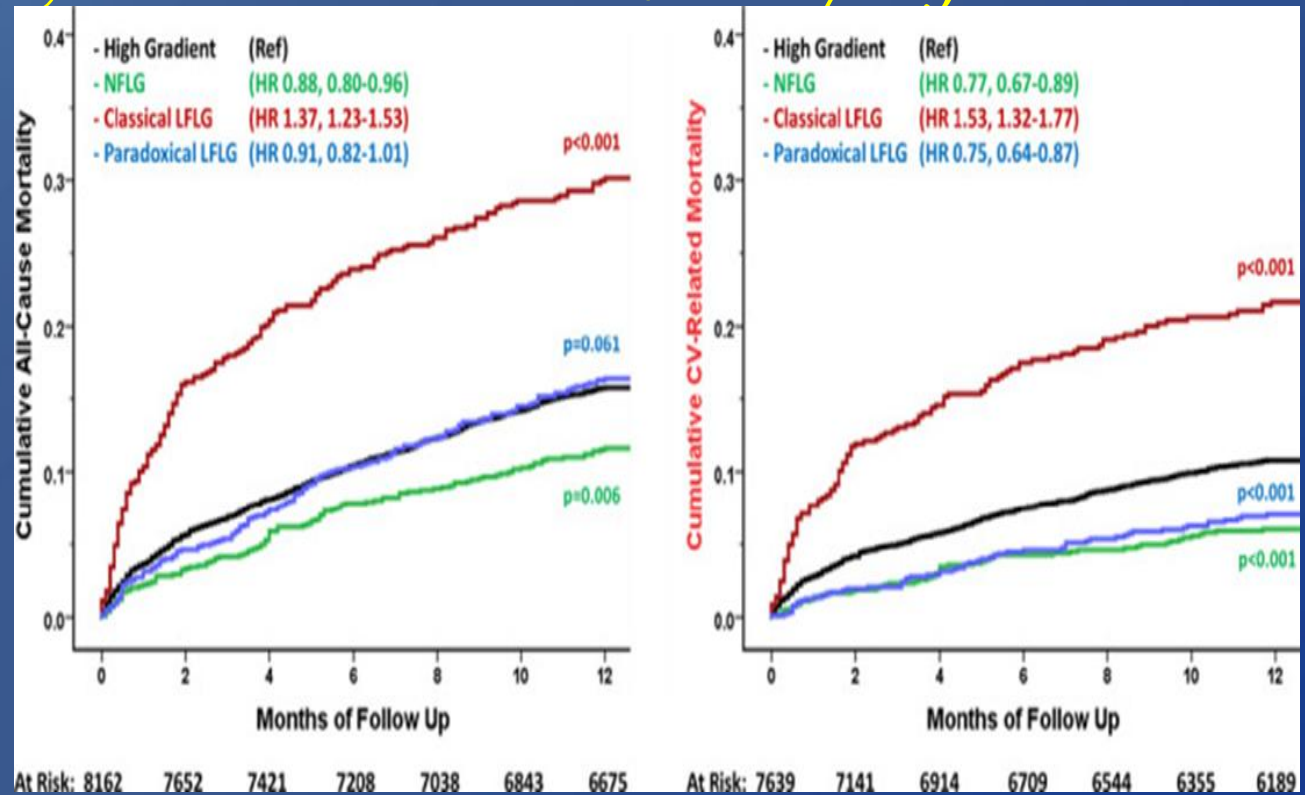
Ila

Ila?



Mayor mortalidad en EA BF/BG.

-12 mil pacientes con estenosis aórtica severa.
-53% de bajo gradiente.



Fenotipos.

**Normal-LVEF
normal-flow
high-gradient**



**Normal-LVEF
"paradoxical"
low-flow
low-gradient**



**Low-LVEF
"classic"
low-flow
low-gradient**



- 512 pacientes con EA severa y FEVI normal.
- 35% con bajo flujo.

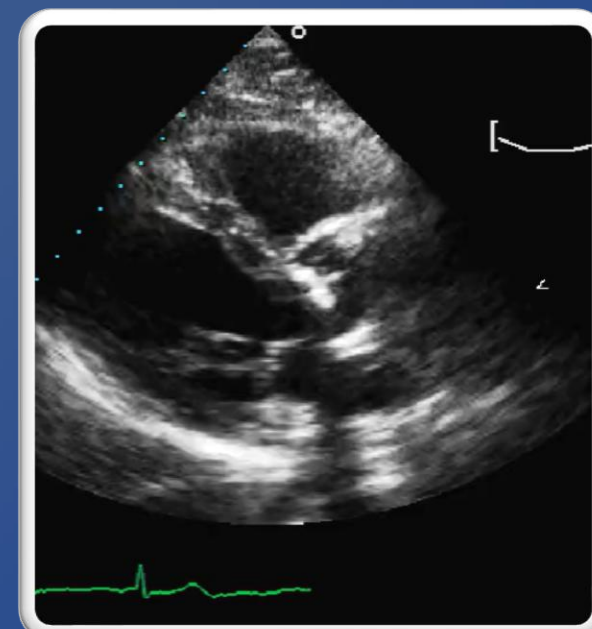
Estenosis aórtica BF/BG. FEVI normal.

TABLE 1. Comparison of Clinical and Systemic Arterial Data in NF and PLF Groups (Table view)

	NF Group (n=331)	PLF Group (n=181)	P	Adjusted P [†]	Overall Adjusted P [†]
Gender, %					
Females	39	51	<0.05	NS	NS
Males	61	49			
Age, y	69±14	73±13	0.004	NS	NS
Body surface area, m ²	1.8±0.2	1.8±0.2	NS	NS	NS
Risk factors and concomitant diseases, %					
Obesity	34	74	NS	NS	NS
Hypertension	68	74	NS	NS	NS
Diabetes	26	28	NS	NS	NS
Hypercholesterolemia	57	52	NS	NS	NS
Coronary artery disease	56	65	NS	NS	NS
Previous myocardial infarction	21	26	NS	NS	NS
Systemic arterial hemodynamics					
Systolic arterial pressure, mm Hg [‡]	134±22	131±21	NS	NS	NS
Diastolic arterial pressure, mm Hg [‡]	72±10	74±11	NS	NS	NS
Systemic vascular resistance, mm Hg · min · L ⁻¹ ‡	1508±380	1986±677	<0.001	<0.001	0.002
Systemic arterial compliance, mL · mm Hg ⁻¹ · m ⁻² ‡	0.8±0.3	0.6±0.2	<0.001	<0.001	<0.001
Systemic arterial compliance<0.6, % [‡]	30	57	<0.001	<0.001	<0.001

Values are expressed as mean±SD or %. NS indicates not significant.

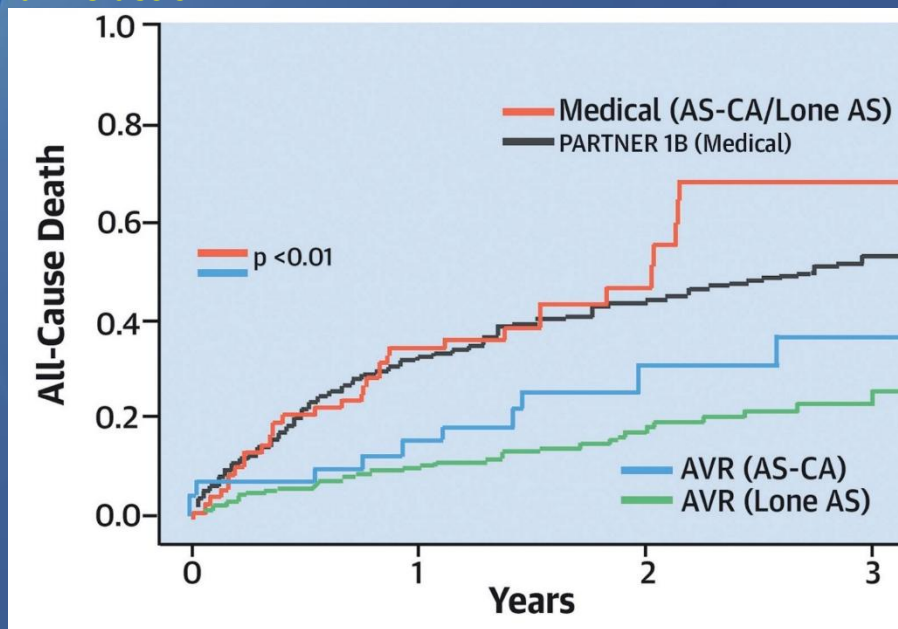
[†]P value adjusted for age and gender.



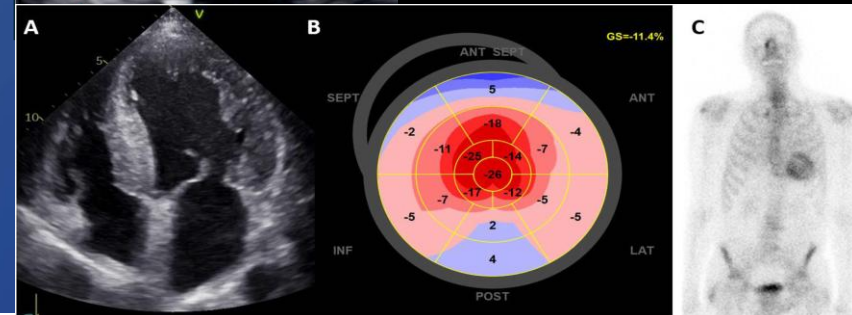
$$Z_{va} = \frac{(sBP + \Delta P_{net})}{SVI}$$

AMILOIDOSIS CARDIACA CON EA

- 407 pacientes con EA.
- Multicéntrico, prospectivo.
- Edad media de 83 años.
- Mayor mortalidad en pacientes con amiloidosis.



Nilsche et al. Outcome of Cardiac Amyloidosis and Aortic Stenosis, JACC 2021.



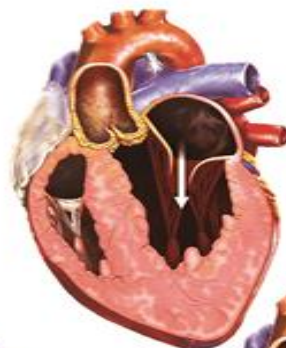


Fenotipos.

