Chiusura

DIFETTO INTER-ATRIALE

Giacomo Boccuzzi, MD, FESC

S.C Cardiologia

Ospedale San Giovanni Bosco, Torino, Italy

ATRIAL SEPTAL DEFECTS: Incidence

Defects of the atrial septum are the third most common type of congenital heart disease, with an estimated incidence of 56 per 100000 livebirths.

With improved recognition of clinically silent defects by echocardiography, recent estimates are about 100 per 100000 livebirths.

ATRIAL SEPTAL DEFECTS: Anatomy

European Heart Journal (2010) **31**, 2915–2957
doi:10.1093/eurheartj/ehq249

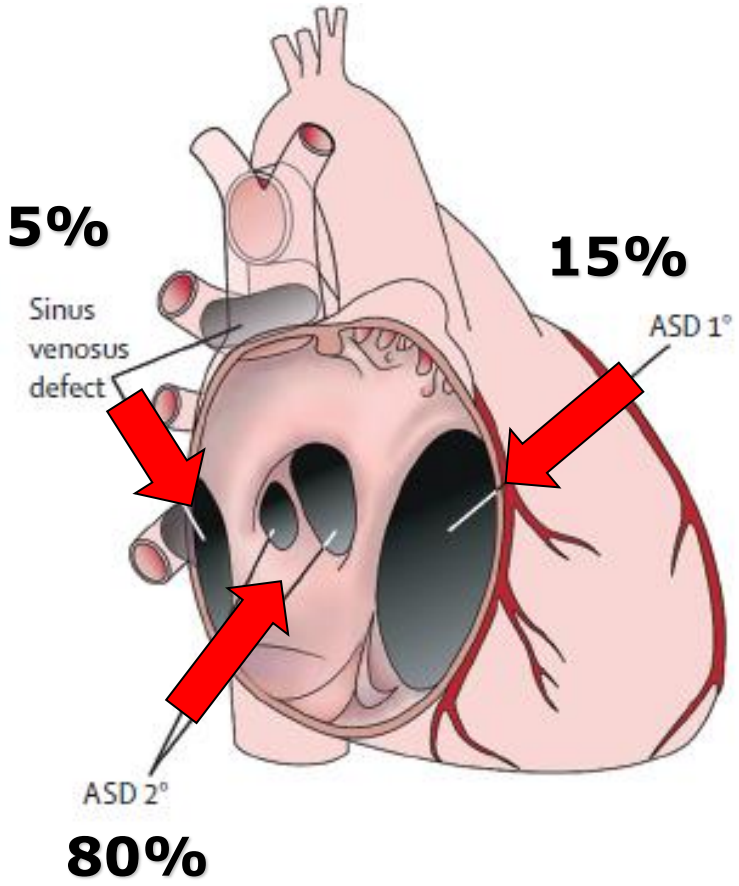
ESC GUIDELINES

ESC Guidelines for the management of grown-up congenital heart disease (new version 2010)

The Task Force on the Management of Grown-up Congenital Heart Disease of the European Society of Cardiology (ESC)

Endorsed by the Association for European Paediatric Cardiology (AEPC)

- Secundum ASD (80% of ASDs; located in the region of the fossa ovalis and its surrounding)
- Primum ASD [15%, synonyms: partial atrioventricular septal defect (AVSD), partial atrioventricular (AV) canal; located near the crux, AV valves are typically malformed resulting in various degrees of regurgitation; see Section 4.3]
- Superior sinus venosus defect [5%, located near the superior vena cava (SVC) entry, associated with partial or complete connection of right pulmonary veins to SVC/right atrium (RA)]
- Inferior sinus venosus defect [<1%, located near the inferior vena cava (IVC) entry]
- Unroofed coronary sinus [<1%, separation from the left atrium (LA) can be partially or completely missing].



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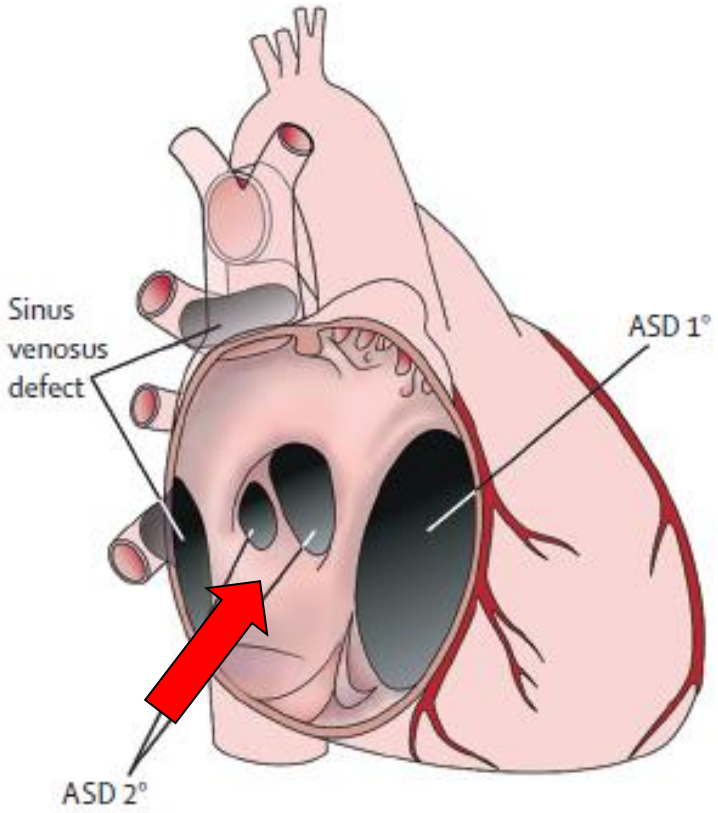

80%

ATRIAL SEPTAL DEFECTS: Anatomy

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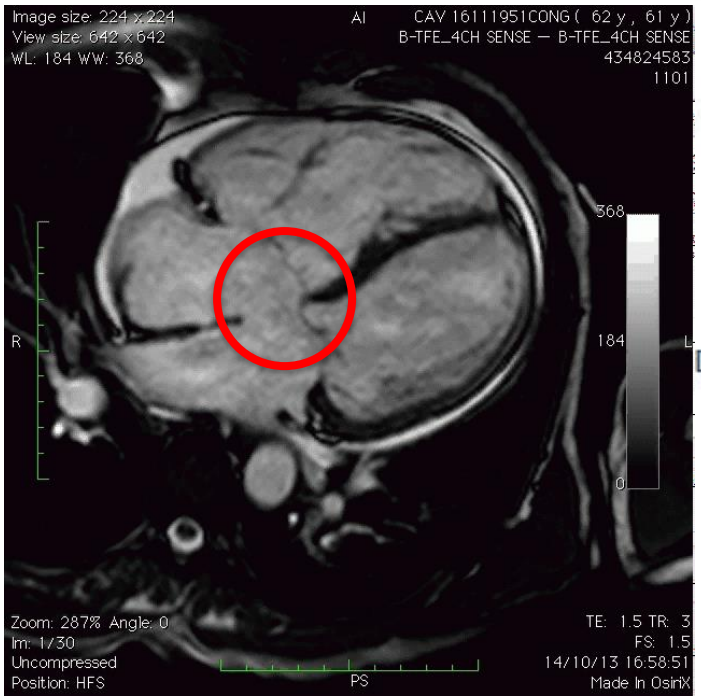

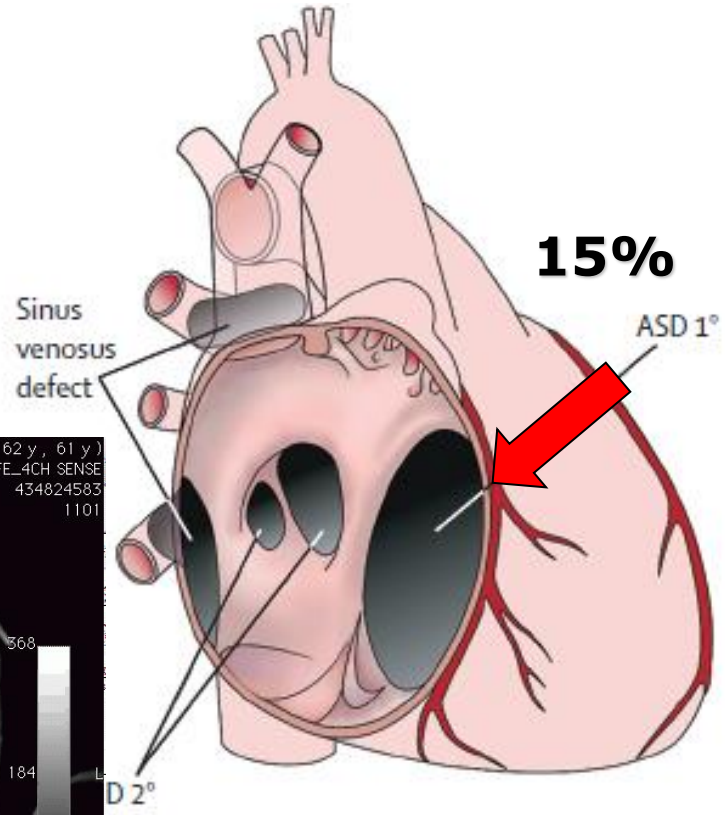

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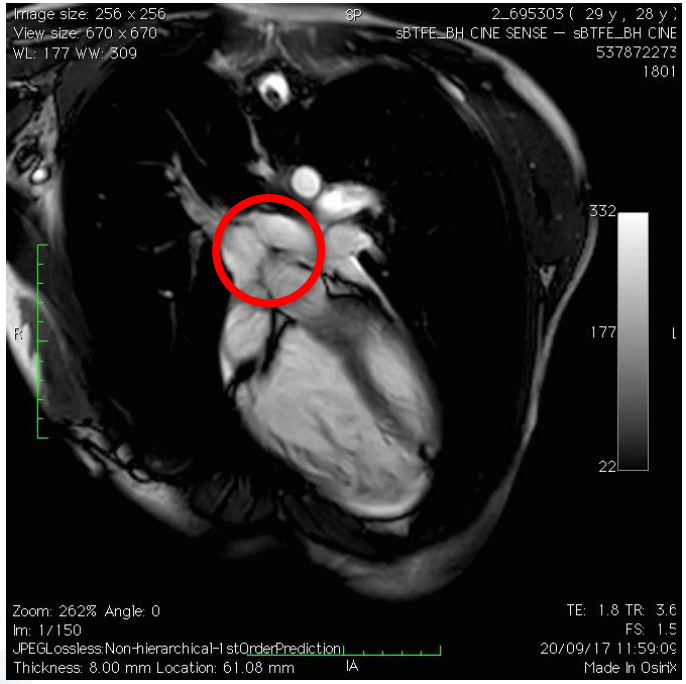
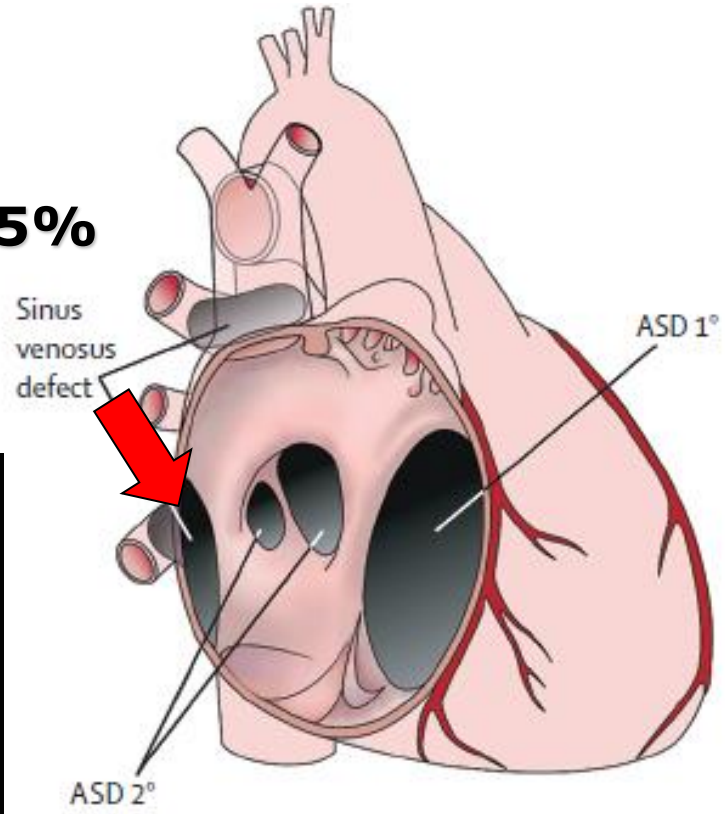


