s/p LV-PA conduit

for ccTGA + PA +VSD

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2010.4.17.

Brief History

- s/p LV-PA conduit, VSD closure for ccTGA + PA + VSD
- 8세
- NYHA class II
- near systemic level of LV systolic pressure

  due to **conduit stenosis** at F/U

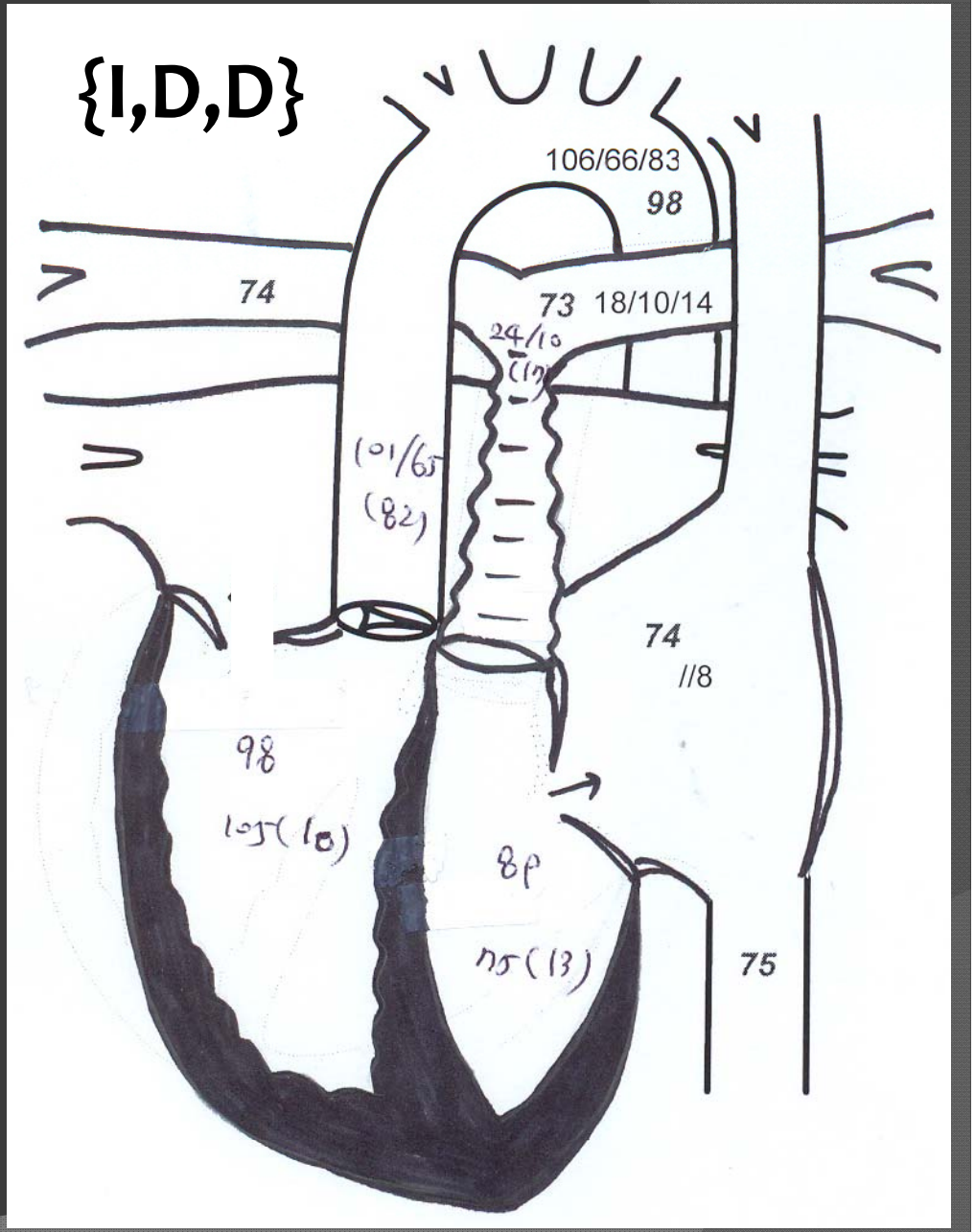
  (mildly elevated LVEDP, good LV sys. function

  by echo, no TR at present)