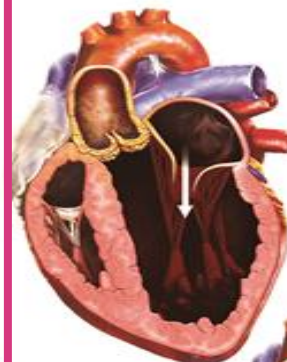
**Normal-LVEF
normal-flow
high-gradient**



**Normal-LVEF
"paradoxical"
low-flow
low-gradient**



**Low-LVEF
"classic"
low-flow
low-gradient**

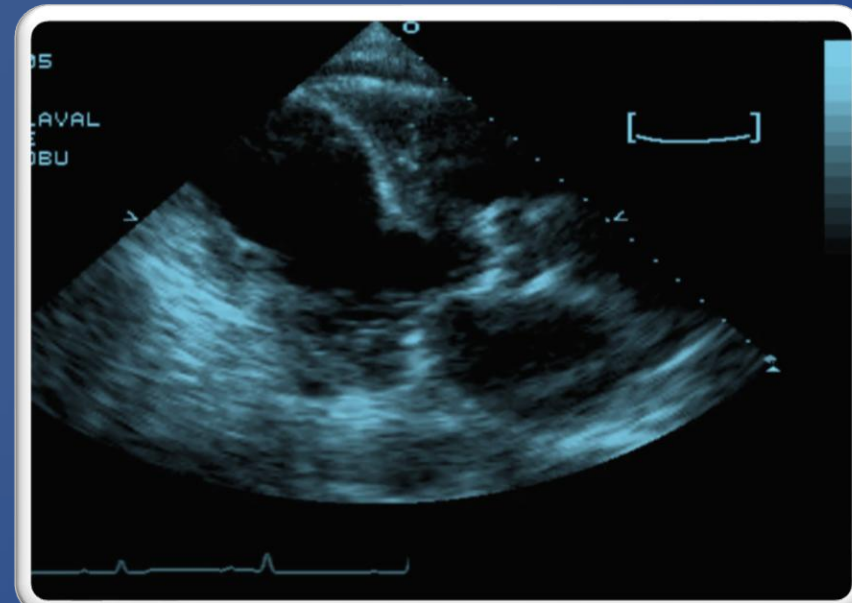


ESTENOSIS AÓRTICA BF/BG CON FEVI REDUCIDA.

- TOPAS trial.
- 101 Pacientes con bg/bf FEVI reducida.

Table 1. Demographic and Clinical Data

Variables	All Patients (n=101)	No AVR Group (n=57, 56%)	AVR Group (n=44, 44%)	P
Demographics				
Age, years	71±10	73±9	67±10	0.003
Male gender, n (%)	78 (77)	44 (77)	34 (77)	0.82
Body surface area, m ²	1.87±0.23	1.86±0.24	1.88±0.21	0.62
NYHA functional class ≥III, n (%)	49 (49)	26 (47)	23 (52)	0.64
DASI	26±14	27±15	26±13	1.0
6MWT distance, m	310±120	309±123	311±118	0.96
Systolic blood pressure, mm Hg	119±20	123±19	115±20	0.04
Diastolic blood pressure, mm Hg	72±11	72±10	72±12	0.78
Heart rate, beats/min	71±13	70±13	72±13	0.48
BNP, pg/mL (range)	534 (215–964)	410 (166–859)	695 (395–1310)	0.029
Risk factors and concomitant diseases				
Coronary artery disease, n (%)	76 (75)	44 (77)	32 (73)	0.78
Multivessel coronary disease, n (%)	46 (46)	25 (44)	21 (48)	0.85
Previous myocardial infarction, n (%)	61 (60)	42 (74)	19 (43)	0.004
Previous CABG, n (%)	28 (28)	16 (28)	12 (27)	0.9
Diabetes, n (%)	40 (40)	19 (33)	21 (48)	0.21
Hypertension, n (%)	60 (59)	37 (65)	23 (52)	0.28
Renal failure, n (%)	24 (24)	16 (28)	8 (18)	0.43
COPD, n (%)	27 (27)	13 (23)	14 (32)	0.36
Current medications				
β-blocker, n (%)	63 (62)	37 (65)	26 (59)	0.70
ACEI/ARB, n (%)	71 (70)	43 (75)	28 (64)	0.29
Statin, n (%)	81 (80)	46 (80)	35 (80)	0.98
Coronary revascularization during follow-up, n (%)				
CABG, n (%)	33 (33)	3 (5)	30 (68)	<0.001
PCI, n (%)	11 (11)	11 (19)	0 (0)	<0.001





- FEVI reducida y bajo gradiente con peor pronóstico.(1980)

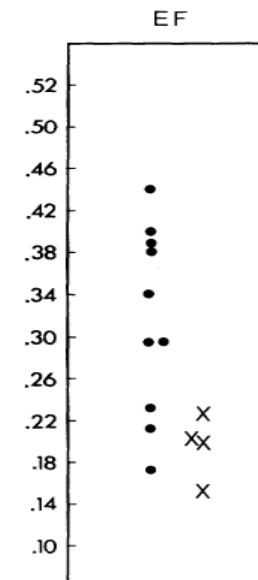
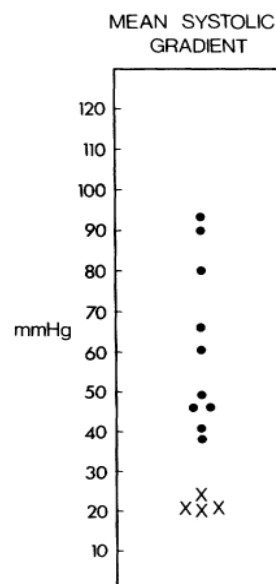
Hemodynamic Determinants of Prognosis of Aortic Valve Replacement in Critical Aortic Stenosis and Advanced Congestive Heart Failure

BLASE A. CARABELLO, M.D., LAURENCE H. GREEN, M.D., WILLIAM GROSSMAN, M.D., LAWRENCE H. COHN, M.D., J. KENNETH KOSTER, M.D., AND JOHN J. COLLINS, JR., M.D.

NYHA CLASSIFICATION	PRE-OP	POST-OP
I	0	8
II	0	2
III	8	0
IV	3	1

Transitions: I to II (6), I to III (2), II to III (2), III to IV (2), IV to I (1)

FIGURE 1. Preoperative and postoperative New York Heart Association (NYHA) classification of operative survivors who underwent aortic valve replacement for aortic stenosis and left ventricular failure

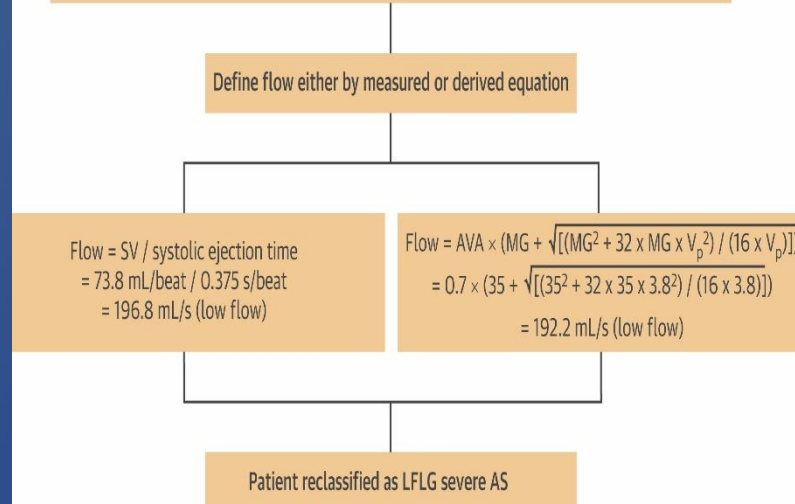


ESTENOSIS AÓRTICA CON FLUJO NORMAL CON FEVI PRESERVADA



BSA 1.9 m², LVOT 2.0 cm, LVOT VTI 23.5 cm; SVi = 38.8 mL/beat/m² (normal flow)
AVA 0.7 cm², AVAi 0.3 cm²/m², AV mean gradient 35 mm Hg, AV peak velocity 3.8 m/s, DI 0.22
According to these parameters, this patient has NFLG severe AS

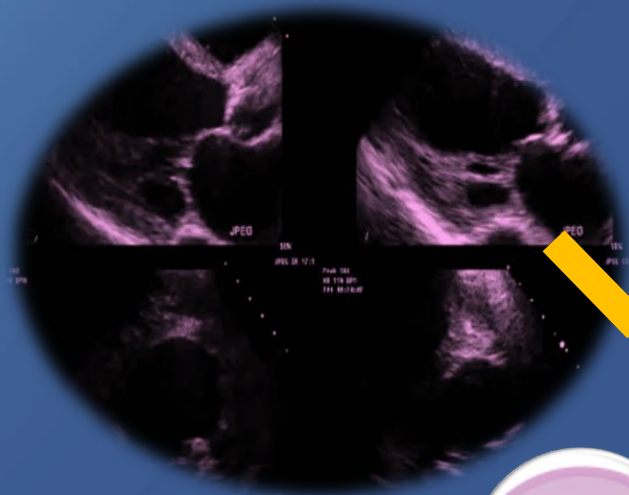
AVA ≤1 cm ² AVAi ≤0.6 cm ² /m ²	EACVI/ASE (2017)	ACC/AHA (2020)	ESC/EACTS (2021)
High Gradient	Severe AS	Severe AS, consider AVR	Severe AS, consider AVR
Low Gradient Low Flow Low EF	1. Rule out pseudosevere AS with dobutamine stress echocardiography. 2. Rule out measurement errors. 3. Aortic valve calcium score by MDCT.		
Low Gradient Low Flow Normal EF	1. Rule out measurement errors. 2. Aortic valve calcium score by MDCT.		
Low Gradient Normal Flow Normal EF	Usually moderate AS; can consider supportive data	Not discussed	Moderate AS



Elkaryoni A, et al. JACC Cardiovasc Imaging. 2024;17(8):926-936.

Manejo quirúrgico.

Recomendaciones	Clase ^a	Nivel ^b
Pacientes sintomáticos con estenosis aórtica grave		
Se recomienda la intervención en pacientes sintomáticos con EA grave de alto gradiente (gradiente medio ≥ 40 mmHg, $V_{\text{máx}} \geq 4,0$ m/s, $AVA \leq 1,0$ cm ² [$0 \leq 0,6$ cm ² /m ² de SC]). ^{388,471-474}	I	B
Se recomienda la intervención en pacientes sintomáticos con EA de bajo flujo ($SVi \leq 35$ mL/m ²) y bajo gradiente (< 40 mmHg) con FEVI reducida (< 50 %), <u>tras una cuidadosa confirmación de que la EA es grave.</u> ^{342,345,346,348,475}	I	B
Se debe considerar la intervención en pacientes sintomáticos con EA de bajo flujo ($SVi \leq 35$ mL/m ²) y bajo gradiente (< 40 mmHg) con FEVI normal (≥ 50 %), <u>tras una cuidadosa confirmación de que la EA es grave.</u> ^{c 293,348,349,476-481}	IIa	B



Señalar la importancia de otras técnicas de imagen.



Mencionar principales errores en la medición.



Describir los principales fenotipos.



Generalidades de estenosis aortica BF/BG.



ECOCARDIOGRAMA TRASTORÁCICO

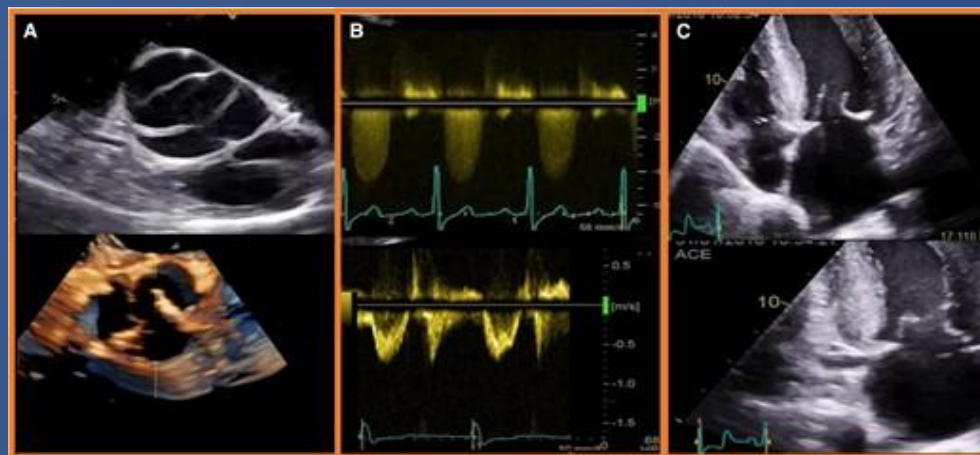
Estudio de elección para el diagnóstico y manejo.



confirmar la morfología valvular y el diagnóstico de EA

Clasificar la gravedad de la EA

Repercusión hemodinámica en cavidades.