5%



ATRIAL SEPTAL DEFECTS: clinical presentation

- Reduced functional capacity
- Exertional shortness of breath
- Palpitations (supraventricular tachyarrhtyhmias)
- Pulmonary infections (Less frequently)
- Right heart failure
- Severe pulmonary vascular disease (rare)
- Systemic embolism may be caused by paradoxical embolism or atrial fibrillation

Life expectancy is reduced overall

ATRIAL SEPTAL DEFECTS

European Heart Journal (2010) 31, 2915–2957
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Indications for intervention in atrial septal defect

Indications	Class[a]	Level[b]
Patients with significant shunt (signs of RV volume overload) and PVR <5 WU should undergo ASD closure regardless of symptoms	I	B[26]
Device closure is the method of choice for secundum ASD closure when applicable	I	C
All ASDs regardless of size in patients with suspicion of paradoxical embolism (exclusion of other causes) should be considered for intervention	IIa	C
Patients with PVR ≥5 WU but <2/3 SVR or PAP <2/3 systemic pressure (baseline or when challenged with vasodilators, preferably nitric oxide, or after targeted PAH therapy) and evidence of net L–R shunt (Qp:Qs >1.5) may be considered for intervention	IIb	C
ASD closure must be avoided in patients with Eisenmenger physiology	III	C

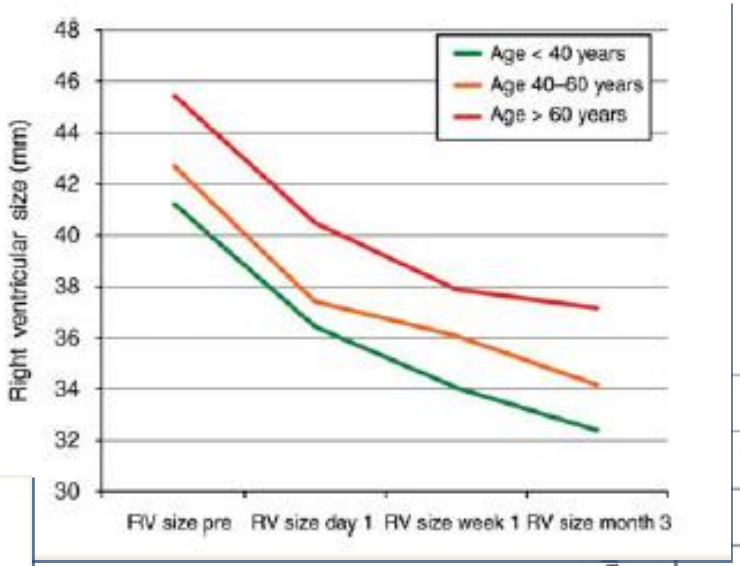
ATRIAL SEPTAL DEFECTS

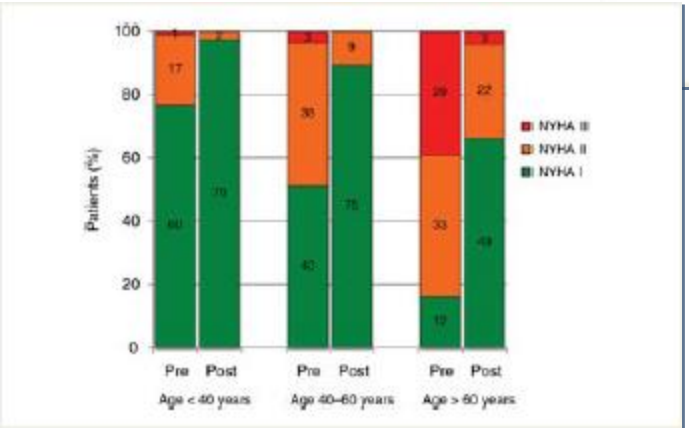
European Heart Journal (2011) **32**, 553–560
doi:10.1093/eurheartj/ehq352

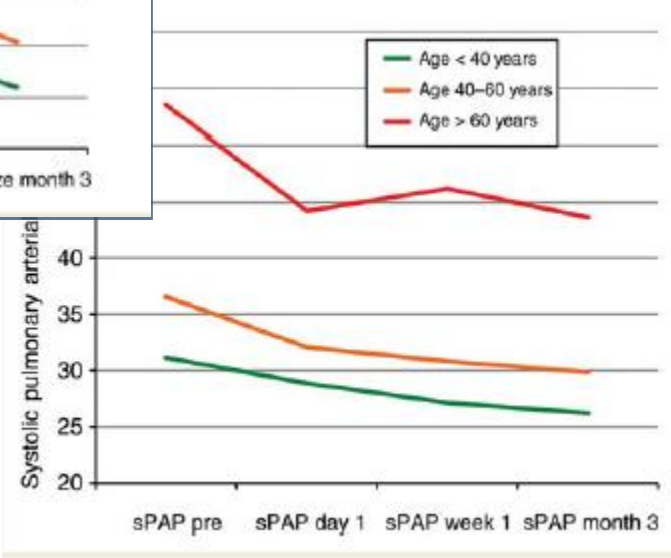
CLINICAL RESEARCH
Congenital heart disease

Benefit of atrial septal defect closure in adults: impact of age

The study population consists of 236 consecutive adults (mean age 49 ± 18 years, 164 females) who underwent transcatheter ASD closure with the Amplatzer septal occluder (ASO; AGA Medical Corporation, Golden Valley, MN, USA). Of these, 78 were younger than 40 years (Group A), 84 were between 40 and 60 years (Group B), and 74 were older than 60 years (up to 82 years; Group C) at the time of intervention. Indication for closure was a significant left-to-right shunt (signs of RV volume overload), irrespective of the presence of symptoms. Patients with severe pulmonary vascular disease (>5 Wood units) even after vasoreactivity testing or after targeted treatment were not considered for ASD closure.





