Interventional treatment of congenital heart diseases

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Incidence and etiology : -

- **About 1/100 live births.**
- **Sexes are equally affected**
- **Higher incidence of PDA and ASD in children born at high altitudes**
- **Maternal infection (Rubella) associated with PDA , Pulmonary valve/artery stenosis , ASD.**
- **Maternal exposure to drugs and toxins (alcohol) associated with septal defects**

Classificaion: -

Left to right side shunts (ASD,VSD,PDA)

Right to left shunts (Fallot,Tricuspid atresia, Ebstein anomaly)

Obstructive lessions (Aortic,pulmonary,tricuspid stenosis, aortic coartation,valvular regurgitation)

Classificaion: -

With shunt

- **acyanotic VSD,ASD,PDA;**
- **cyanotic (Fallot,tricuspid artesia,transposition of great vessels, truncus arteriosus,Ebstein anomaly,pulmonary atresia)**

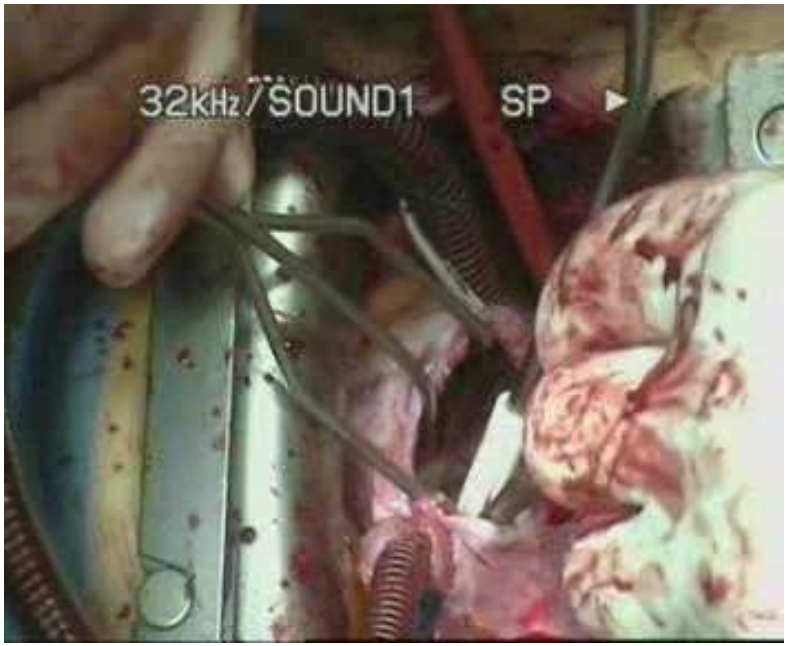
Without shunt

- **aortic, tricuspid and pulmonary stenosis**
- **coarctation of aorta**
- **valvular regurgitation**

Treatment strategy – on time diagnosis on time treatment to prevent heart failure