Stage 1 - LV hypertrophy
- LV diastolic dysfunction
- LV systolic dysfunction

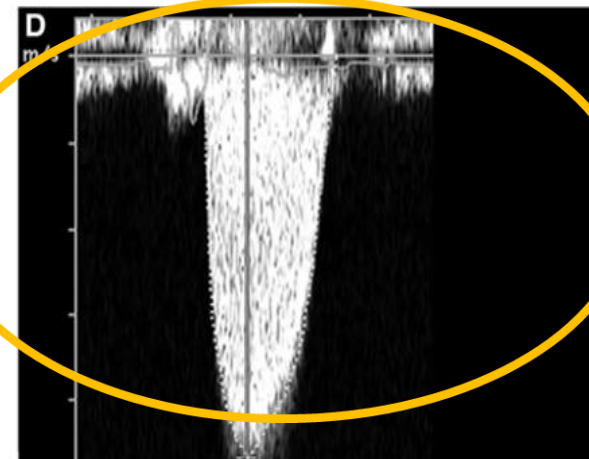
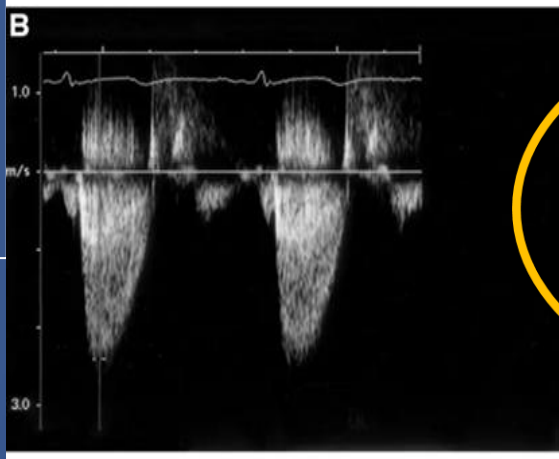
Stage 2 - Left atrial dilatation
- Atrial fibrillation
- Significant mitral regurgitation

Stage 3 - Pulmonary arterial hypertension
- Tricuspid regurgitation

Stage 4 - Right ventricular dysfunction



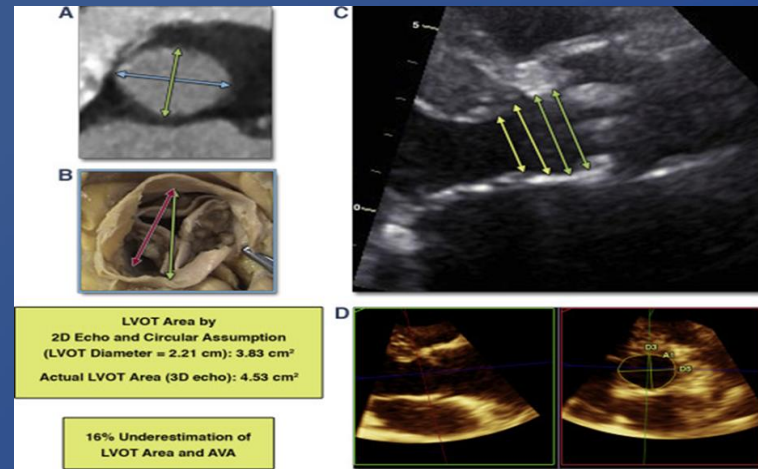
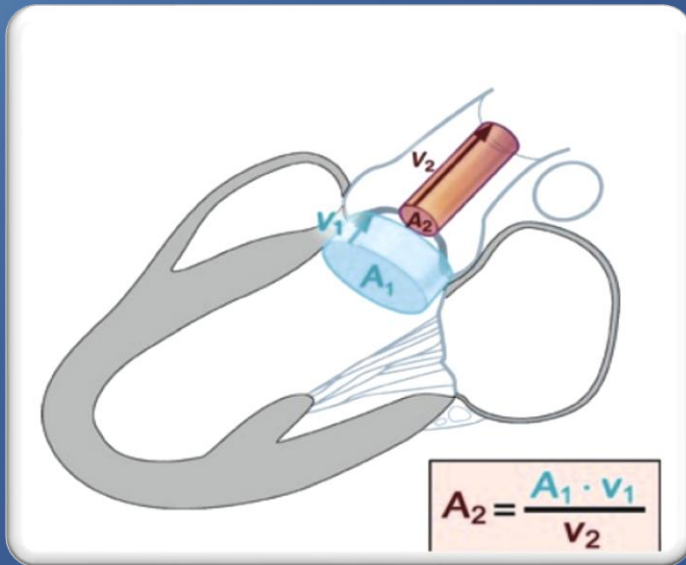
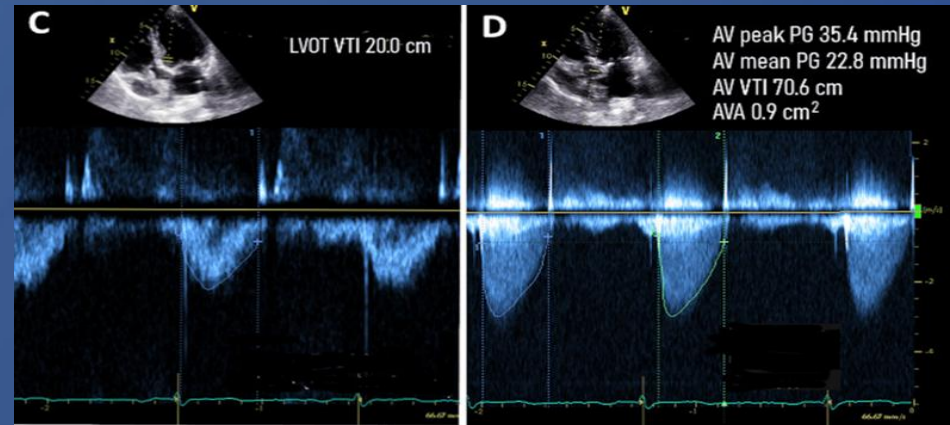
- ✓ *Correcta alineación.*
- ✓ *Múltiples ventanas ecocardiográficas.*
- ✓ *Espectro del Doppler con pico tardío en estenosis severas.*
- ✓ *Relación de integrales.*





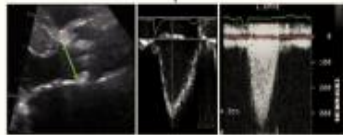
Cálculo de AVA efectiva por ecuación de continuidad.

$AVA = \frac{CSA_{LVOT} \times VTI_{LVOT}}{VTI_{AV}}$	< 1.0	Measures effective orifice area; Relatively flow independent	Measurement error more likely
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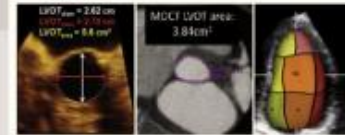
$$V_s = \frac{V_s}{V_s}$$

LOW GRADIENT AS
AVA \leq 1.0cm² and MG<40mmHg



CORROBORATE SV, AVA, AND MG BY OTHER METHODS:

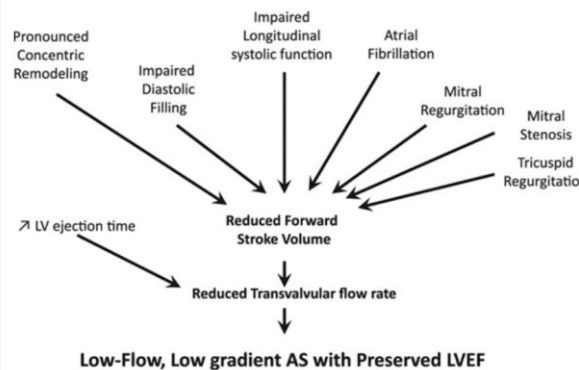
LVOT area: Compare with predicted value, 3D echo, MDCT
SV: Modified Teichholz, 3D echo, CMR
AVA: DVI, TTE/TEE Planimetry, Hybrid (MDCT-Doppler), CMR
MG: Multi-window CW interrogation, Catheterization



STEP 2: IDENTIFY TYPE OF LOW GRADIENT AS

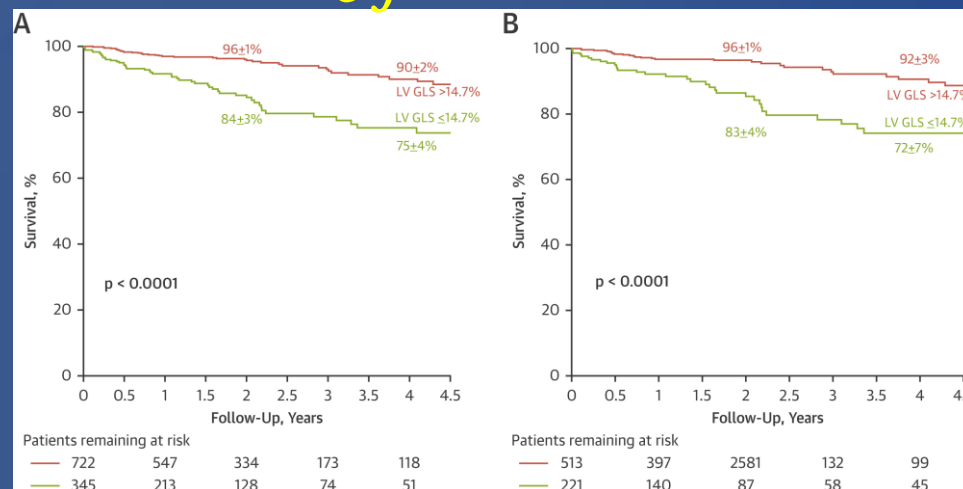
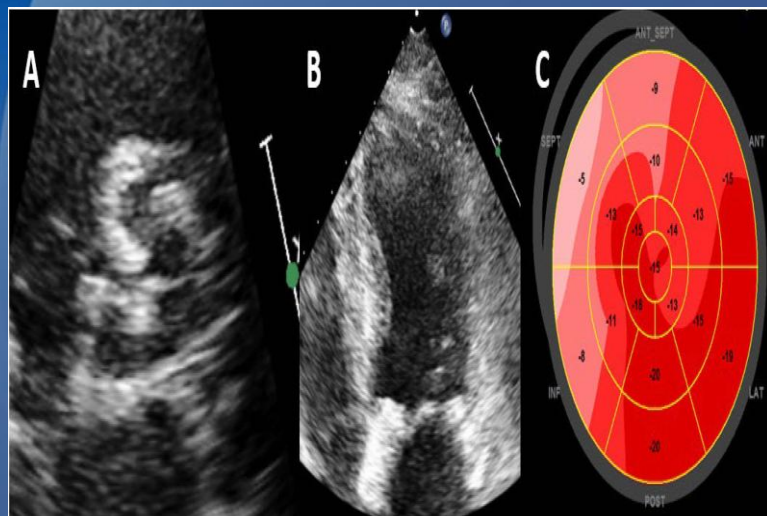
Identify Potential Causes of Low-Flow State:
Low LVEF, LV restrictive physiology,
reduced GLS, MR, MS, AFib