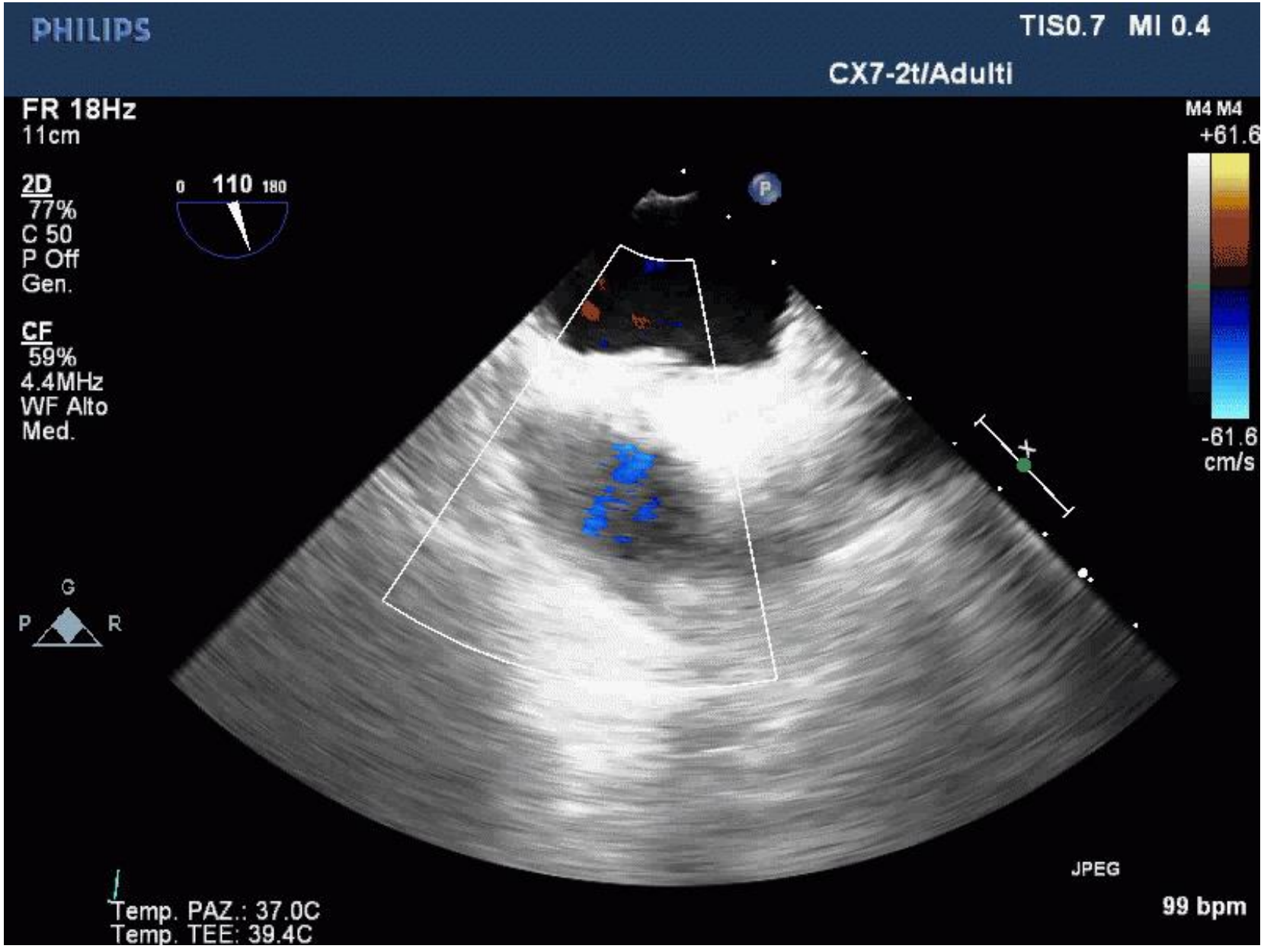


ATRIAL SEPTAL DEFECTS

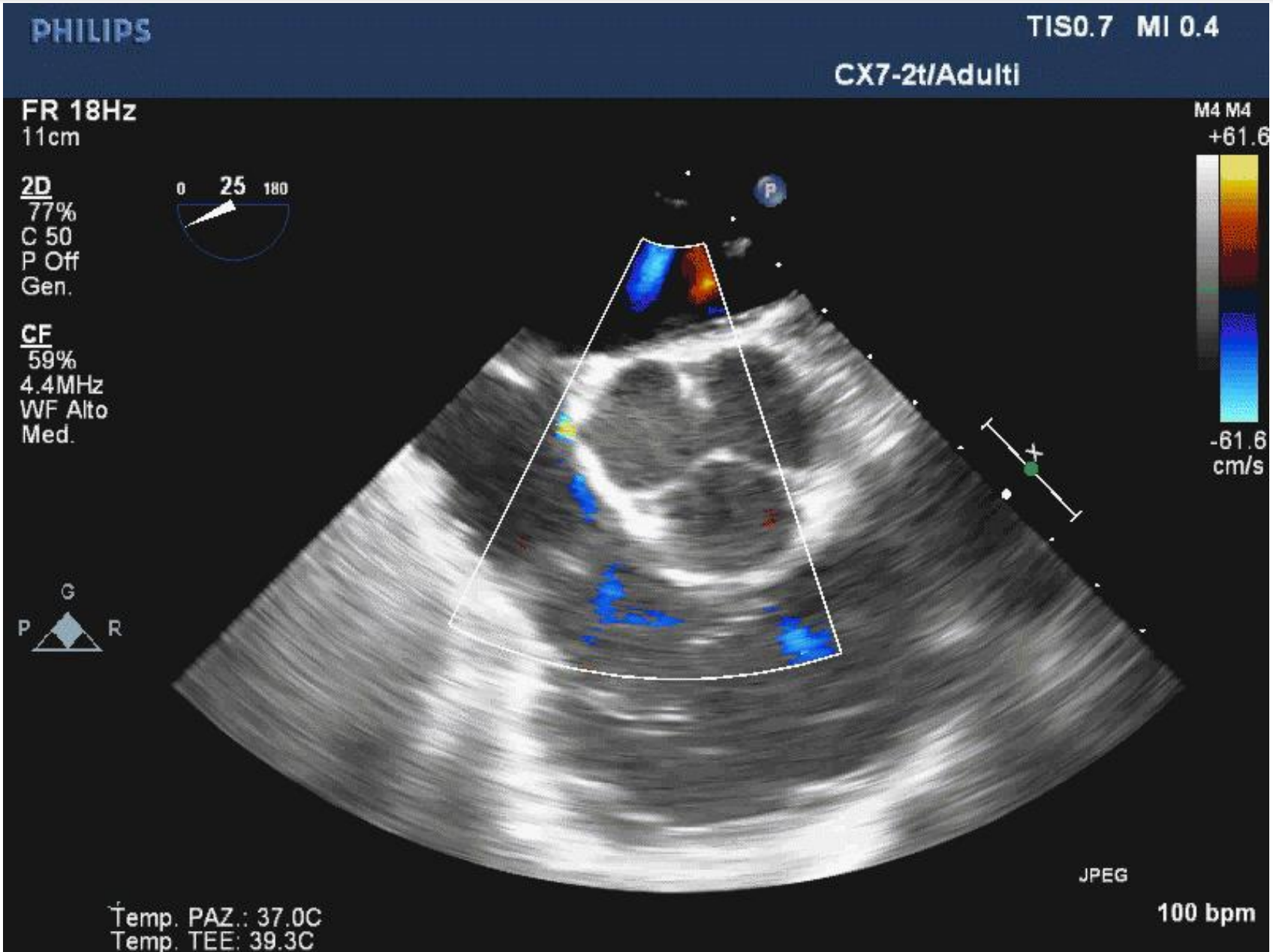
- Symptomatic patients with ASD, irrespective of age, should undergo closure to reduce subsequent morbidity (most commonly right ventricular dysfunction and failure, atrial tachyarrhythmias, or stroke) and mortality.

- By contrast, ASD closure in asymptomatic or minimally symptomatic adults reduces morbidity but not mortality.

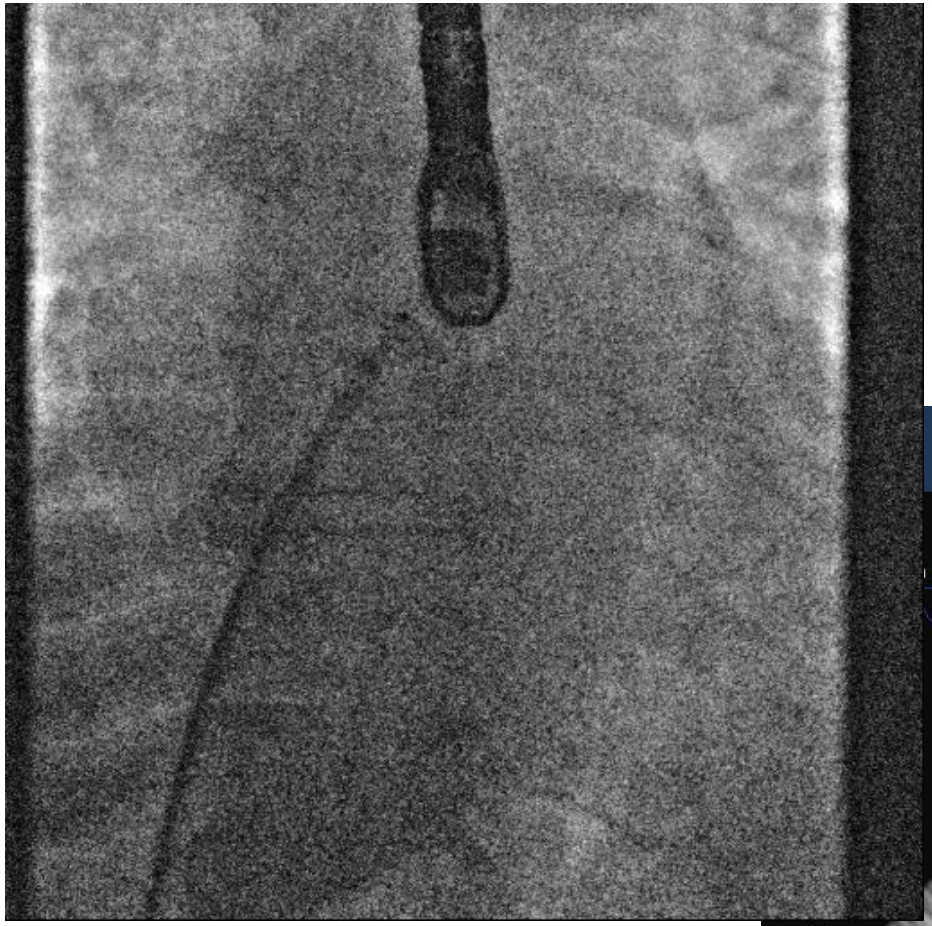
SMALL ASD TTE (long Axis)



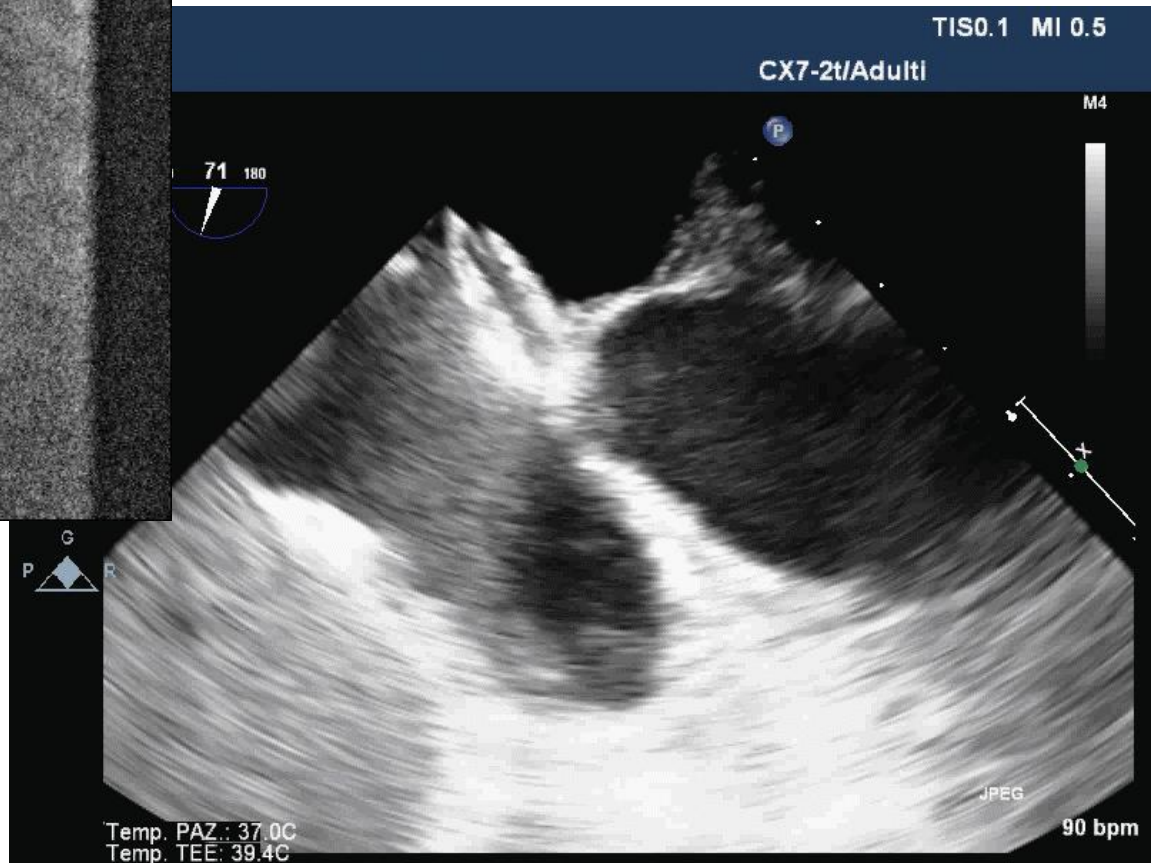
SMALL ASD TTE (short axis)