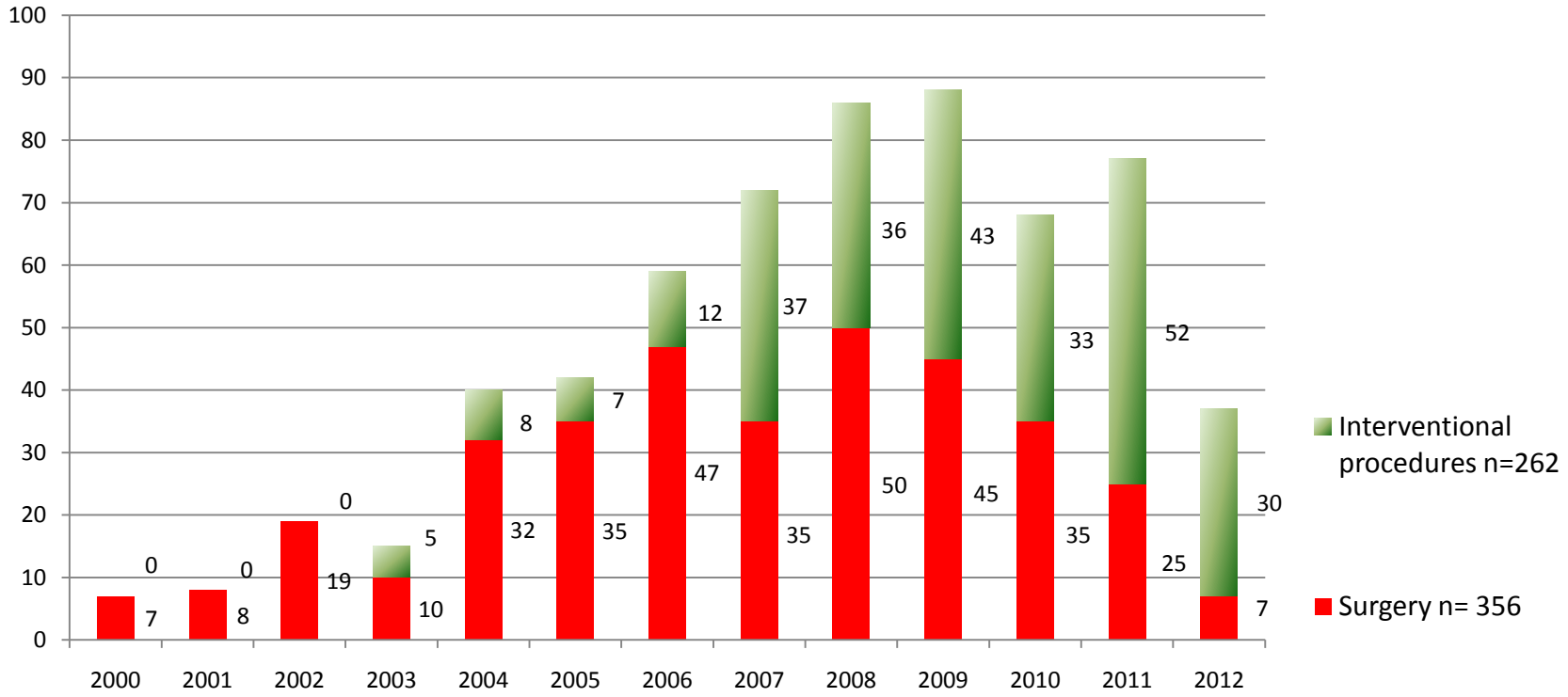
Treatment of CHD

surgical



interventional

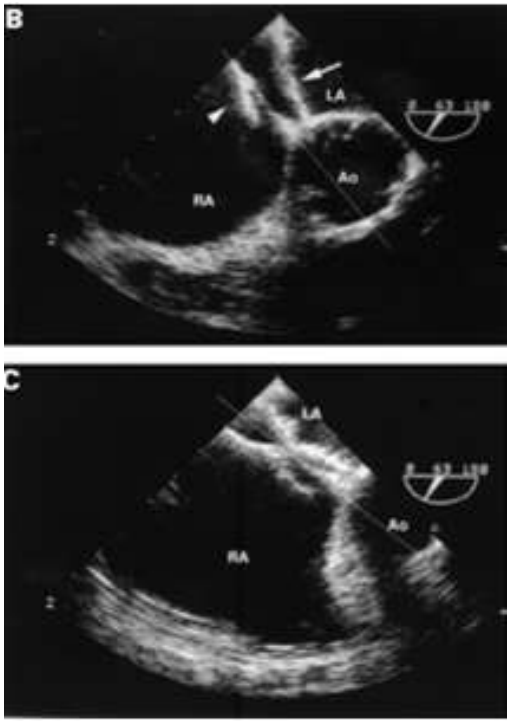
Congenital heart diseases - treatment
Annual trend 2000-2012 N=618pts



Type of procedure N- 618 pts

Atrial septum defect n=130

- **Not reccomanded in cases with absent posteroinferior and anterosuperior rims**



**ACC/AHA 2008 Guidelines for the Management of Congenital Heart Disease*

ASD – results and follow up n=130pts

- **Patient followed by TTE/TEE and angio**
- **10-36mm ASD devices**
- **Failure to close in 4 pts (large ASD 2), insufficient AS rim (2)**
- **In hospital stay 20±4 hours**
- **TEE in all adults**
- **1 boy with TEE in general anesthesia**
- **ASA 10mg/kgTT/day in next 6 months**
- **Clopidogrel 75mg/24h-adults**
- **6 months IE prophylaxis**