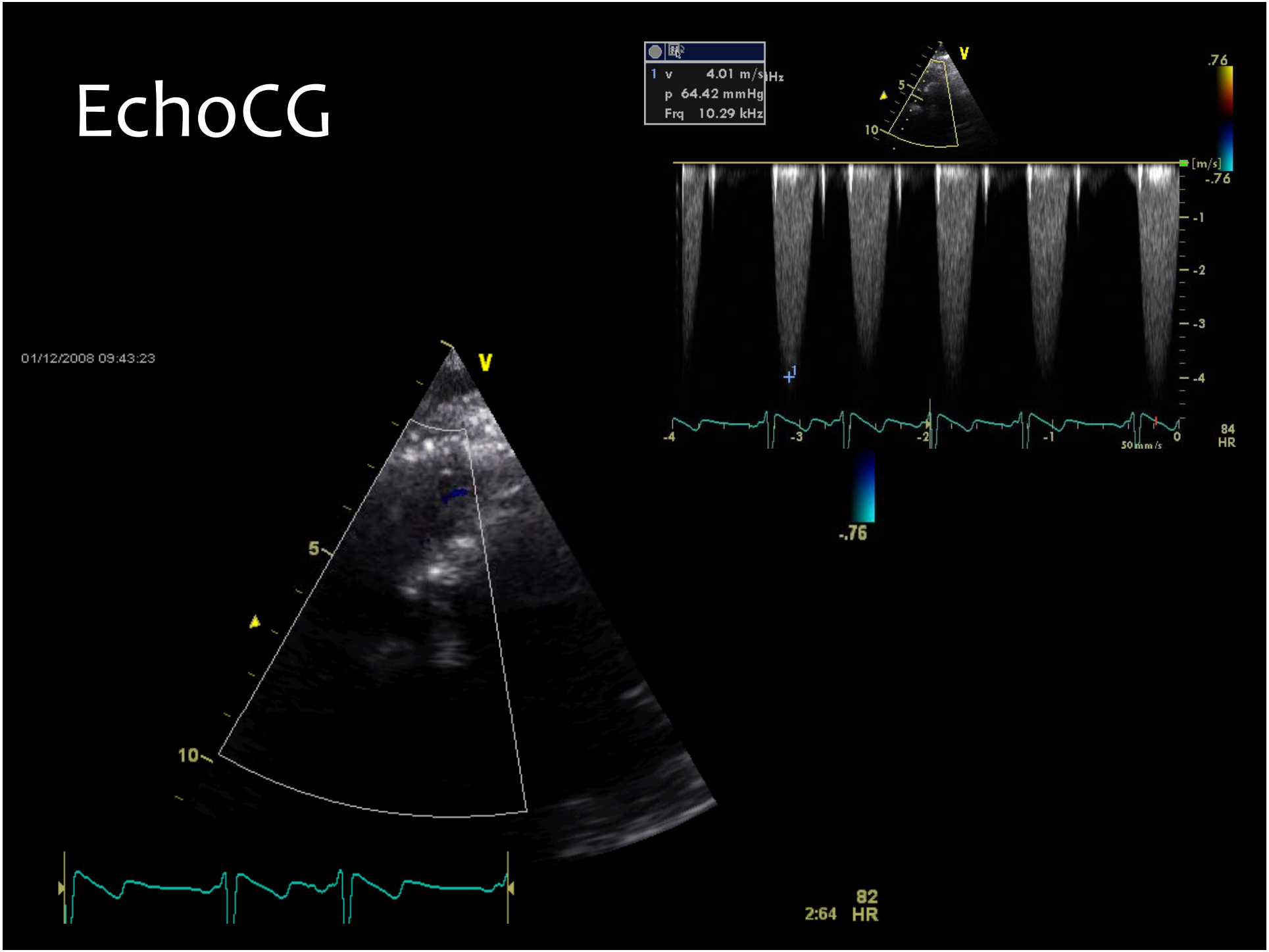
Cardiac cath.