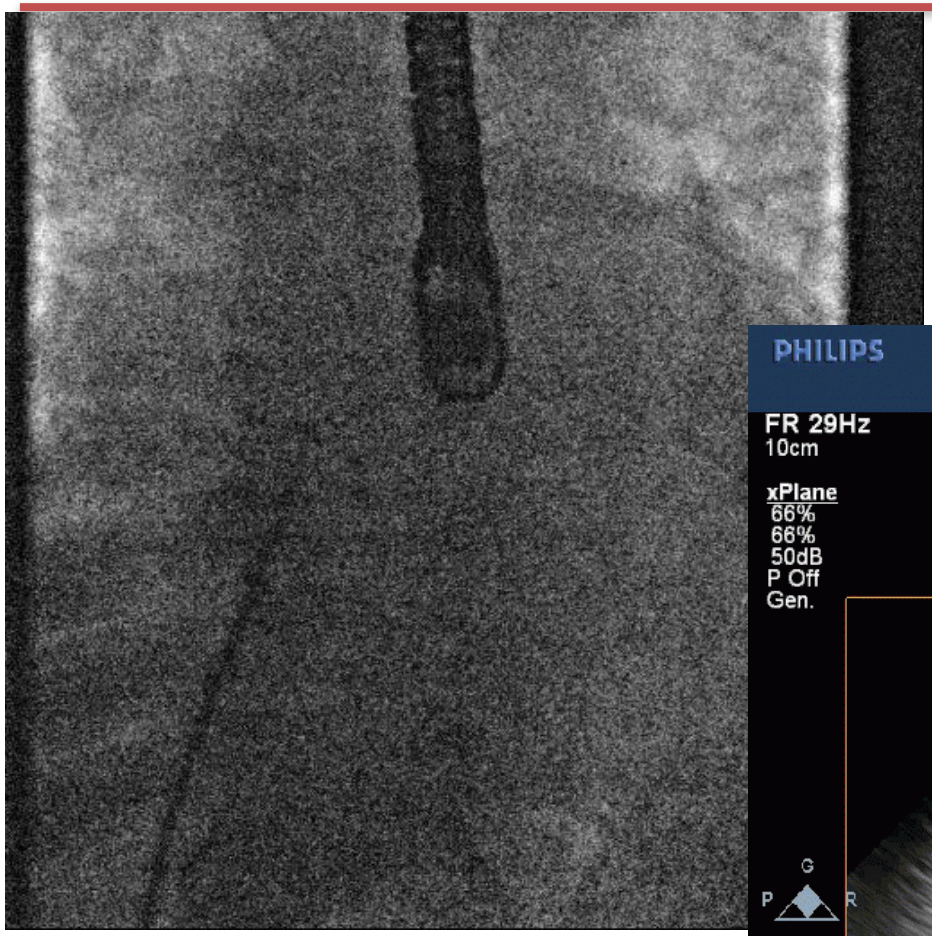
SMALL ASD PROCEDURE



In the cardiac catheterisation laboratory



SMALL ASD PROCEDURE



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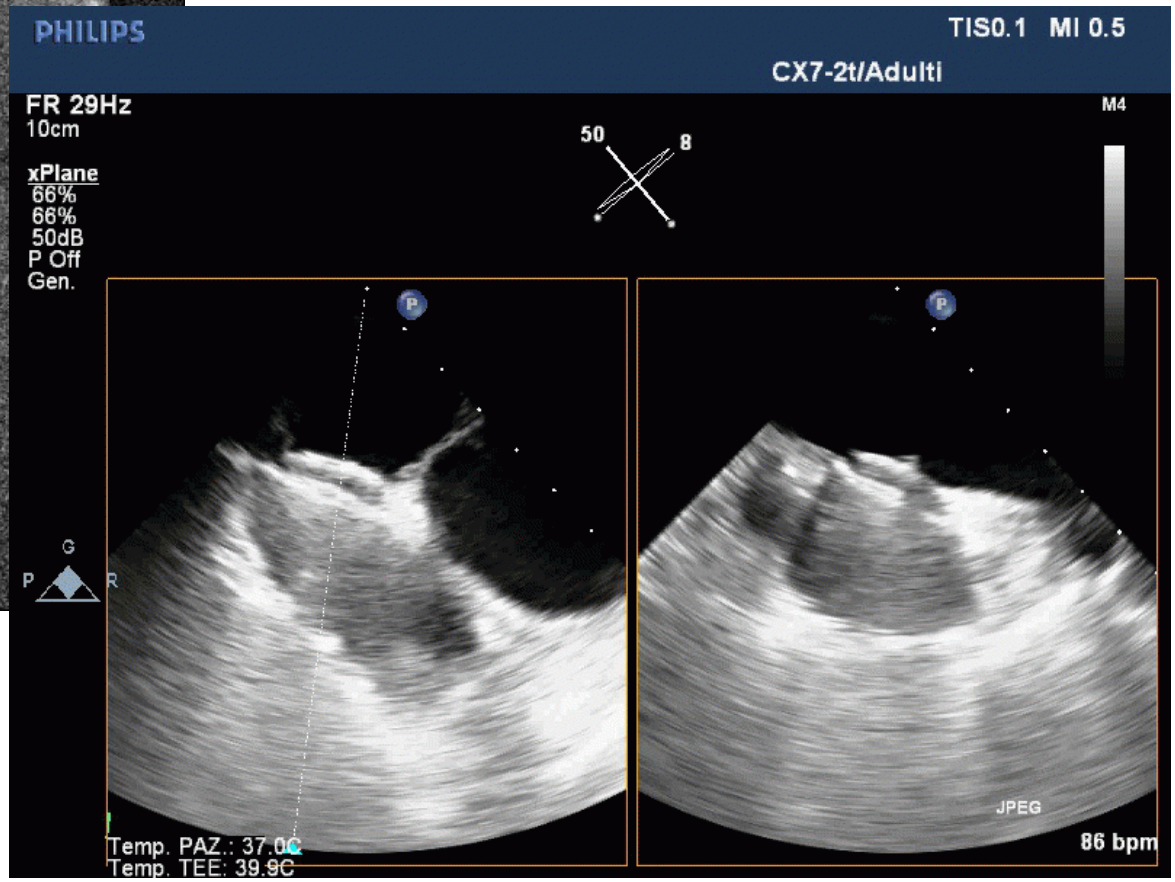
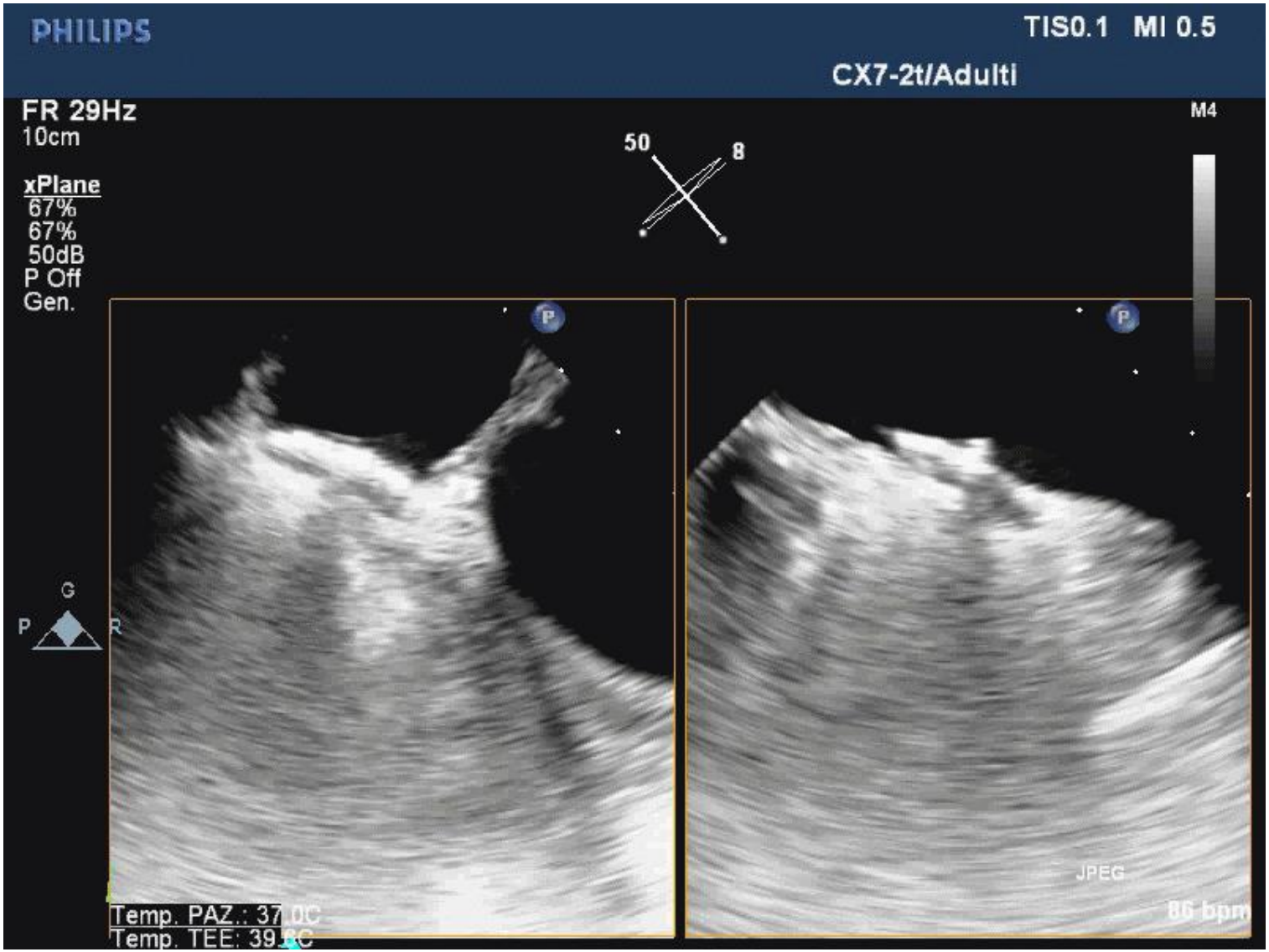
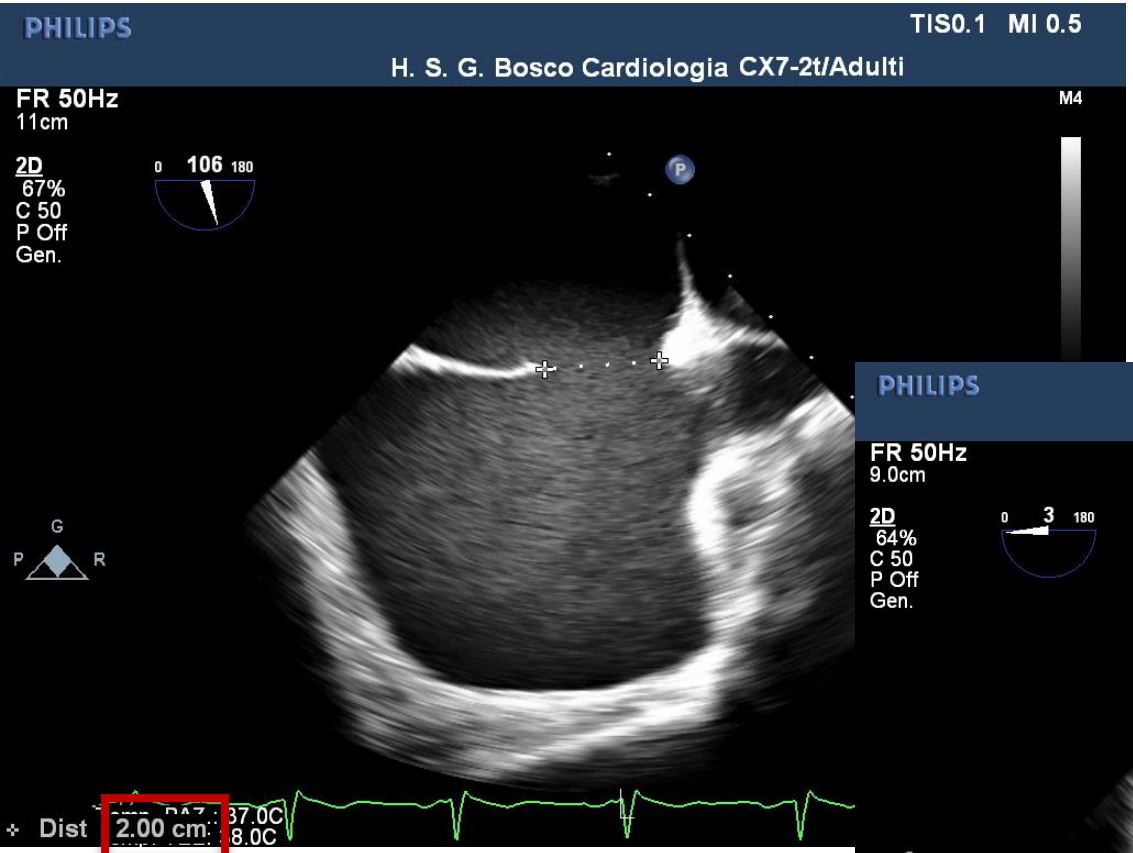