Pulmonary valve stenosis, n=57

- **Average reduction TVPG 54 ± 9mmHg**
- **14 pts were treated with B-blockers after**
- **Young female surgical treated**
- **A tamponade in neonatal form-succesfully treated**
- **PR < 1 degree in all**
- **Long life prophylaxis IE**

Indication

Class I

Doppler gradient greater than 60 mm Hg (mean Doppler gradient > than 40 mm Hg)

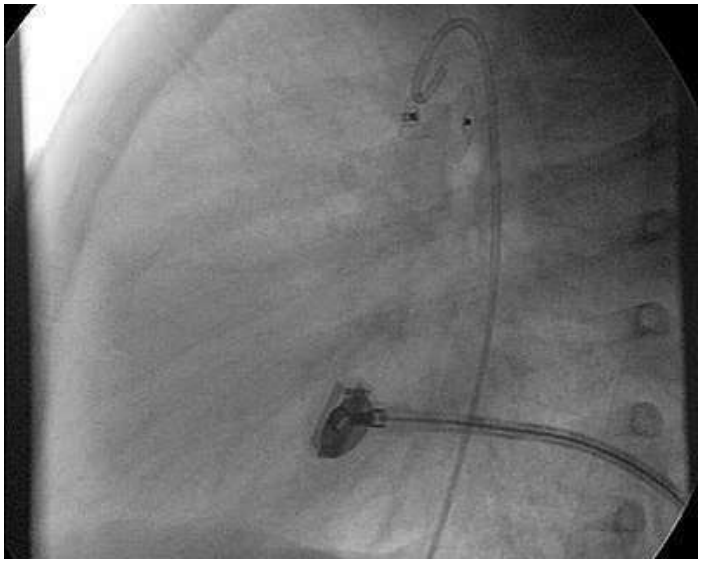
Class IIb

In dysplastic pulmonary valve Doppler gradient > 60 mm Hg (mean Doppler gradient greater than 40 mm Hg)

In symptomatic patients with a dysplastic pulmonary valve and peak gradient by Doppler > 50 mm Hg or a mean Doppler gradient greater than 30 mm Hg.

*****_ACC/AHA 2008 Guidelines for the Management of Congenital Heart Disease_

PDA n=46 pts



Class I

Closure of a PDA either percutaneously or surgically is indicated for the following:
Left atrial and/or LV enlargement or if PAH is present, or in the presence of net left-to-right shunting.
Prior endarteritis
Contraindication:
calcified PDA.

Class IIa

1 It is reasonable to close an asymptomatic small PDA by catheter device.
2 PDA closure is reasonable for patients with PAH with a net left-to-right shunt.