- Δ P (mLV/mRV) : **0.71**
- Peak PG (mLV-distal PA)

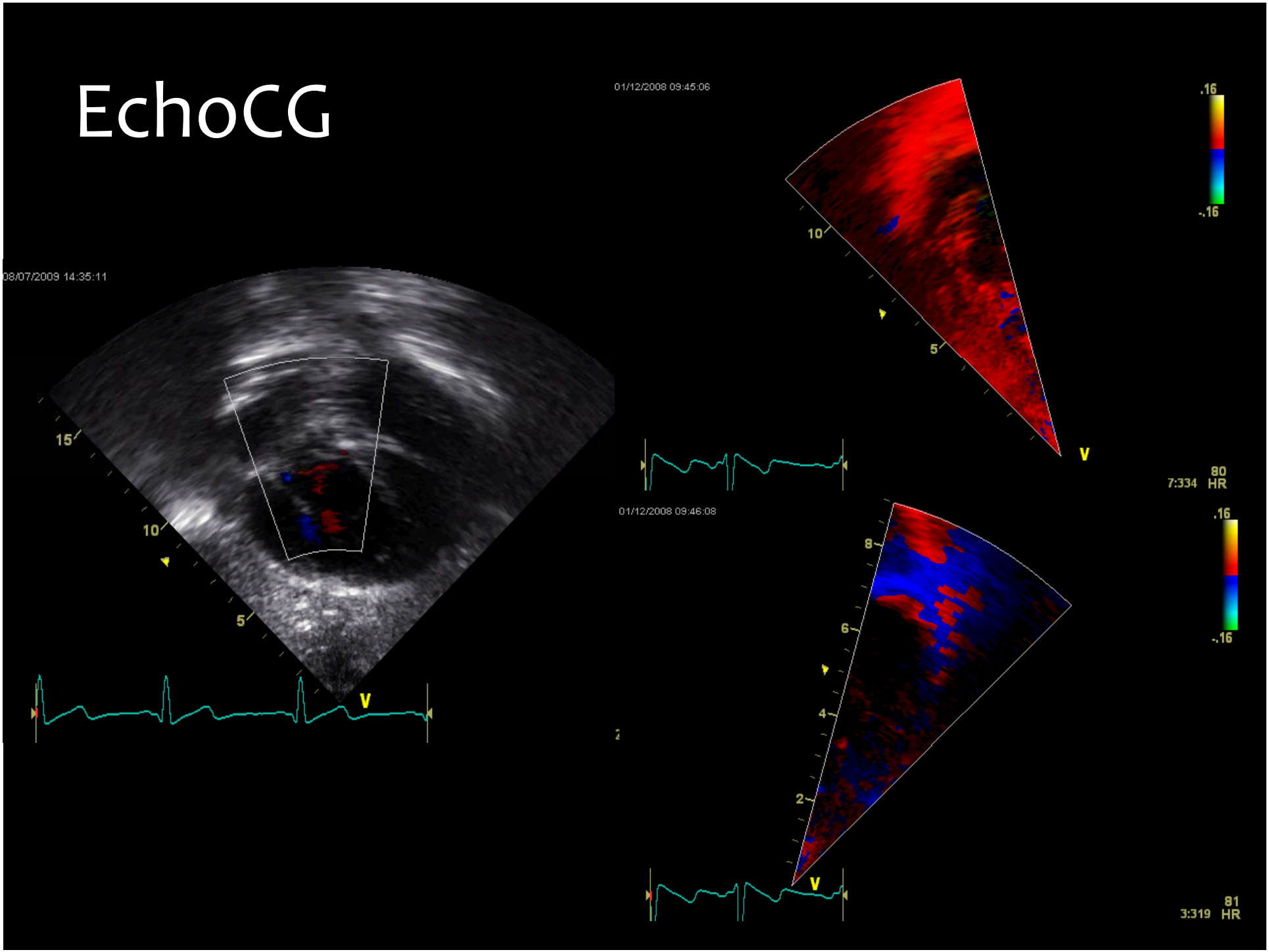
  : **51** mmHg



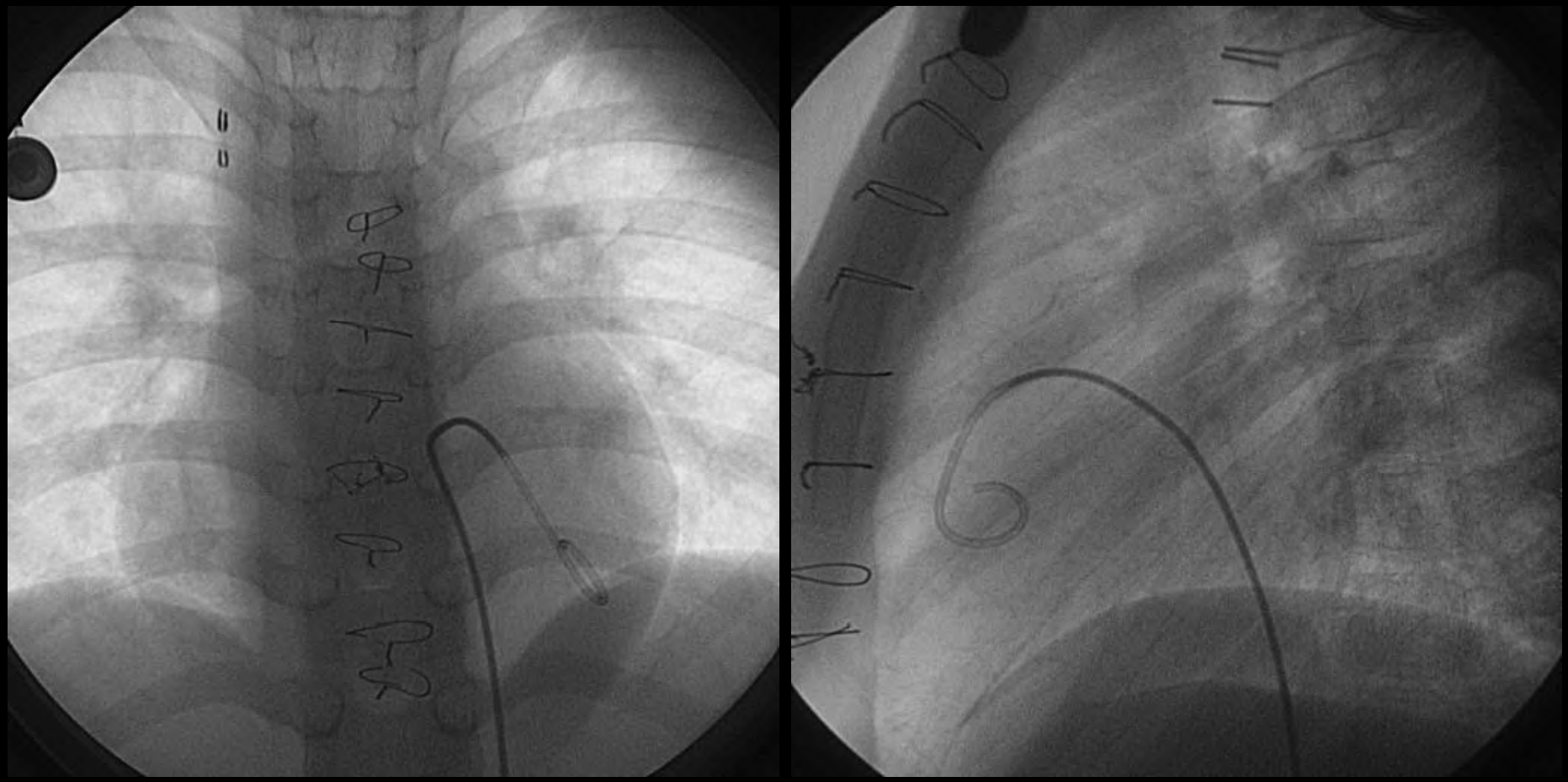
EchoCG


1 v 4.01 m/s
p 64.42 mmHg
Frq 10.29 kHz
01/12/2008 09:43:23
V
5
10
.76
[m/s]
-.76
-1
-2
-3
-4
-4
-3
-2
-1
0
50mm/s
84
HR
-.76
82
2:64 HR