SMALL ASD CLOSURE FINAL RESULT

In the cardiac catheterisation laboratory

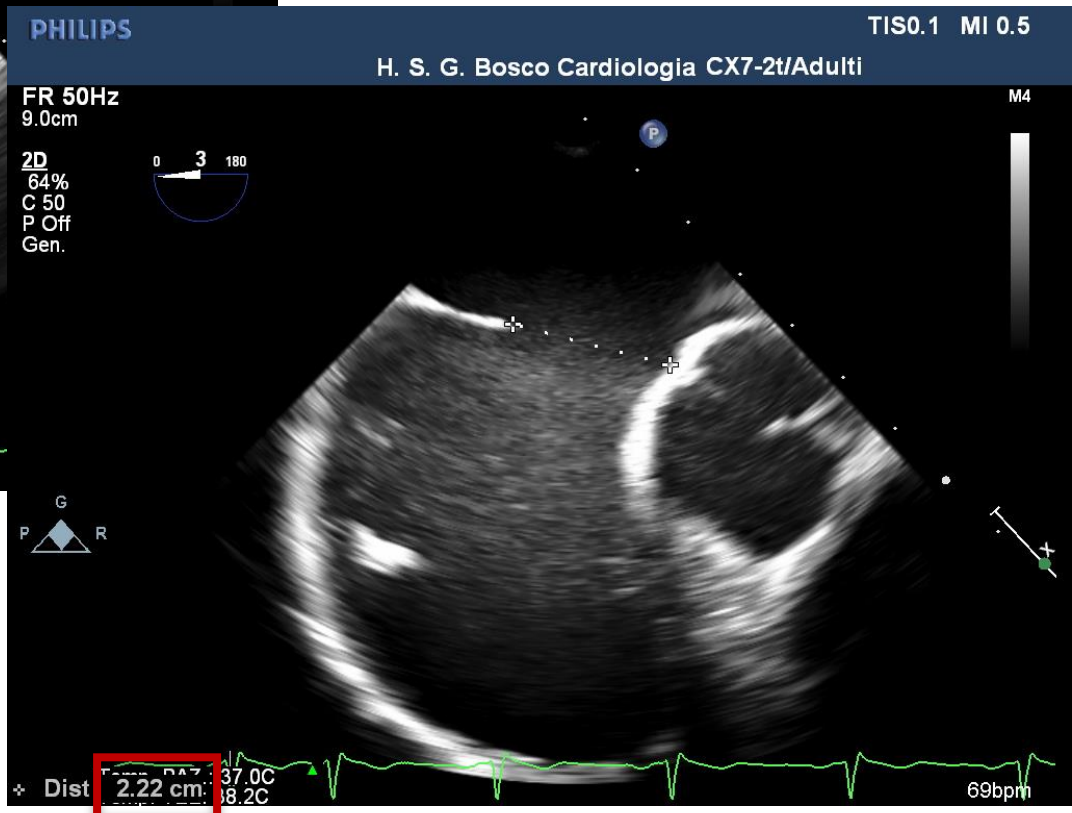


LARGE ASD TEE

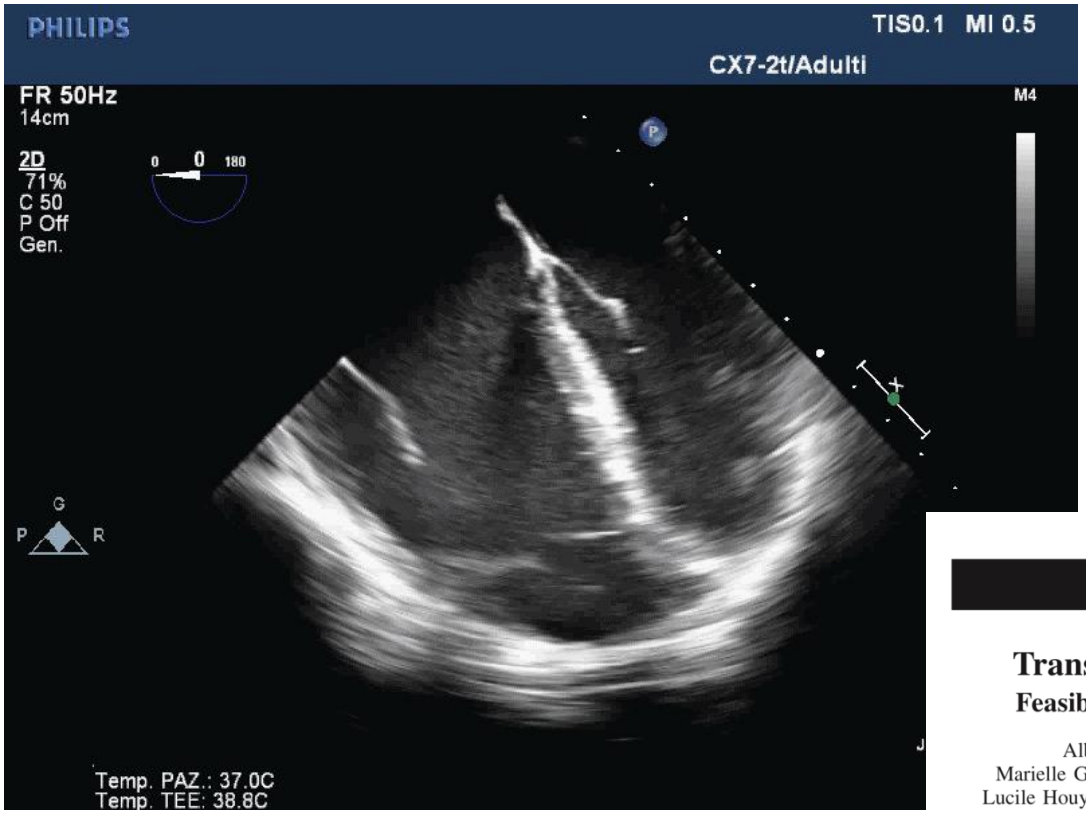


ASSE LUNGO

ASSE CORTO



ATRIAL SEPTAL DEFECTS



> 34 mm

Original Article

Transcatheter Closure of Large Atrial Septal Defects
Feasibility and Safety in a Large Adult and Pediatric Population

Alban-Elouen Baruteau, MD; Jérôme Petit, MD; Virginie Lambert, MD, PhD; Marielle Gouton, MD; Dominique Piot, MD; Philippe Brenot, MD; Claude-Yves Angel, MD; Lucile Houyel, MD; Emmanuel Le Bret, MD, PhD; Régine Roussin, MD; Mohamedou Ly, MD; André Capderou, MD, PhD; Emre Belli, MD

Background—Data are needed on the safety and efficacy of device closure of large atrial septal defects.

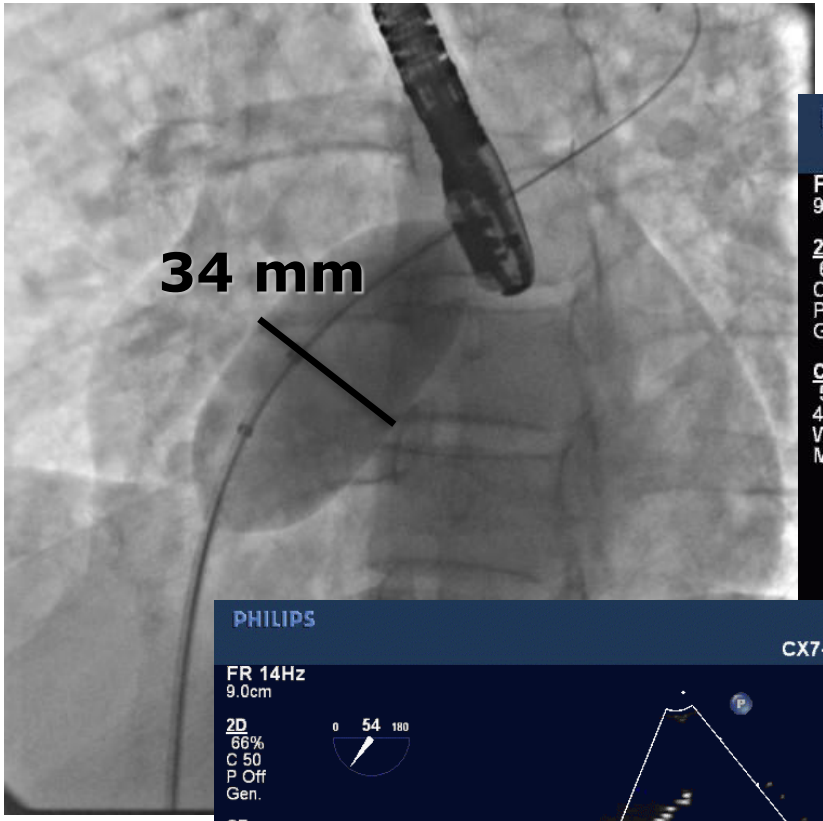
Methods and Results—Between 1998 and 2013, 336 patients (161 children <15 years) with large, isolated, secundum atrial septal defects (balloon-stretched diameter ≥34 mm in adults or echocardiographic diameter >15 mm/m² in children) were managed using the Amplatzer device, at the Marie Lannelongue Hospital. Transthoracic echocardiographic guidance was used starting in 2005 (n=219; 65.2%). Balloon-stretched diameter was >40 mm in 36 adults; mean values were 37.6±3.3 mm in other adults and 26.3±6.3 mm/m² in children. Amplatzer closure was successful in 311 (92.6%; 95% confidence interval, 89%–95%) patients. Superior and posterior rim deficiencies were more common in failed than in successful procedures (superior, 24.0% versus 4.8%; *P*=0.002; and posterior, 32.0% versus 4.2%; *P*<0.001). Device migration occurred in 4 adults (2 cases each of surgical and transcatheter retrieval); in the 21 remaining failures, the device was unreleased and withdrawn. After a median follow-up of 10.0 years (2.5–17 years), all patients were alive with no history of late complications.