LVEF<50%	LVEF \geq 50% SVi<35ml/m ²	LVEF \geq 50% SVi \geq 35ml/m ²
CLASSICAL LOW-FLOW LOW-GRADIENT	PARADOXICAL LOW-FLOW LOW-GRADIENT + Symptoms	NORMAL-FLOW LOW-GRADIENT + Symptoms

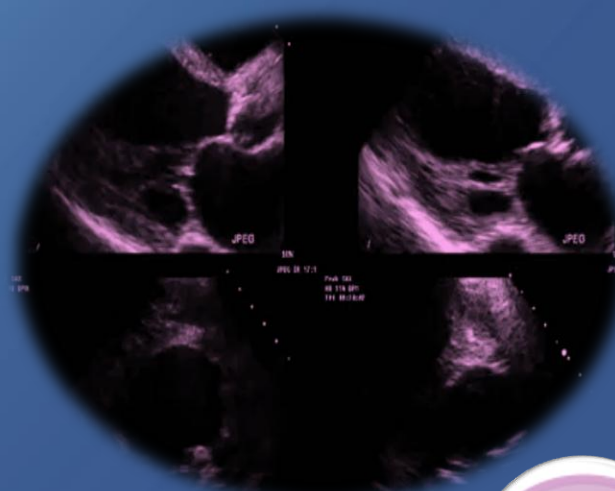


- *SGL en la estratificación del riesgo.*

1067 Pacientes. Con EA asintomáticos y FEVI >50%. Mejor predictor de mortalidad SGL en -14%.



Julien Magne et al. Global longitudinal strain in asymptomatic aortic stenosis. *Journal of the American College of Cardiology.* 2019;74(23):2953–2964.



Señalar la importancia de otras técnicas de imagen.



Mencionar principales errores en la medición.



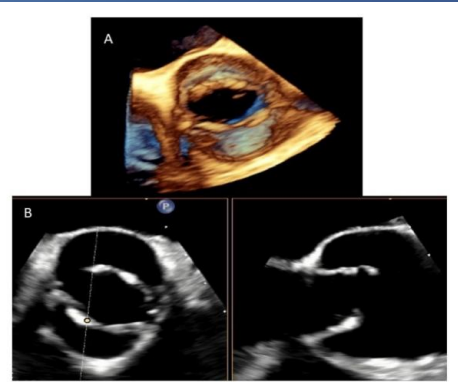
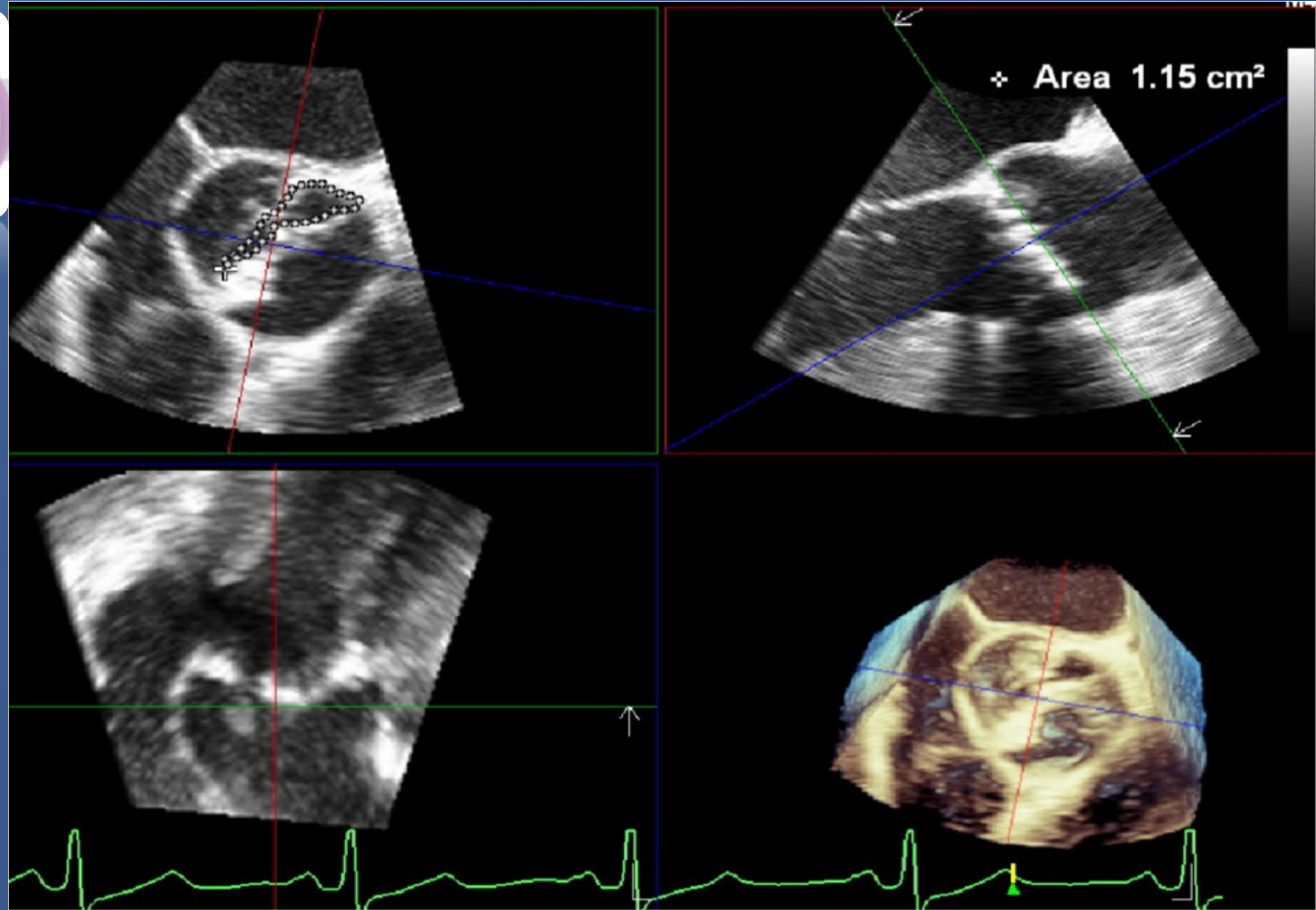
Describir los principales fenotipos.



Generalidades de estenosis aortica BF/BG.

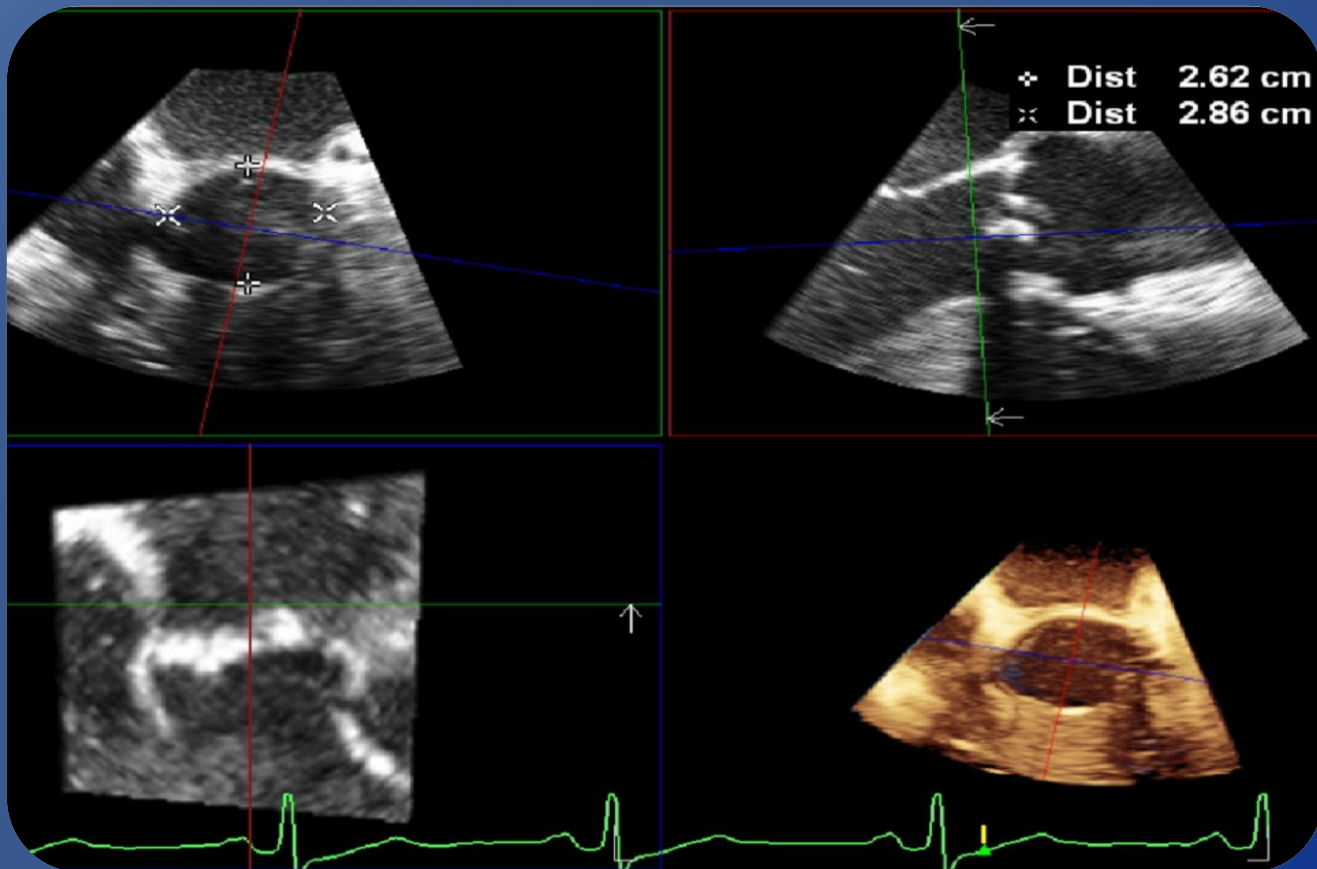


❖ **Planimetría para determinar el área de la válvula aórtica.**





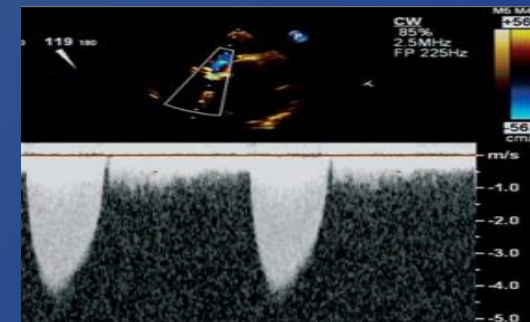
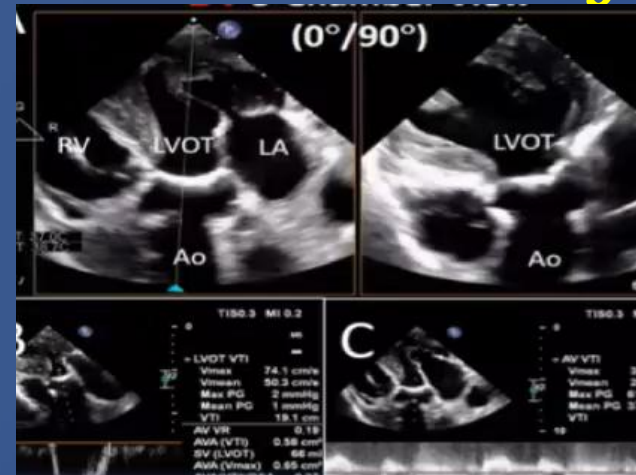
- ❖ **Reconstrucció n Multiplanar (MPR) de eje corto.**
- ❖ **Planimetria del TSVI.**