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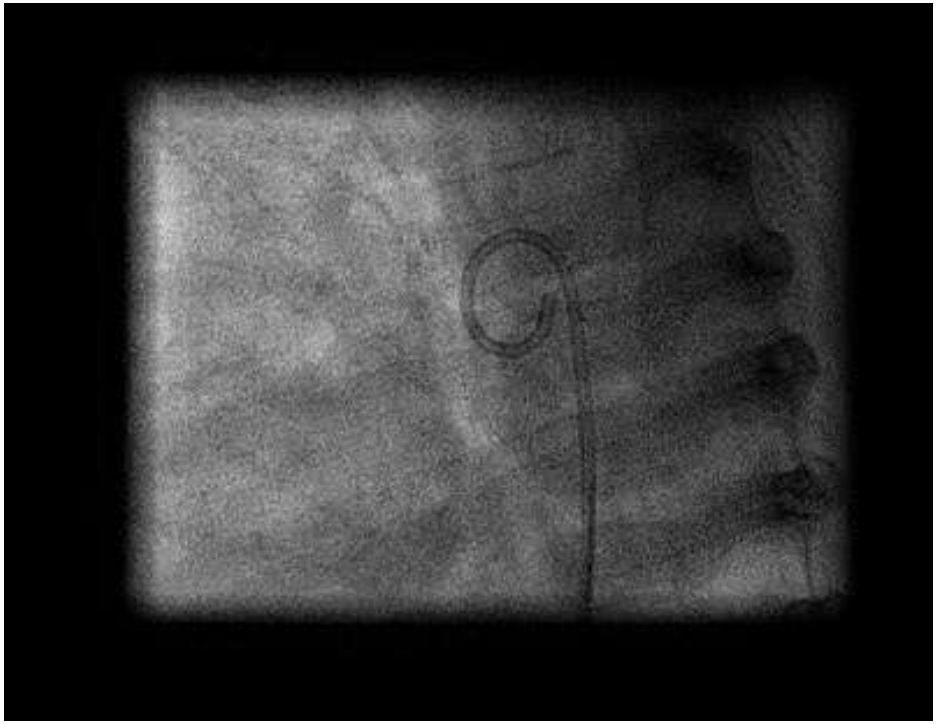
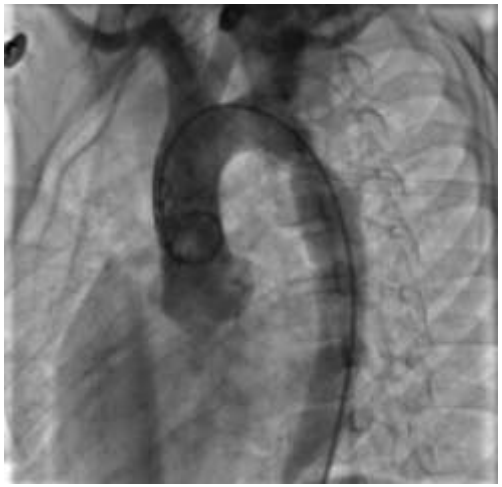
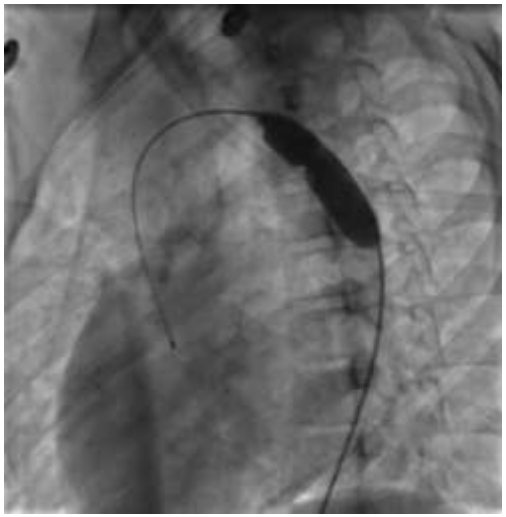
PDA results and follow up 46pts

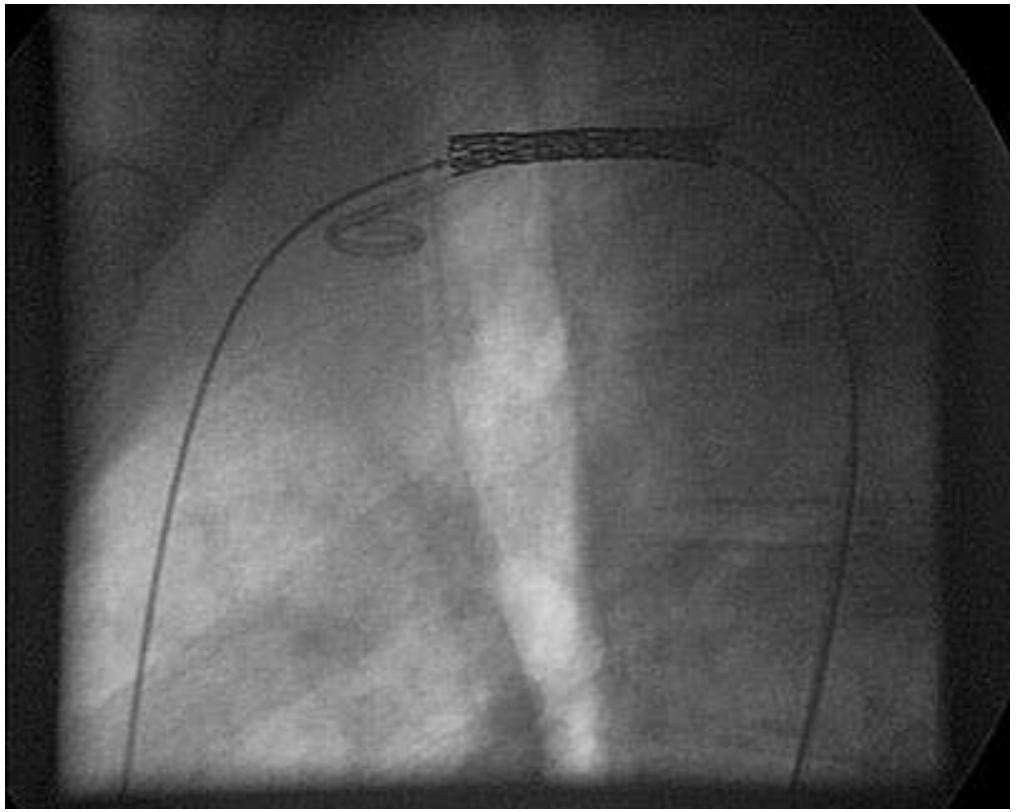
- **44/46 pts were closed without shunt**
- **One girl with small shunt (coil)**
- **23 Amplatz devices/ 23 coils were implanted**
- **In hospital stay 28 ± 4 h**
- **Boy referred for surgery- large PDA**
- **Surgical extirpation of device from femoral vein in one girl (OR in stand by)**
- **Prophylaxis of IE 3 months**