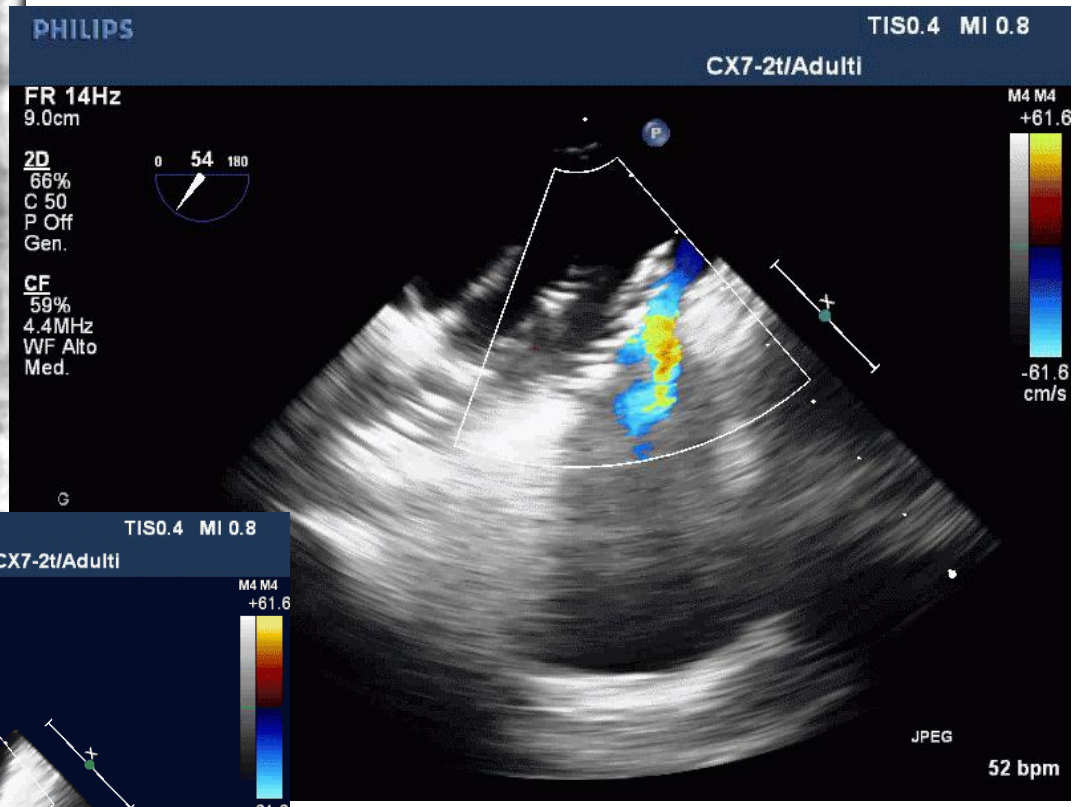
Conclusions—Closure of large atrial septal defects using the Amplatzer device is safe and effective in both adults and children. Superior and posterior rim deficiencies are associated with procedural failure. Closure can be performed under transthoracic echocardiographic guidance in experienced centers. Early device migration is rare and can be safely managed by device extraction. Long-term follow-up showed no deaths or major late complications in our population of 311 patients. (*Circ Cardiovasc Interv*. 2014;7:00-00.)

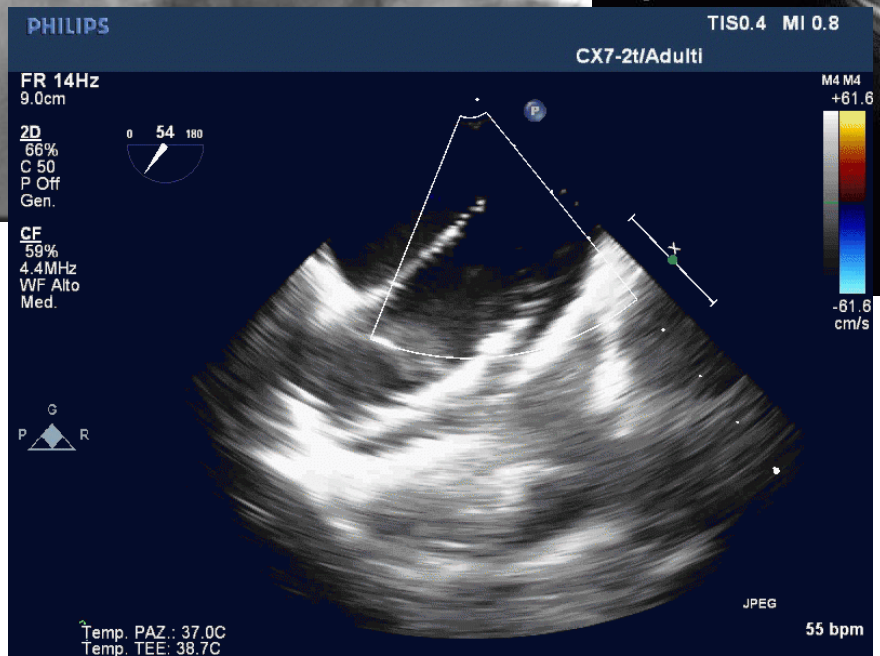
Superior and inferior rim deficiensies are associated with failure