ECOCARDIOGRAMA TRANESOFÁGICO

- *Planimetría del TSVI (Método híbrido).*
- *Planimetría del anillo aórtico.*

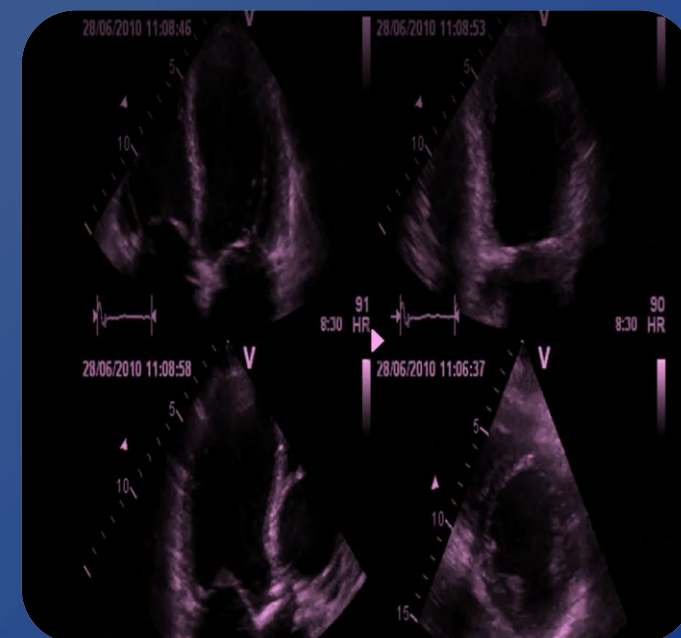




ECO DOBUTAMINA

Approach	Definition/Method	Strengths	Limitations
Standard DSE criteria [13,14,23,24,32]	<p>Low dose dobutamine infusion up to 20 µg/kg/min; interpretation based on the following:</p> <ul style="list-style-type: none"> • True severe AS: mean gradient ≥ 40 mmHg with $AVA \leq 1.0$ cm² • Pseudo-severe AS: AVA increases >1.0 cm² with 	<ul style="list-style-type: none"> • Widely validated in classical LFLG AS • Provides information on valve hemodynamics and contractile reserve • Strong prognostic implications when criteria are conclusive 	<ul style="list-style-type: none"> • 30–40% of patients fail to achieve sufficient flow augmentation • Inconclusive in absence of contractile reserve • Risk of underestimating severity in borderline cases

Marker	Definition/Finding	Prognostic Significance	Therapeutic Implications
Contractile reserve (CR) [13,23,24]	$\geq 20\%$ increase in stroke volume during low dose dobutamine	Historically, absence of CR predicted high operative mortality (30–50%) in surgical AVR	Presence of CR = better surgical/TAVR outcomes; absence no longer absolute contraindication with contemporary AVR
True severe AS [13,14,23]	Mean gradient ≥ 40 mmHg with $AVA \leq 1.0$ cm ² during flow augmentation	Identifies patients with fixed obstruction at high risk of adverse outcomes if untreated	AVR (SAVR or TAVR) confers substantial survival benefit
Pseudo-severe AS	AVA increases >1.0 cm ² with minimal gradient rise during DSE	Reflects flow limitation rather than fixed obstruction; not associated with improved survival after AVR	Conservative management preferred; avoids unnecessary intervention
Paradoxical LFLG AS [31,32]	Preserved EF, small LV cavity, impaired filling; gradient remains low despite flow	DSE refines risk stratification, identifying those with severe obstruction despite preserved EF	Guides selection for AVR vs. watchful waiting

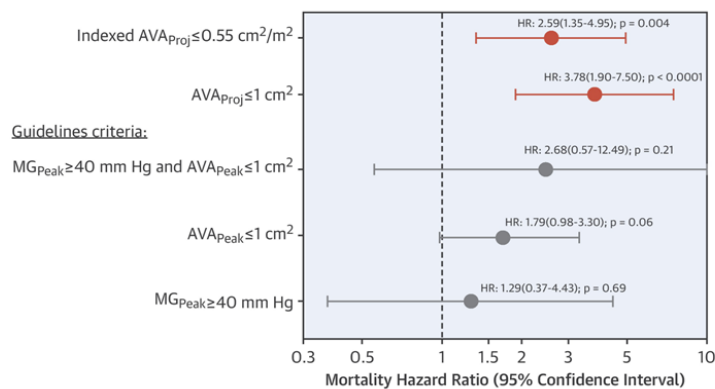


ECO DOBUTAMINA

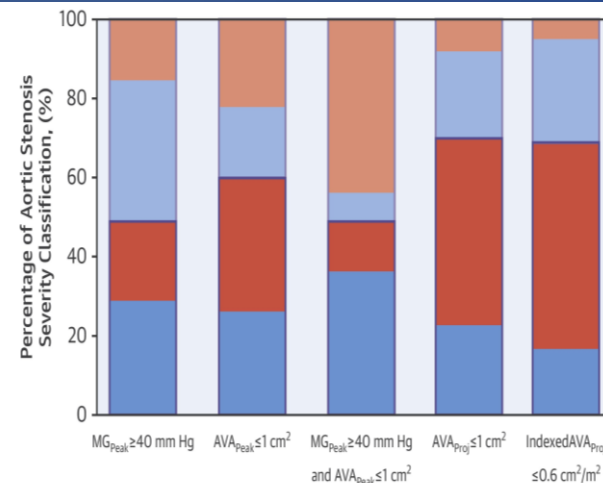
- 186 Pacientes del estudio TOPAS.
- FEVI Baja .BF/BG.

$$\text{Projected AVA} = \text{AVA}_{\text{Rest}} + \frac{\text{AVA}_{\text{Peak}} - \text{AVA}_{\text{Rest}}}{(Q_{\text{Peak}} - Q_{\text{Rest}})} \times (250 - Q_{\text{Rest}})$$

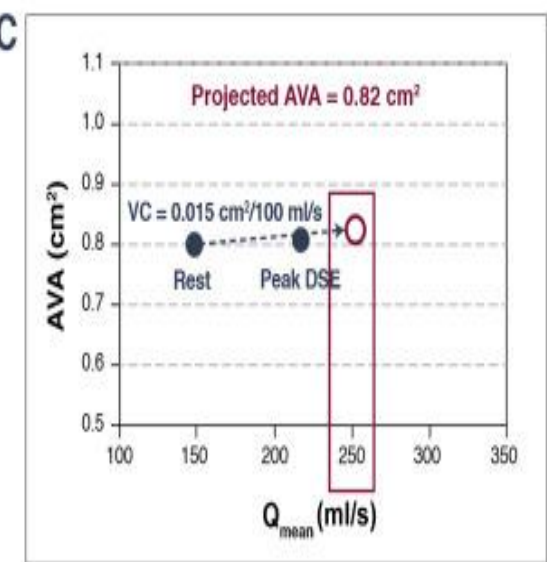
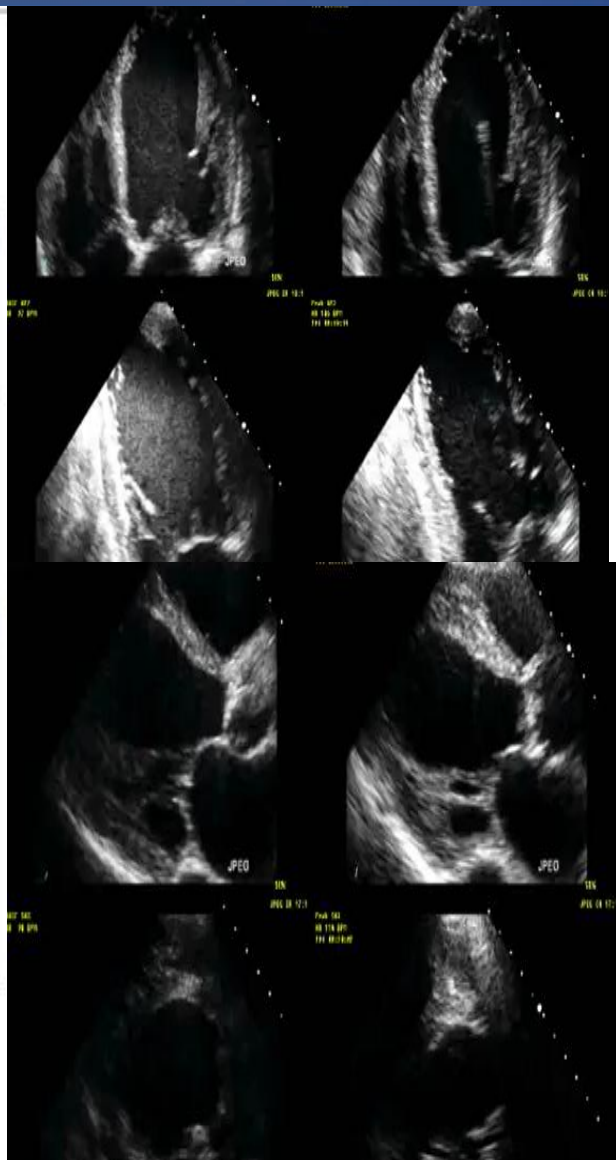
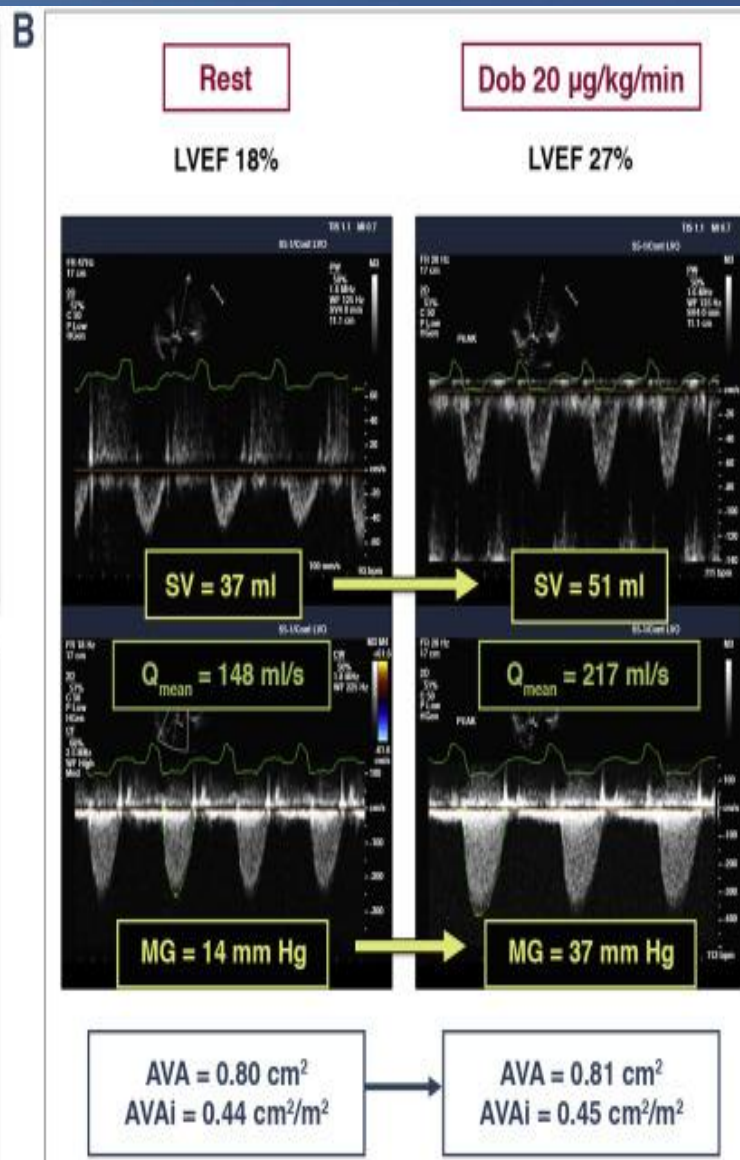
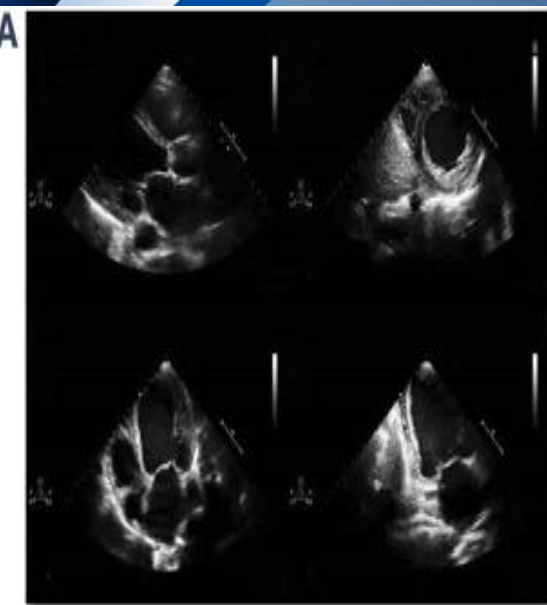
B Prediction of Mortality Under Medical Management