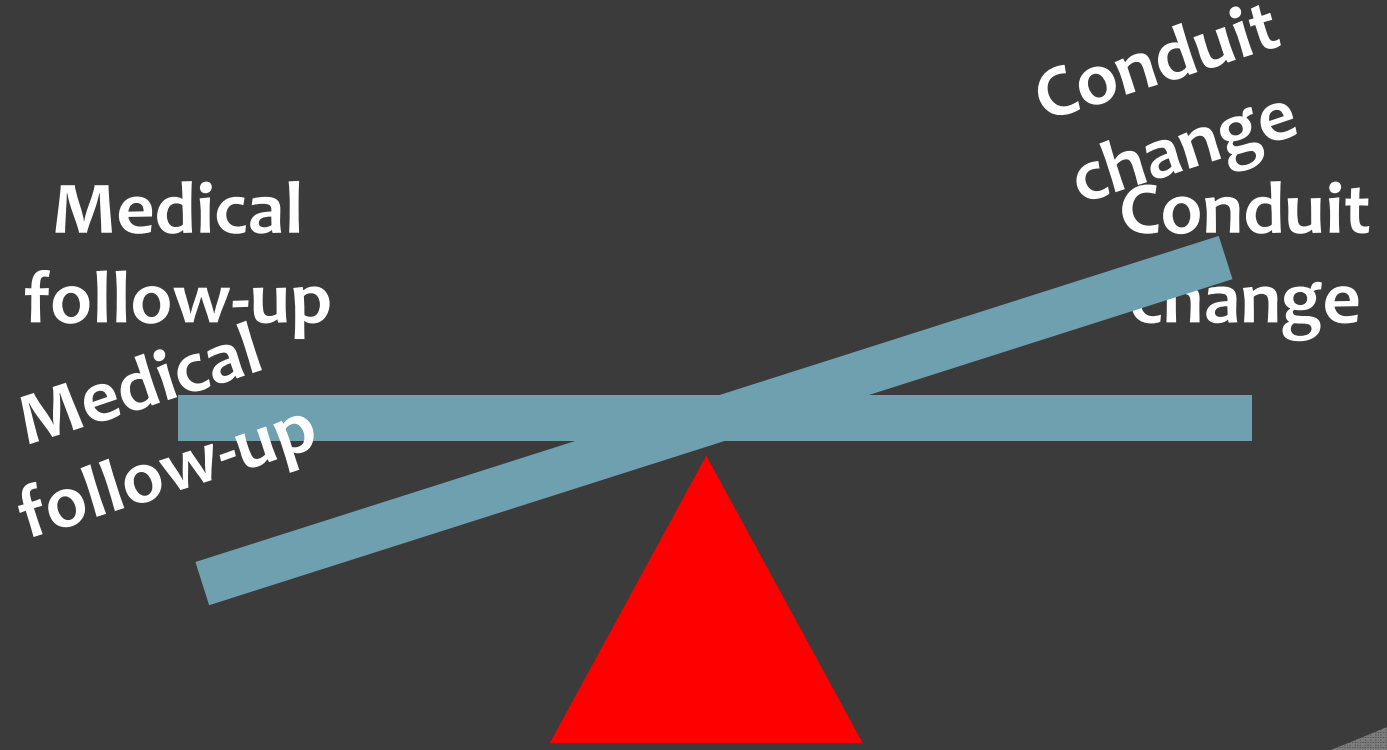
EchoCG


08/07/2009 14:35:11
15
10
5
V
01/12/2008 09:45:06
10
5
V
.16
-.16
80
7:334 HR
01/12/2008 09:46:08
8
6
4
2
V
.16
-.16
81
3:319 HR

Angiography in mLV



Considerable options in this patient ?