LARGE ASD procedure

In the cardiac catheterisation laboratory



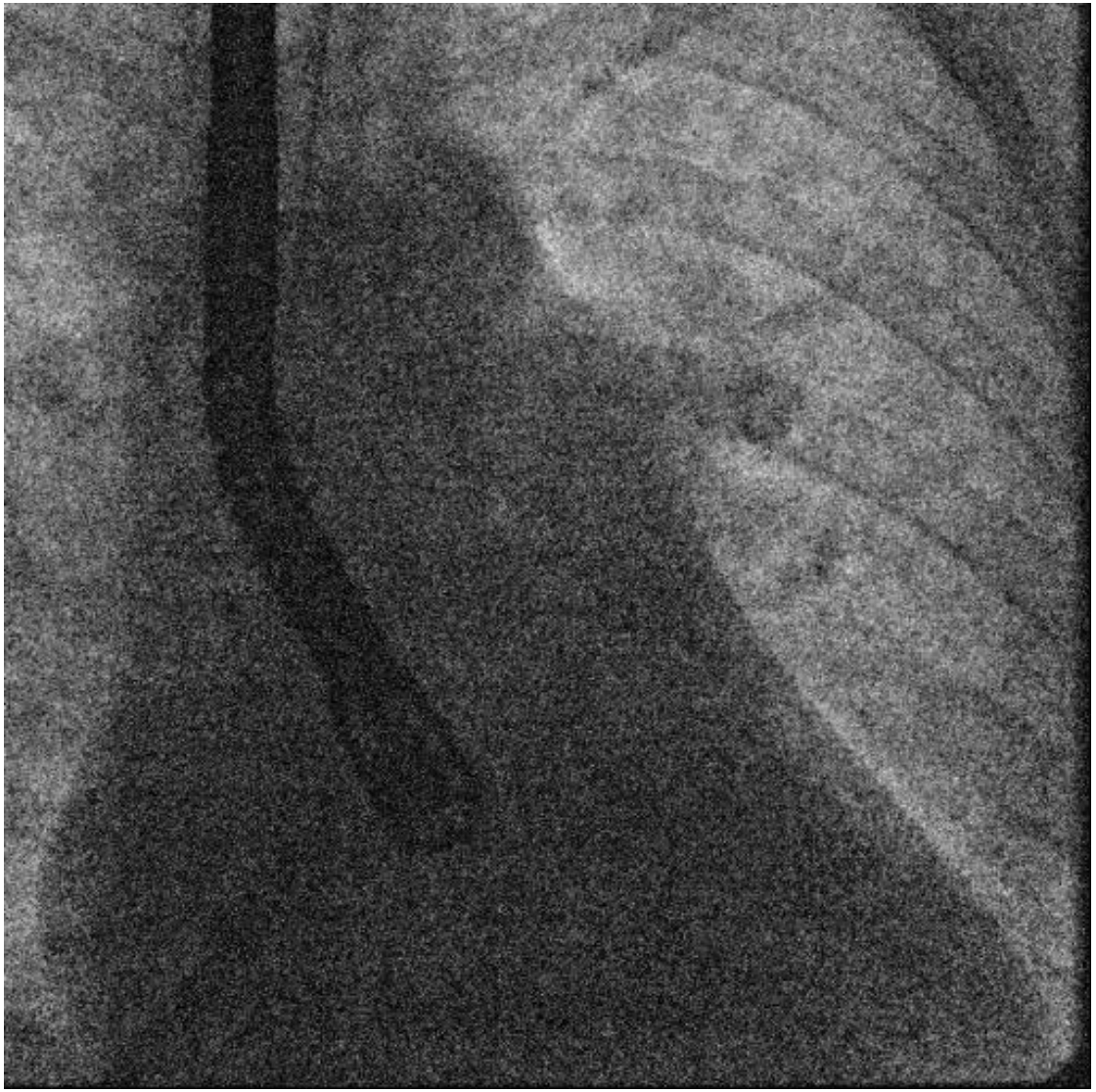




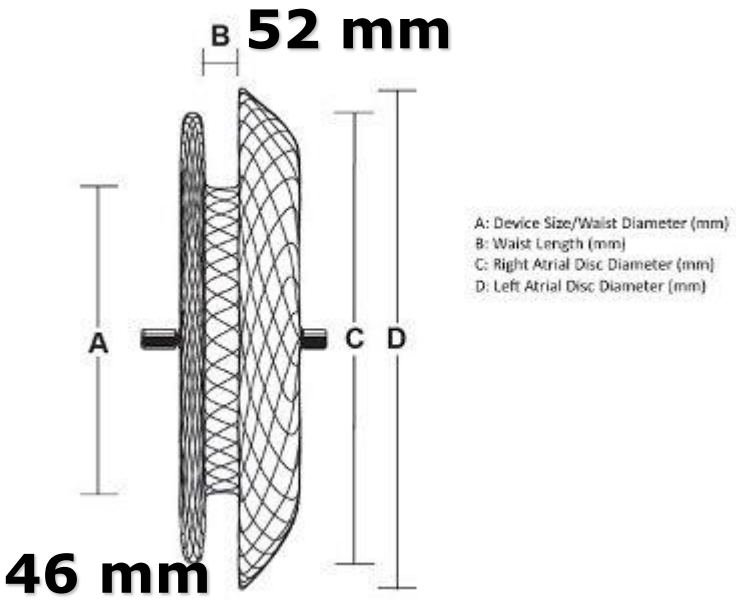
Stop Flow a 34 mm

LARGE ASD procedure

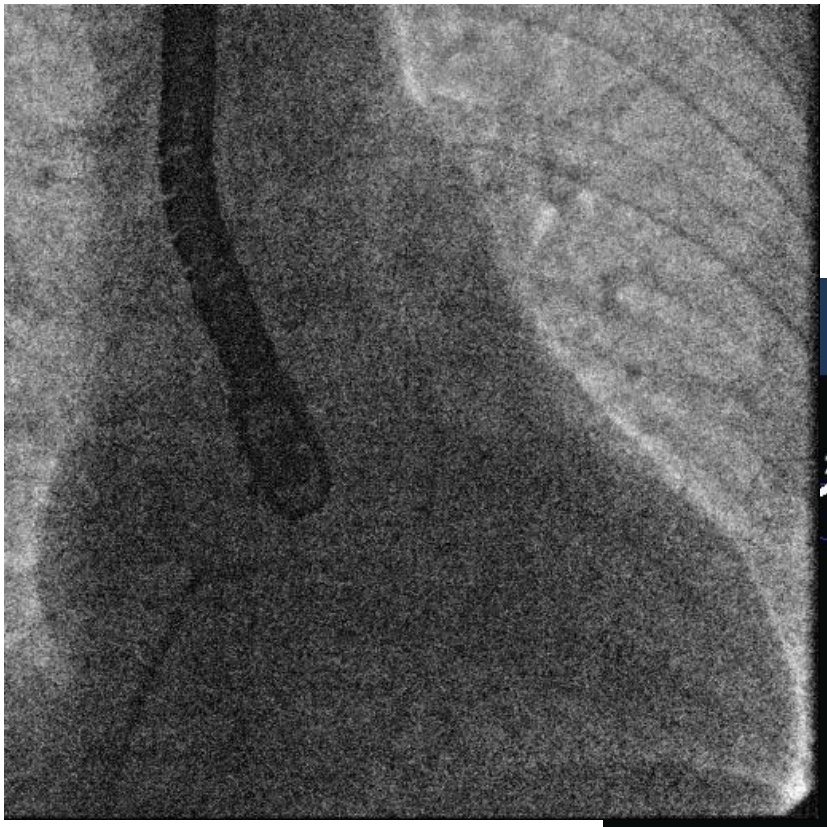
In the cardiac catheterisation laboratory