Balloon angioplasty, stenting of aorta n=18pts







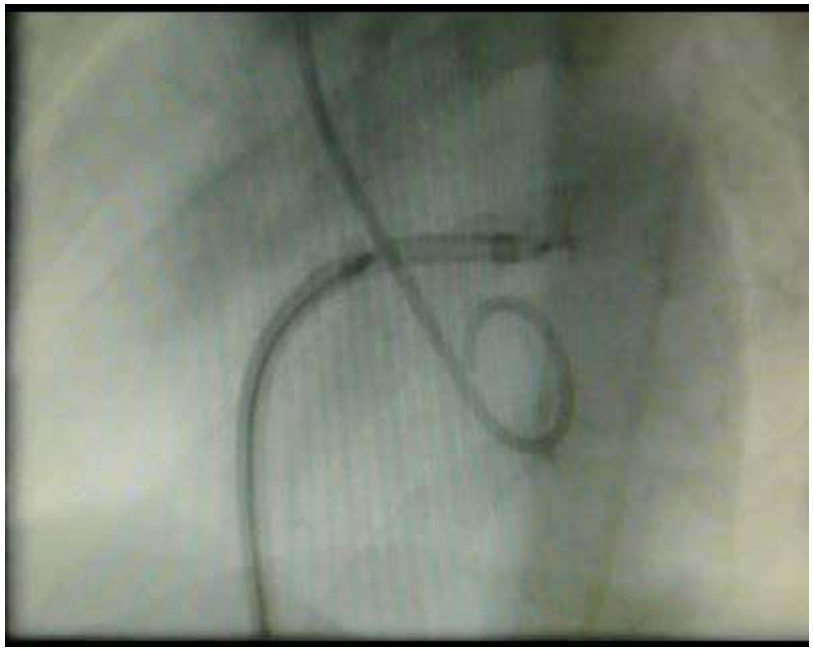
- **Balloon angioplasty, 13 pts**
- **Stenting of aorta in 5pts**
- **Average reduction of PG 30 5 mmHg**

VSD- Amplatz perimembraneous ocluder n=8pts

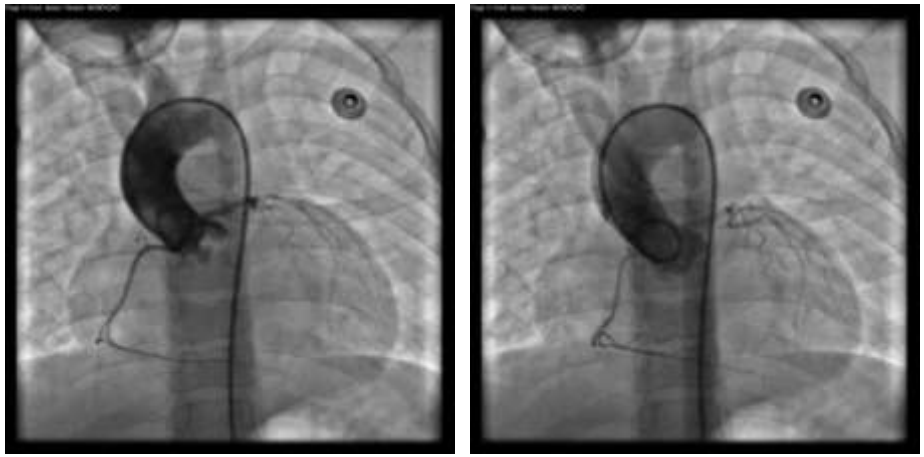
- 8 pts with perimembranous VSD
- Aged 5 -45 y
- Child with trisomy 21 and VSD