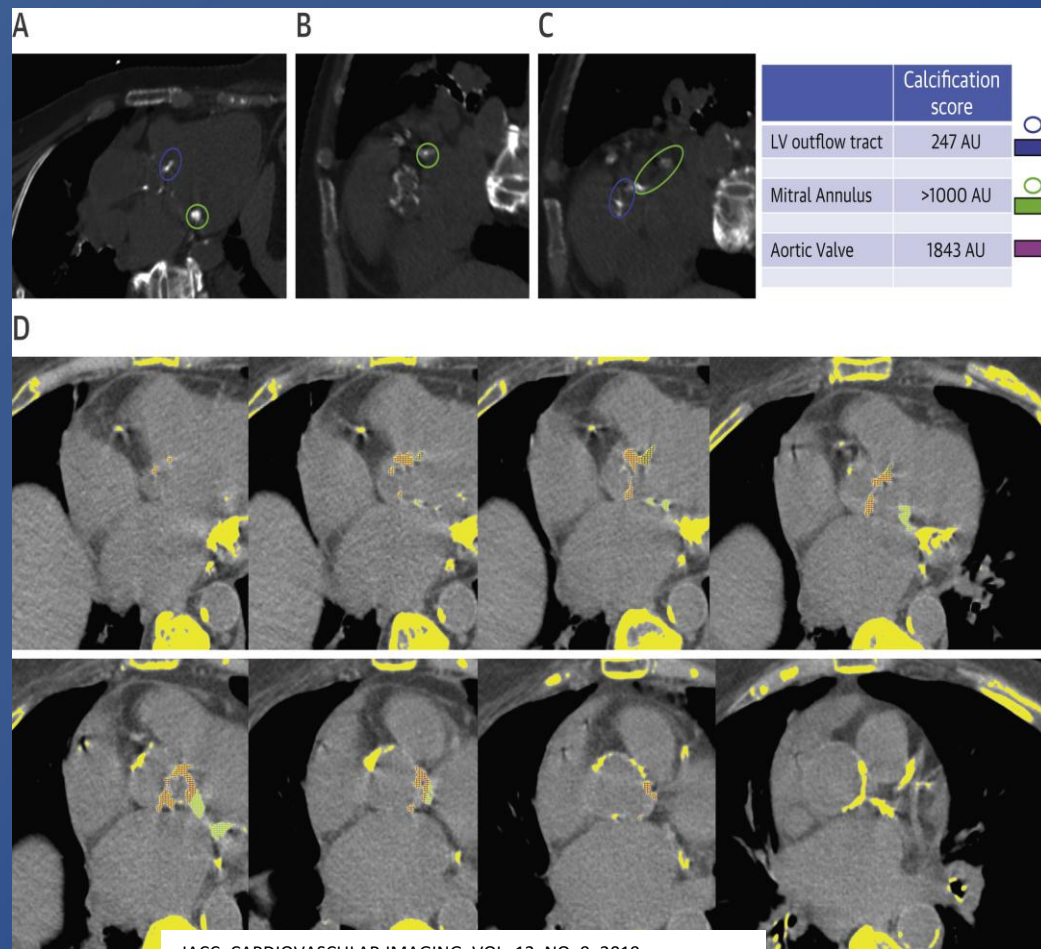
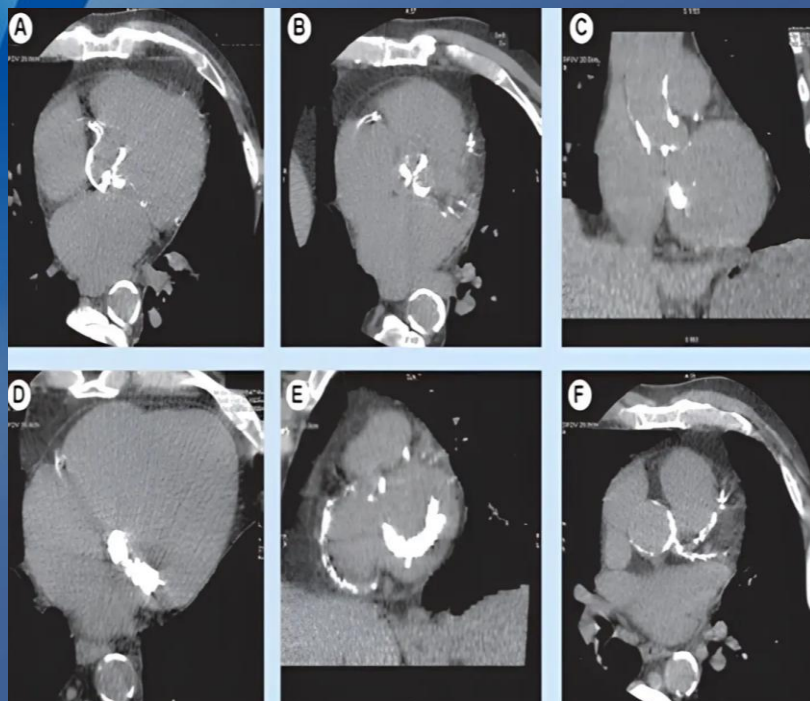
Annabi, M.-S. et al. *J Am Coll Cardiol.* 2018;71(5):475-85.



■ Correctly Classified Pseudo-Severe AS ■ Wrongly Classified Pseudo-Severe AS (True-Severe AS by DSE)
■ Correctly Classified True-Severe AS ■ Wrongly Classified Truly-Severe AS (Pseudo-Severe AS by DSE)



- Excluir otras estructuras en la cuantificación.



STATE-OF-THE-ART REVIEW

Why and How to Measure Aortic Valve Calcification in Patients With Aortic Stenosis

Tania Pawade, MD, PhD,^a Tej Sheth, MD,^b Ezequiel Guzzetti, MD,^c Marc R. Dweck, MD, PhD,^d Marie-Annick Clavel, DVM, PhD^c



ACC.18

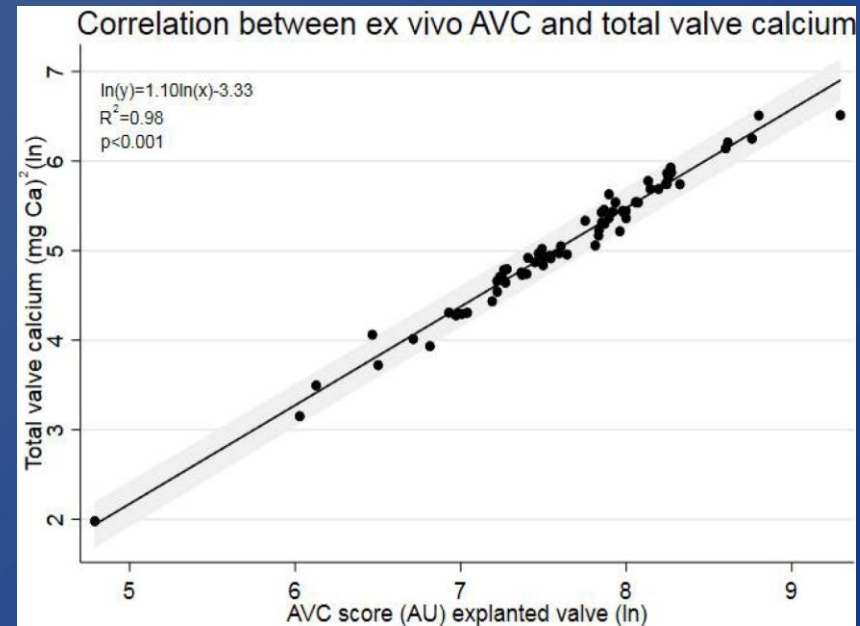
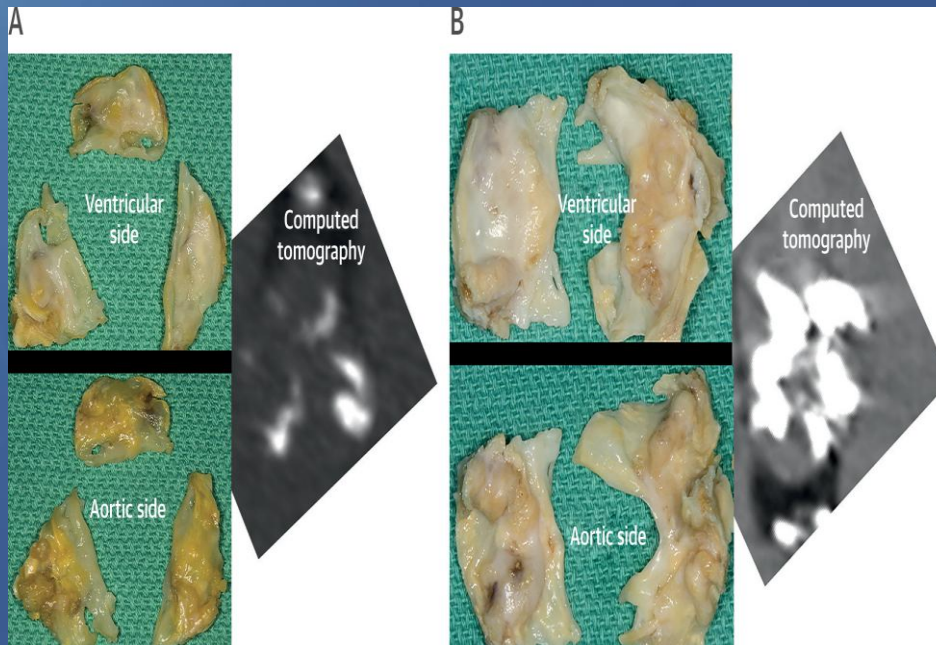
1985
JACC March 20, 2018
Volume 71, Issue 11



Valvular Heart Disease

STRONG CORRELATION BETWEEN AORTIC VALVE CALCIFICATION SCORE BY CARDIAC COMPUTED TOMOGRAPHY AND TOTAL VALVE CALCIUM IN PATIENTS WITH SEVERE AORTIC VALVE STENOSIS

Poster Contributions
Poster Hall, Hall A/B
Saturday, March 10, 2018, 10:00 a.m.-10:45 a.m.