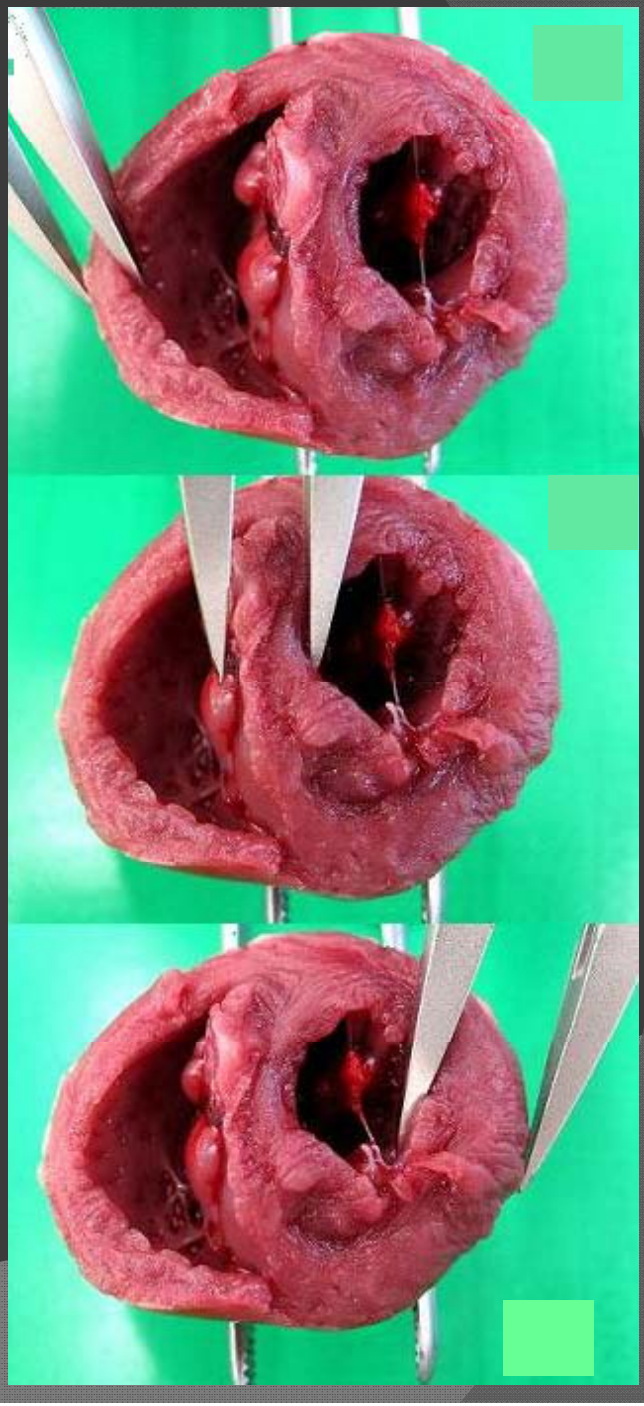


Right Ventricle

Normal RV wall thickness

= 1/3 of LV wall thickness

Inborn Weakness !!