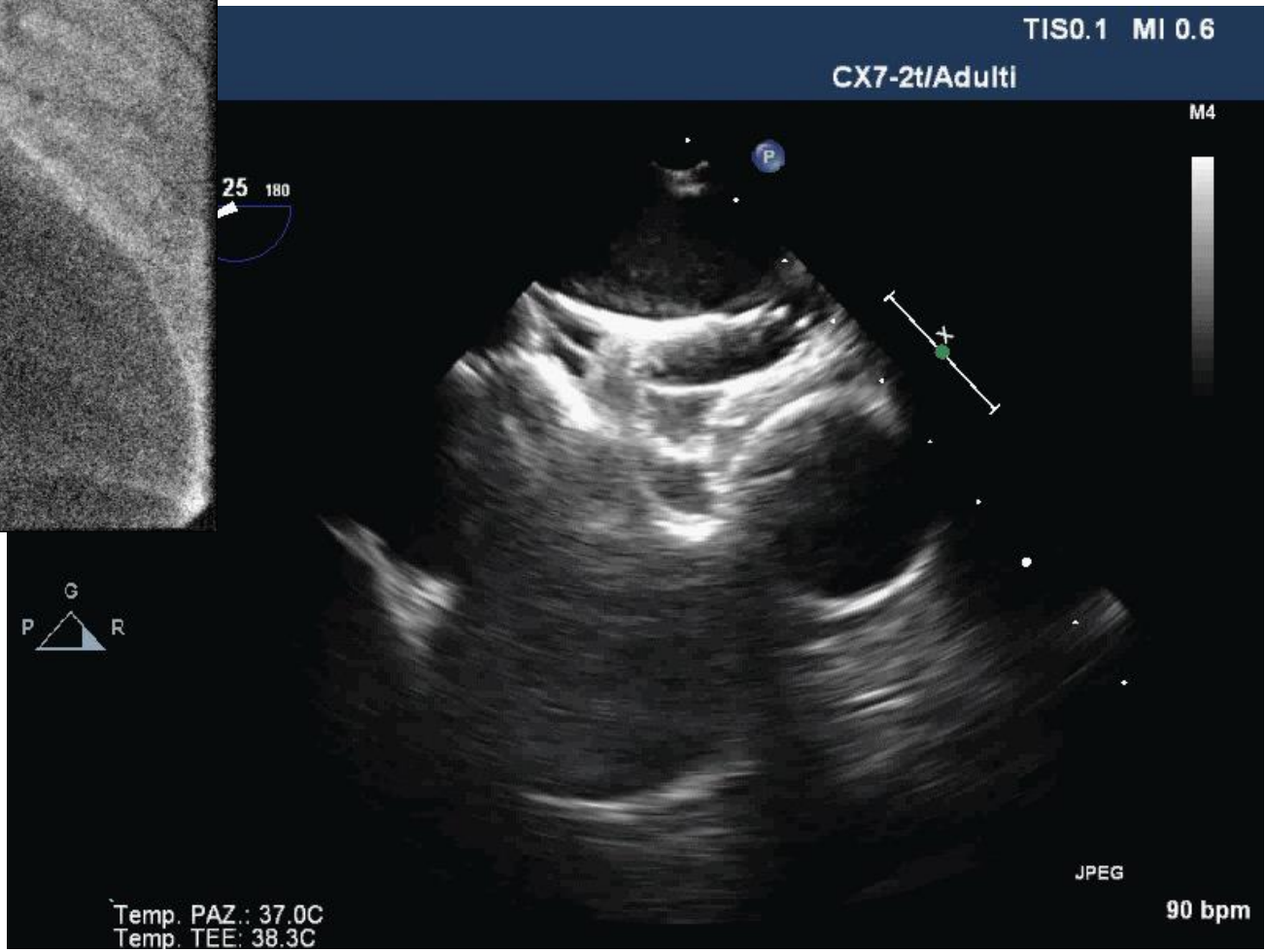


Amplatzer 36 mm



LARGE ASD procedure





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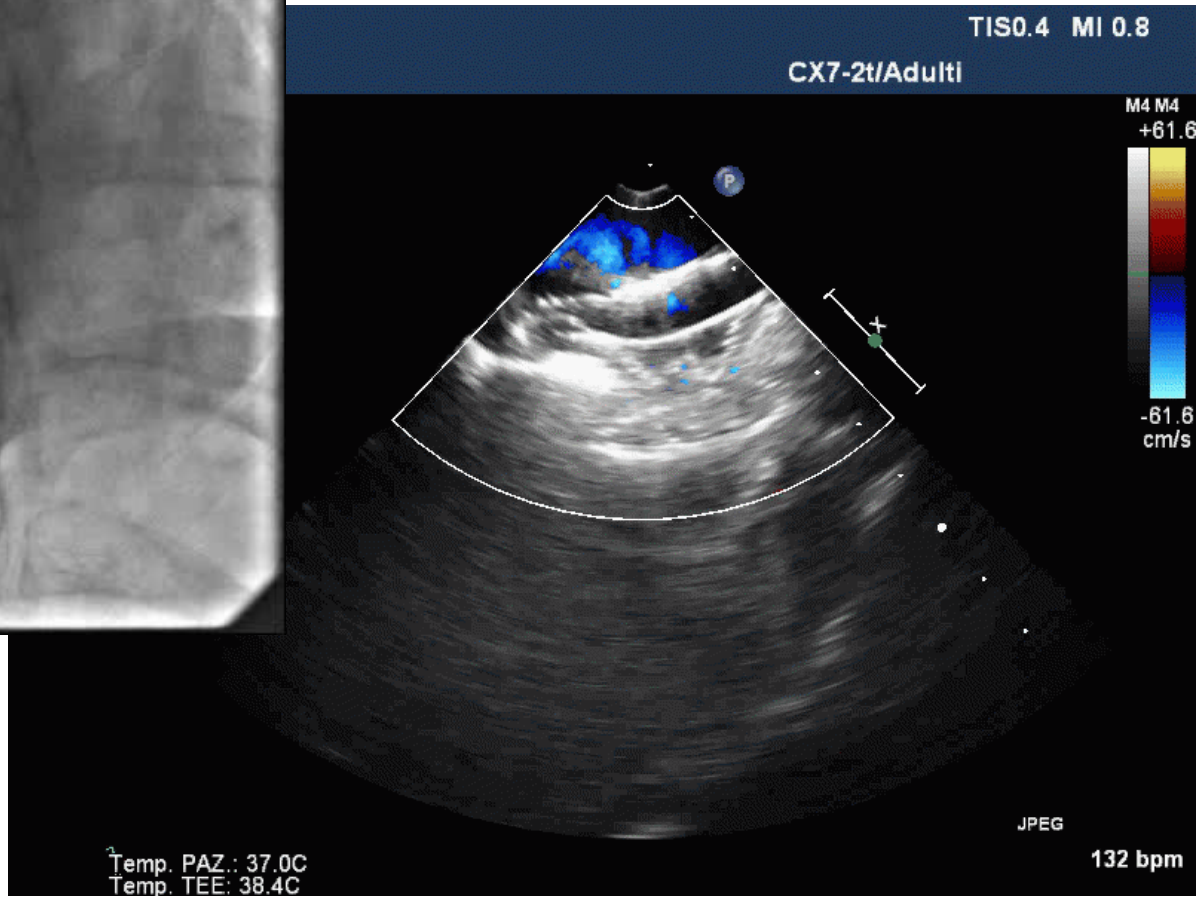
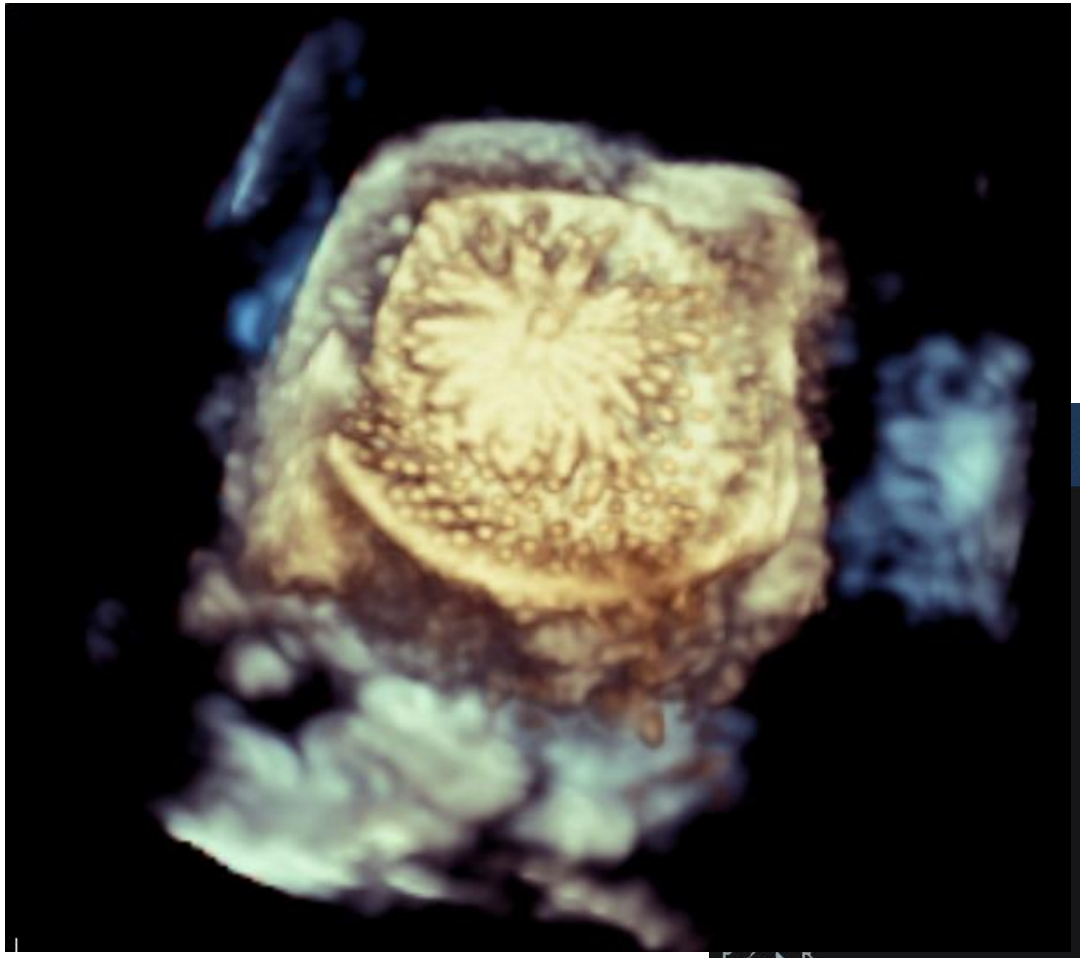
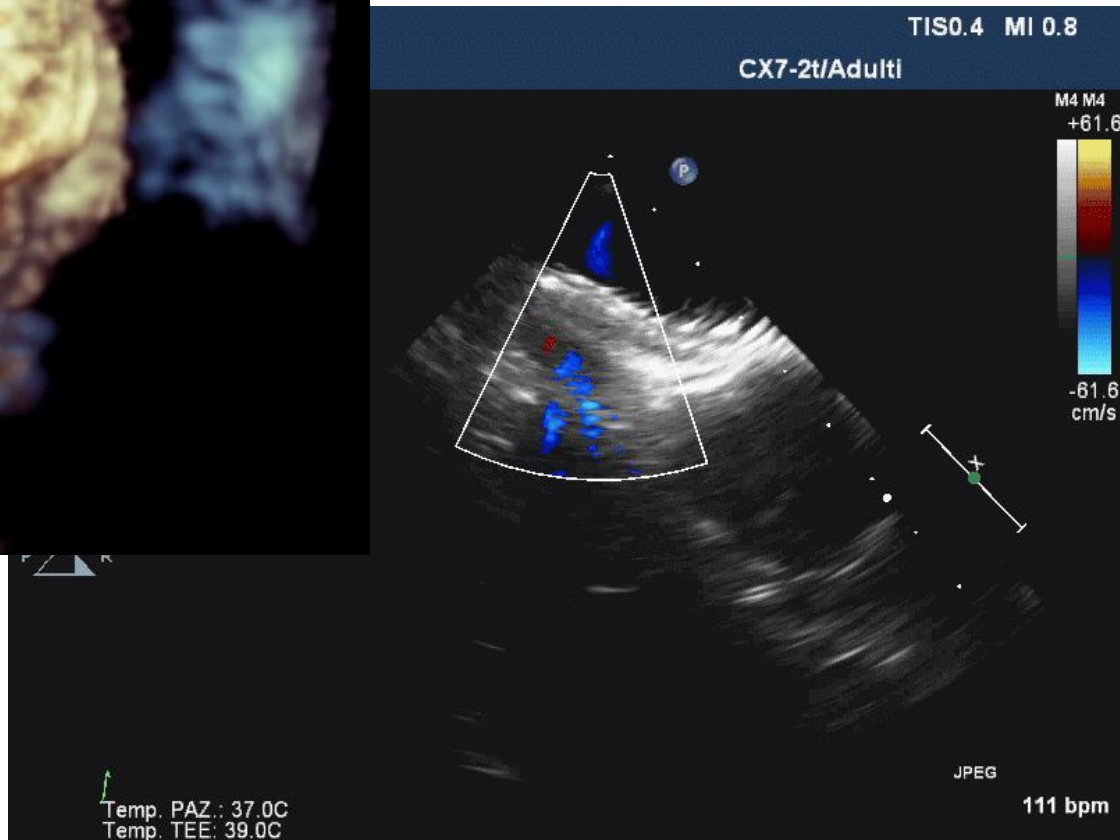


LARGE ASD FU




TIS0.4 MI 0.8
CX7-2t/Adulti
M4 M4
+61.6
-61.6
cm/s
JPEG
111 bpm
Temp. PAZ.: 37.0C
Temp. TEE: 39.0C

ATRIAL SEPTAL DEFECTS

In 1976, King's group reported the first successful percutaneous closure of ASD

Reference	Number of patients	Mean age (years, SD)	Median follow-up (years)	Device type	Closure success	Procedural mortality*	Procedural morbidity*
Du et al, 2002[15]	442	18 (19)	1	ASO	97%	0%	7%
Fischer et al, 2003[16]	236	5 (41)	2	ASO	94%	0%	Not reported
Masura et al, 2005[14]	151	12 (12)	7	ASO	99%	0%	0%
Butera et al, 2006[17]	735	29 (20)	Immediate	ASO=595 CS/SF=140	92%	0%	7%

ASO=Amplatzer Septal Occluder, CS/SF=CardioSEAL/StarFLEX. *Events occurring during procedure or within 30 days thereafter (except for Butera et al,[17] who reported only immediate outcomes).

Table 2: Percutaneous ASD closure

ATRIAL SEPTAL DEFECTS

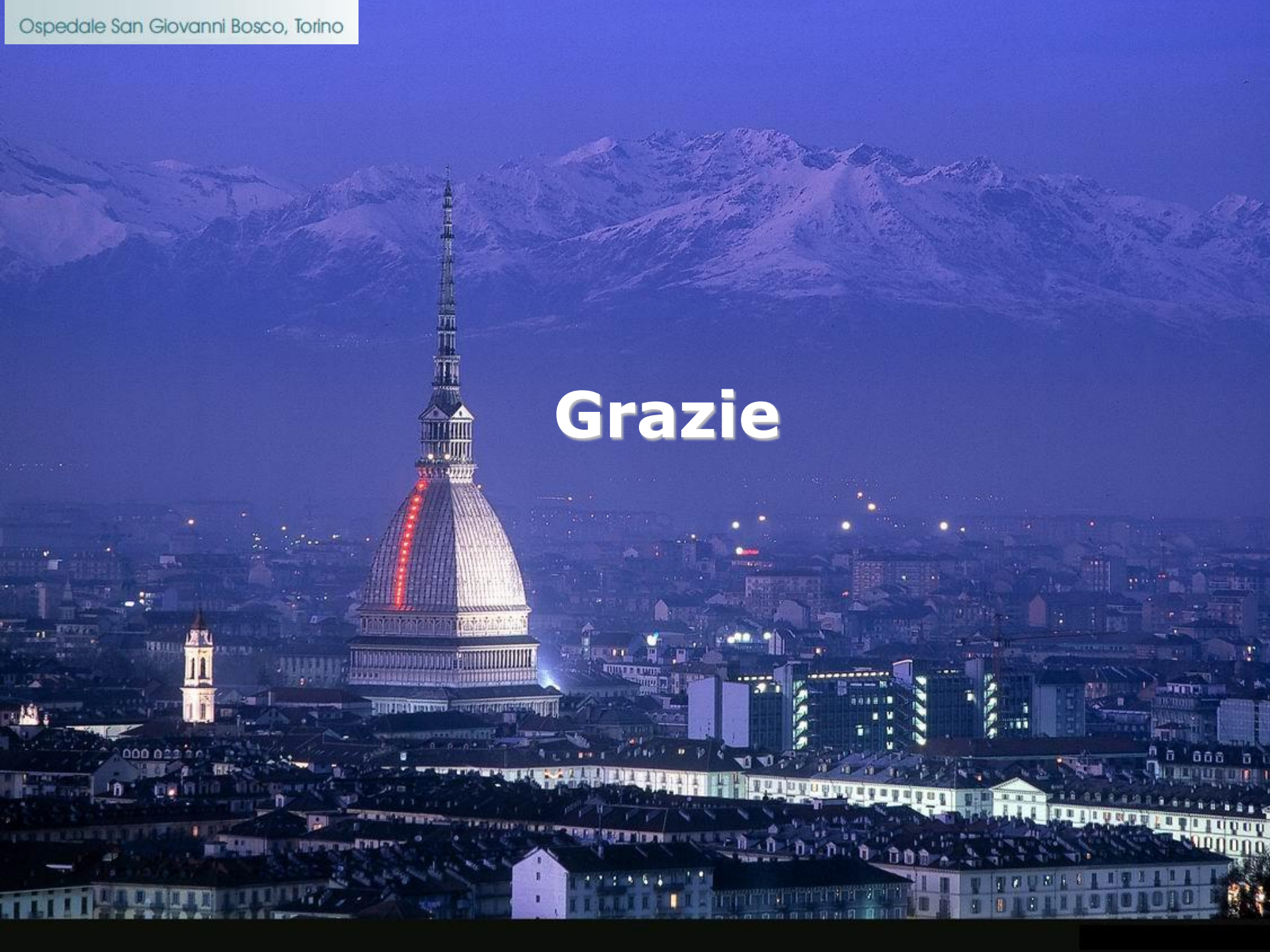
For decades, surgical repair of all types of ASD **was the only available therapy.**

Even today, it is the only therapeutic option for ostium primum and sinus venosus defects, which together comprise 25% of ASDs.

ATRIAL SEPTAL DEFECTS

Over the past 10–15 years, percutaneous closure has gained widespread acceptance as an effective alternative to surgical repair for patients with secundum ASD in whom the ASD is under 35 mm in diameter and in whom a sufficient (>5 mm) rim of surrounding atrial tissue is present

Limited data suggest that defects up to 40 mm in diameter can be closed percutaneously


Grazie