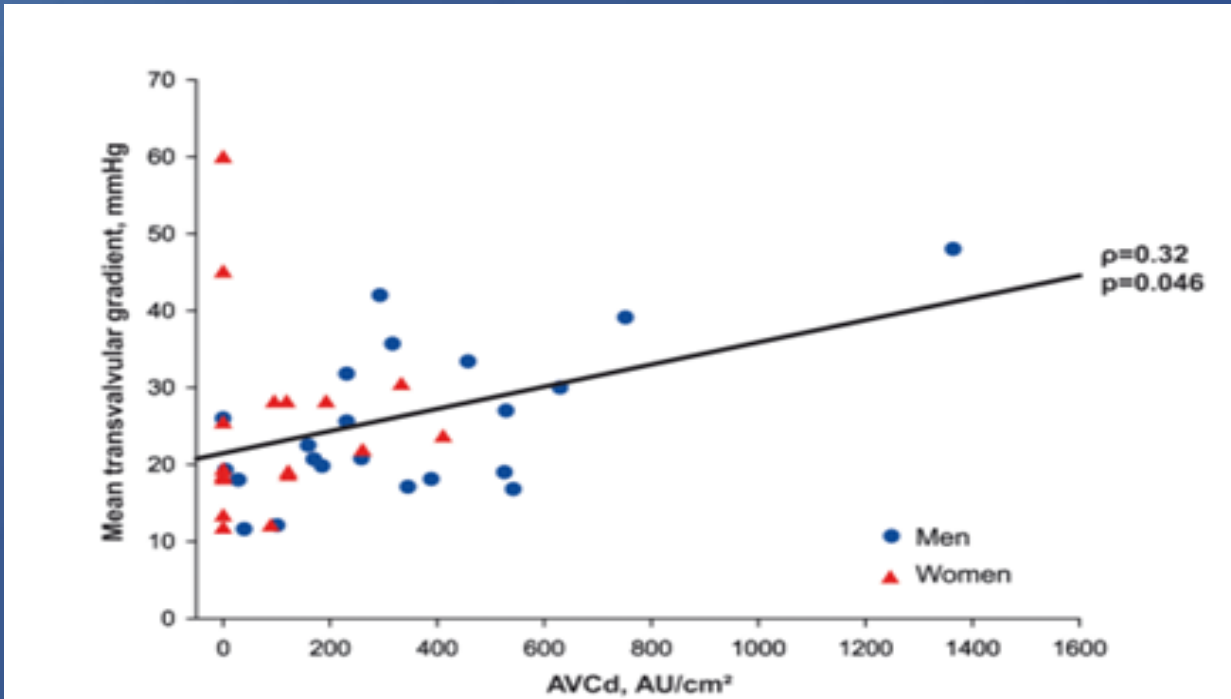


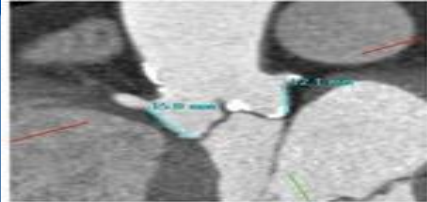
Valvular heart disease

ORIGINAL ARTICLE

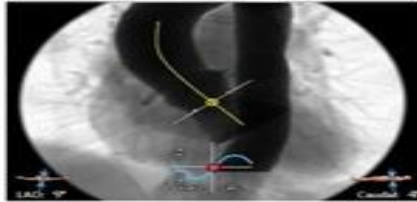
Effect of age and aortic valve anatomy on calcification and haemodynamic severity of aortic stenosis

Mylène Shen,¹ Lionel Tastet,¹ Romain Capoulade,¹ Éric Larose,¹ Élisabeth Bédard,¹ Marie Arseneault,¹ Philippe Chetaille,² Jean G Dumesnil,¹ Patrick Mathieu,¹ Marie-Annick Clavel,¹ Philippe Pibarot¹

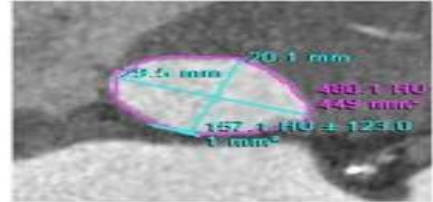




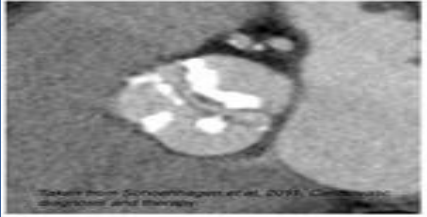
Coronary ostia heights



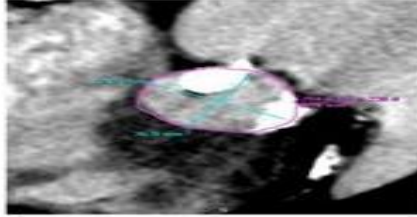
Fluoroscopic projection angles- identifying the optimal angulations for fluoroscopy at the time of the procedure



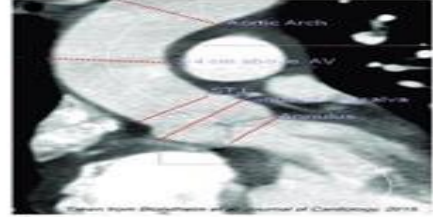
Annulus size- the aortic annulus is defined as the virtual basal ring, formed by joining the three most caudal connection points of the aortic leaflets



CT augments the characterization of bicuspid aortic valve morphology as well as defining the risk associated with TAVI in bicuspid valve disease

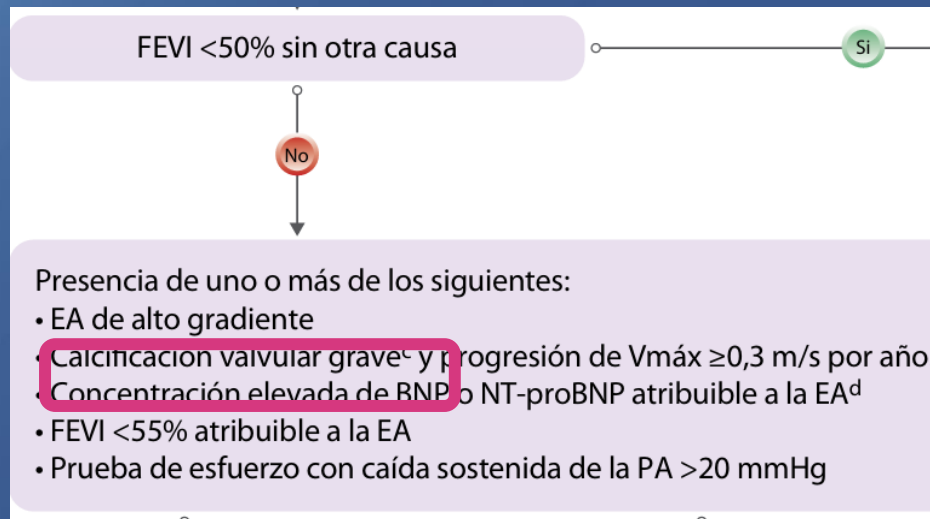


Distribution of calcification in the valve and left ventricular outflow tract, with the identification of protruding nodules of calcium that might predispose to paravalvular leak or annular rupture



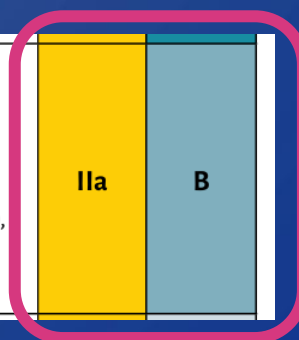
Sinotubular junction and ascending aorta diameters





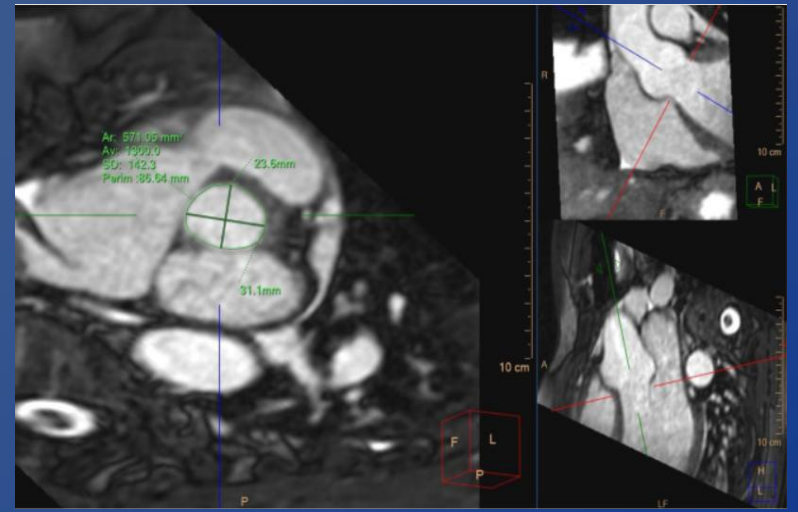
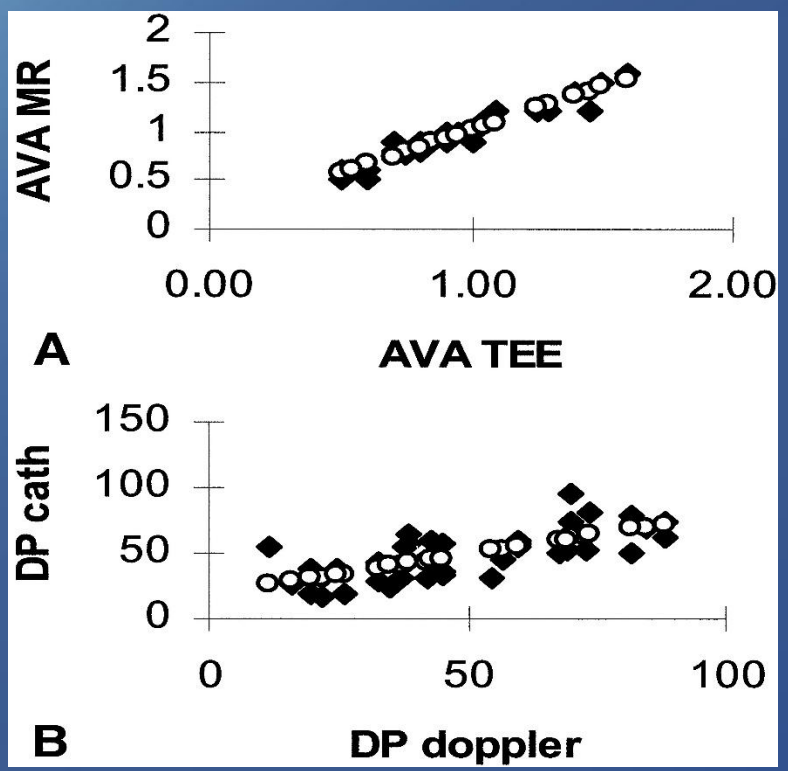
Se debe considerar la intervención en pacientes asintomáticos con EA grave y FEVI ≥50 %, si el riesgo del procedimiento es bajo y está presente uno de los siguientes parámetros:

- EA muy grave (gradiente medio ≥60 mmHg o Vmáx >5,0 m/s). ^{14,362,363,482-484}
- Calcificación valvular severa (idealmente evaluada mediante TCC) y progresión de Vmáx ≥0,3 m/s/año. ^{303,353,364}
- Concentración de BNP/NT-proBNP marcadamente elevada (más de tres veces por encima del rango normal ajustado por edad y sexo, confirmada en determinaciones repetidas y sin otra explicación). ^{97,365}
- FEVI <55 % sin otra causa que lo justifique. ^{14,354,356-359}



RESONANCIA CARDIACA.

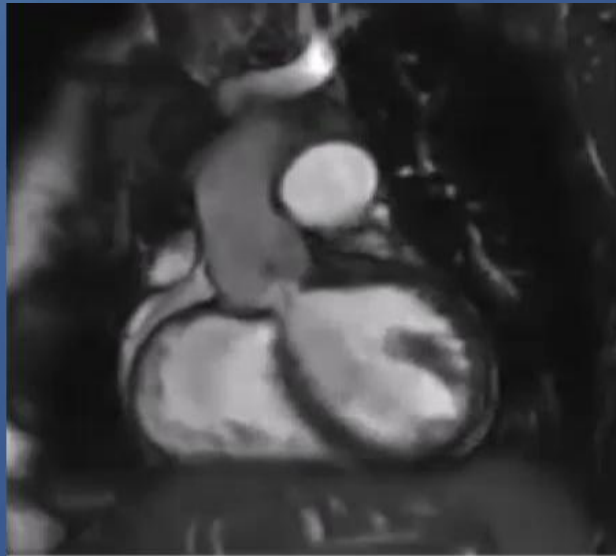
- 40 Pacientes con EA sintomática.

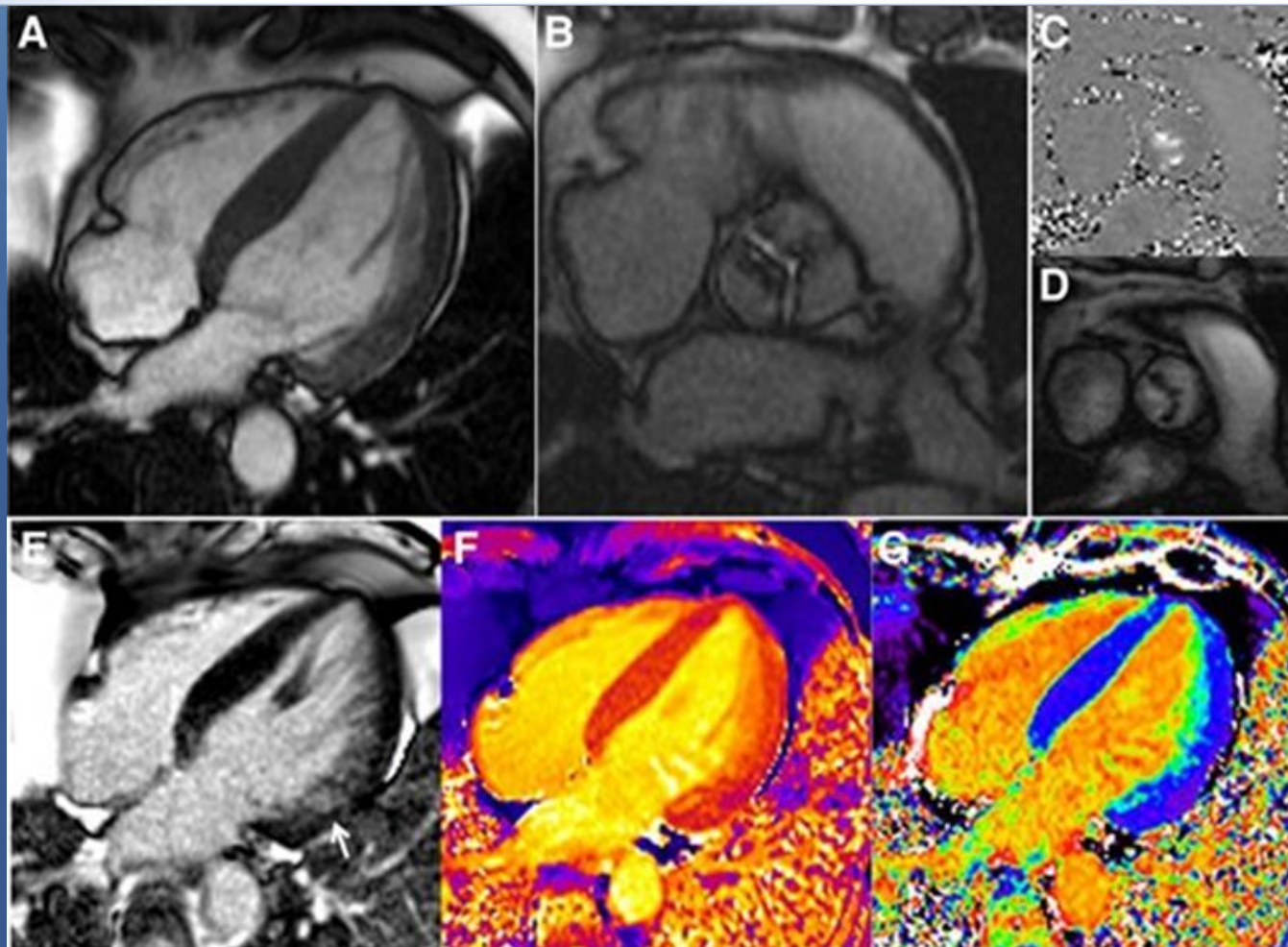


JACC Vol. 42, No. 3, 2003 MR Planimetry of AS
August 6, 2003:519–26

J Clinic Med. septiembre de 2024;13(17):584.

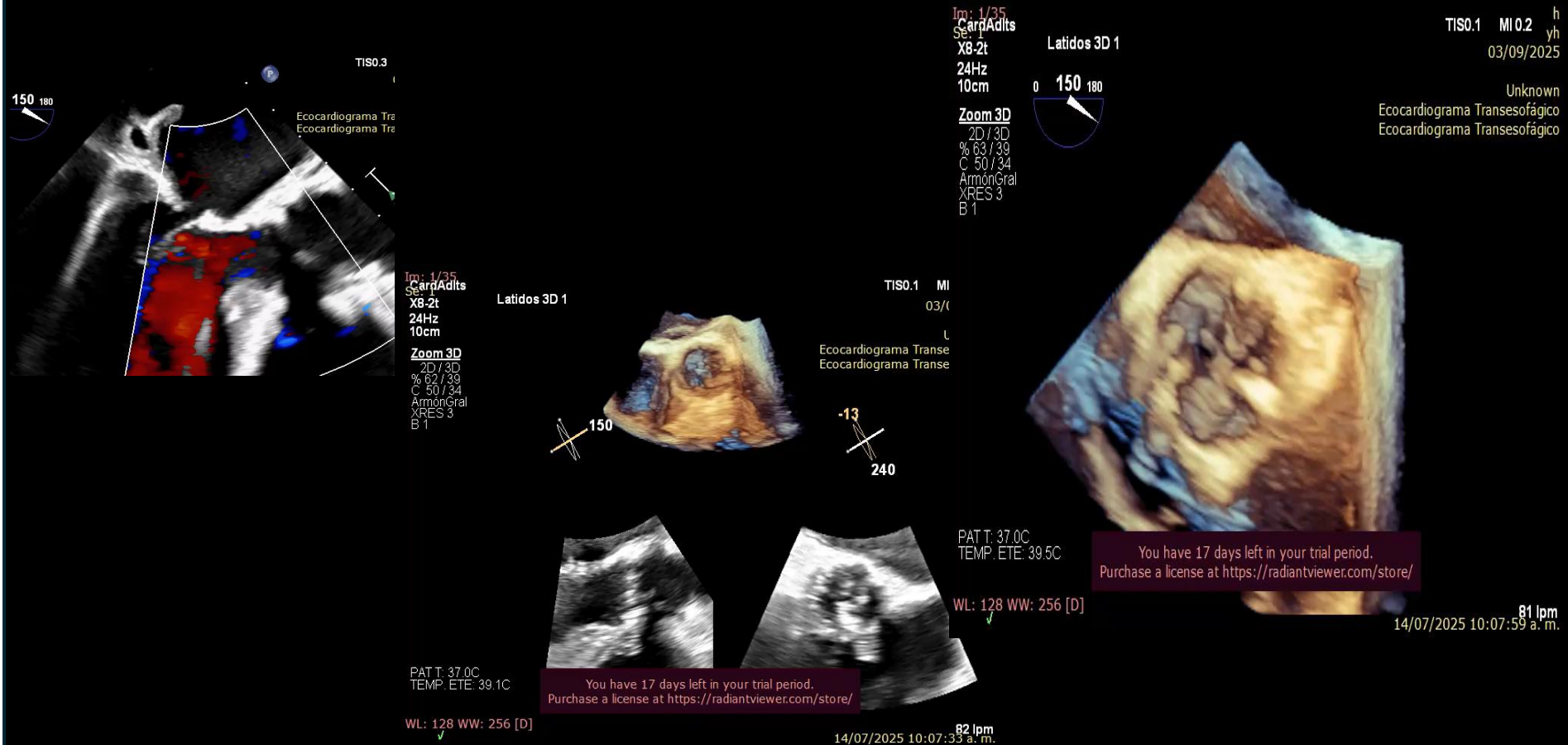
- Secuencias cine (SSFP) para AV.
- Secuencia de contraste de fase. 4v2. Velocidad de flujo





-Realce tardío, pero pronóstico.
-Patrón no isquémico.

- Paciente masculino de 80 años con disnea a los mínimos esfuerzos.
- Soplo mesosistólico en foco aórtico.



Conclusiones

¿Que sabemos?

- Entidad desafiante.

¿Qué debemos hacer?

- Evaluación multiparamétrica.

¿Diagnóstico de precisión?

- Enfoque multimodal.