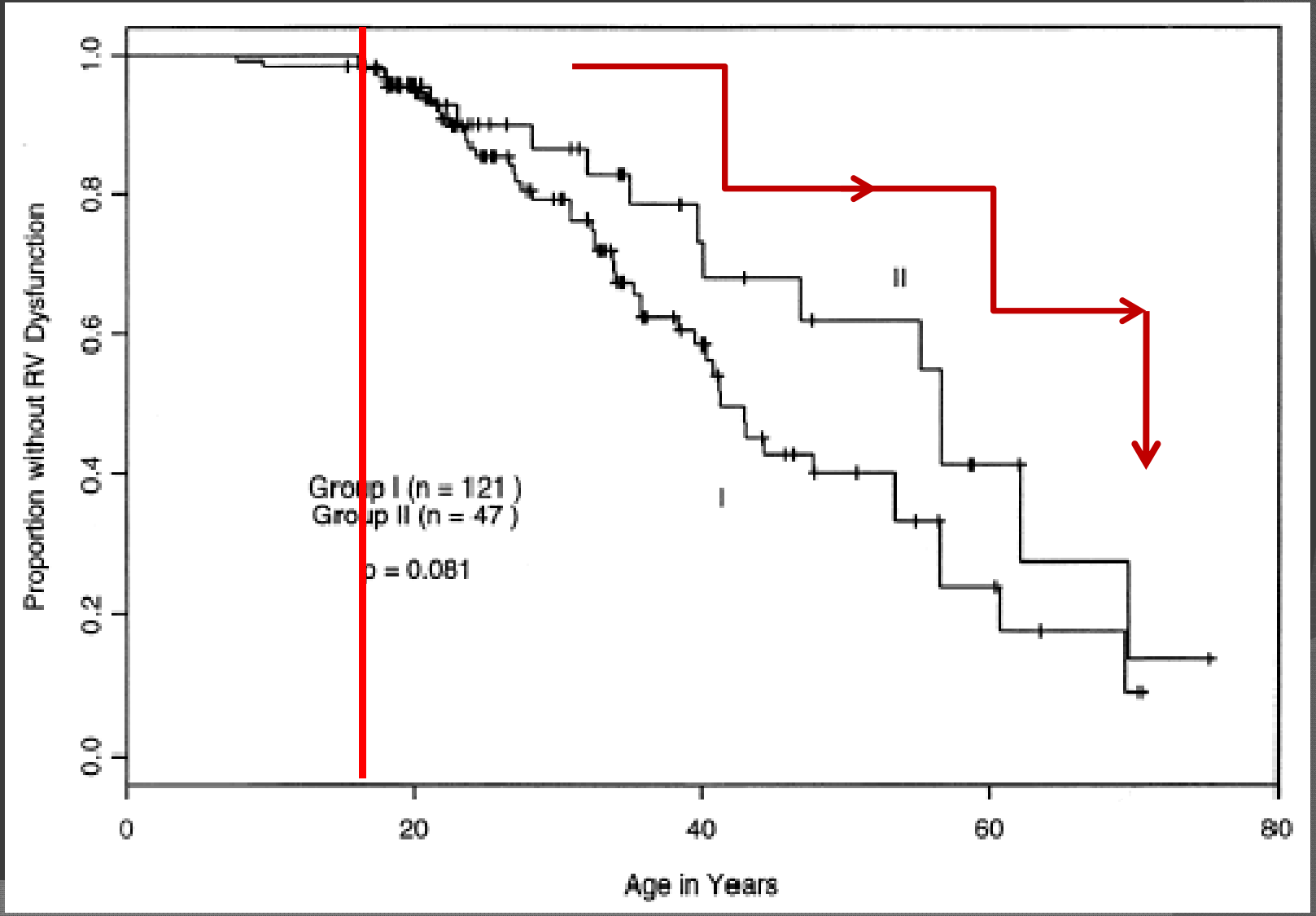
Natural course of RV function in cc-TGA

	Group I (Associated Lesions) (n = 132)	Group II (No Associated Lesions) (n = 50)	p Value
Age (yr, mean ± SD)	32 ± 12	34 ± 15	NS
Gender	37% female	52% female	NS
CHF	51%	34%	0.04
RV Dysfunction:			
Any	70%	55%	NS
Moderate or severe	39%	32%	NS
TR:			
Any	82%	85%	NS
Moderate or severe	57%	40%	NS
Pacemaker	45%	27%	0.04
Arrhythmia	47%	29%	0.04
Open heart surgery (excludes transplant)	70%	15%	0.001
LV Dysfunction	25%	7%	0.014
AR	36%	25%	NS

(Graham et al, 2000 JACC)