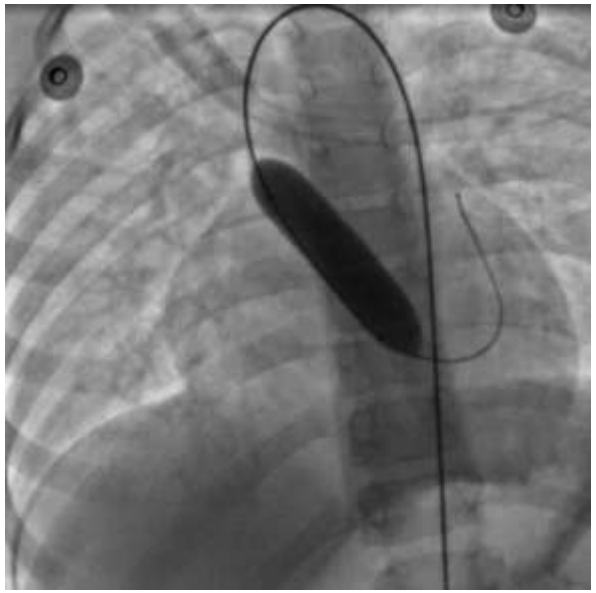
- ECG without AV block

- Amplatz perimembraneous occluder 8-14mm

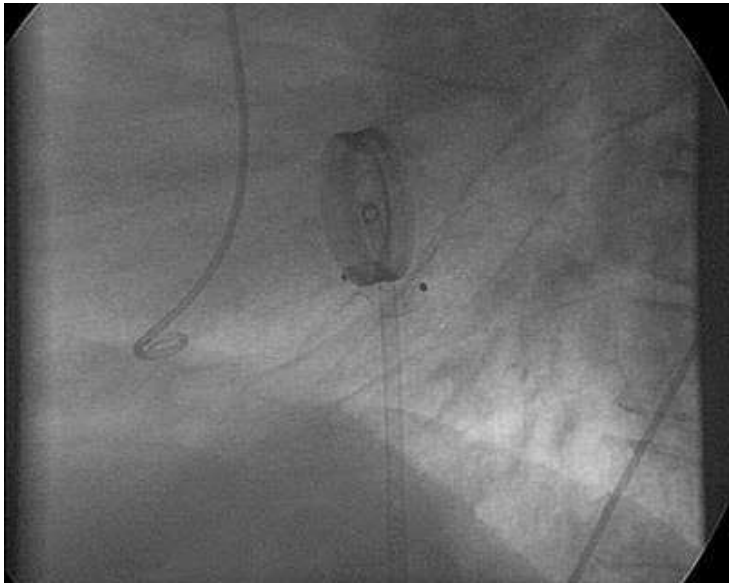


Congenital aortic stenosis- 7pts





Closure of paravalvular leak- case report



- **55 y.old female with MS, PAH, DM, obesity, HOBB, hypothireosis**
- **Octomber, 2005 MVR (mechanical)**
- **May, 2007 valve thrombosis, pulmonary edema, urgent re- do**
- **Postoperative paravalvular leak 3 degree**
- **August 2007, closure of leak with implantation of muscular VSD occluder 8 mm**

Postsurgical VSD- case report

I surgery: 07.12.2001

Echo: PAH
(PA syst/med 110/65)
MReg.+3, TReg +4,VSD, PA med42mm
Surgery: PA banding, MKR, TKR
PA- 29mm, PA syst/med 68/43

01/2005 heart failure, new AV block
18.02/2005 permanent PM
18.08.2007 closure with Amplatzer device VSD
Th: ACE inh, Spironolactone, diuretics, OAT
Follow up 11 years

II-surgery 05.11.2004

Echo: MReg.+4 (prolaps/dilation of ring), TReg.+3, PA syst/med 110/60, LAP 30
Surgery: replacement of mitral valve ,ASD closure with pericardial patch
PA syst/med 60/23

Conclussion

Interventional procedures are method of choice for treatment of congenital heart disease.

Less stres for patients with excellent permanent outcome

Surgery is final option when this procedures are not able to resolve the problem