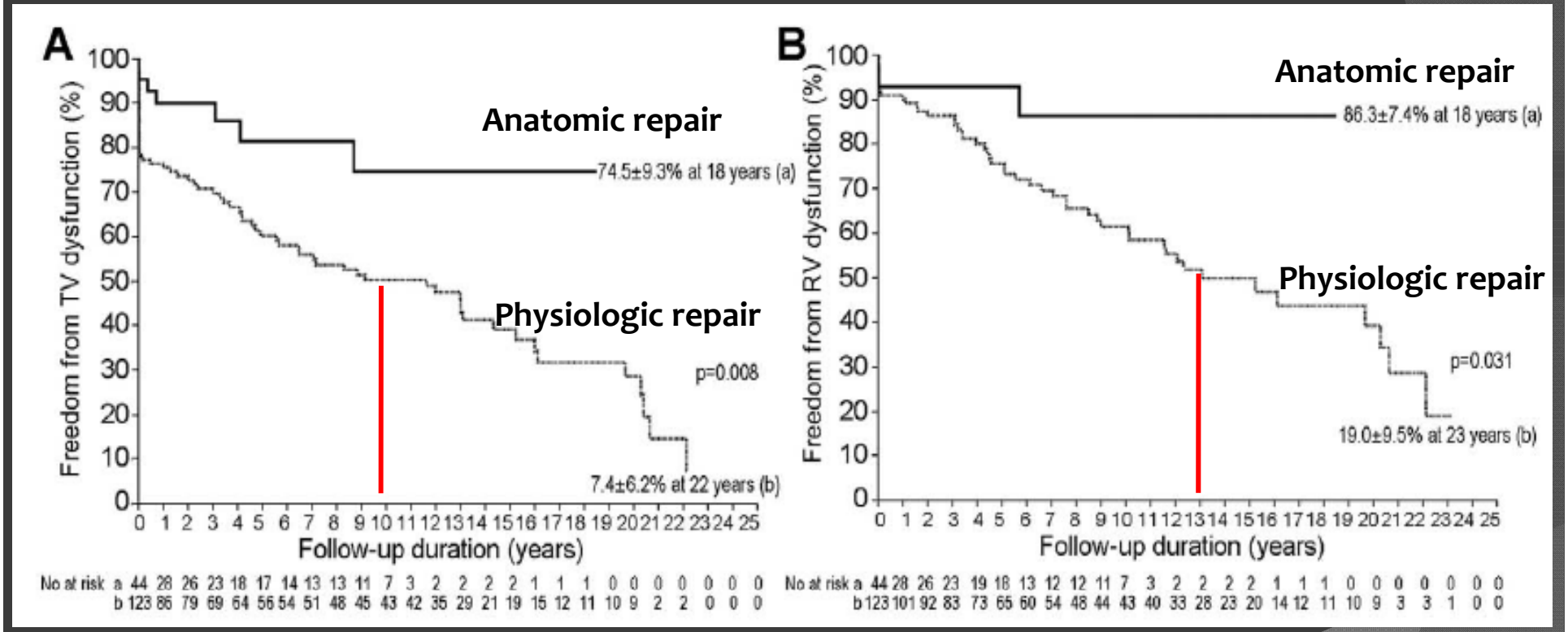
Natural course of RV function in cc-TGA

(Graham et al, 2000 JACC)



Tv dysfunction and TR in biventricular repair for ccTGA

(Lim HG et al, 2010 Ann Thorac Surg)



- Between 1983 and 2009, a total of 167 patients
- Physiologic repair in 123 patients and anatomic repair in 44
- Average follow-up duration : 9.3 ± 6.6 years

ccTGA with LV-PA conduit in SNUCH

	Age (Yr)	Sex	Op. #	TV Op.	Time to TVR	TR degree at present	Medication	NYHA
1	29	Female	2			(-)		I
2	35	Male	2			Trivial, I/IV		I
3	15	Male	2	TVR	7	(-)		I
4	18	Male	2	TVP		Mild, I/IV	+	I
5	32	Male	2			?		I
6	21	Female	3			Trivial, I/IV	+	I
7	20	Male	4	TVR	15	(-)	+	I
8	18	Female	4			Mild, I/IV	+	I
9	7	Male	4			Mild, II/IV	+	I
10	25	Male	3	TVR	25	(-)	+	I
11	12	Male	4	TVR	13	(-)	+	I
12	15	Female	2			Mild, I/IV		I
13	9	Male	4	TVP		Moderate, II~III/IV		I
14	17	Male	4	TVR	13	(-)		I
15	14	Female	4	TVR	6	(-)	+	I
16	21	Male	5			Mild, II/IV	+	I
17	16	Male	3	TVR	10	(-)	+	I
18	21	Male	2			Mild, I~II/IV		I
19	16	Female	2	TVR	10	(-)		I
M	19		3.1	42%	12.4		53%	

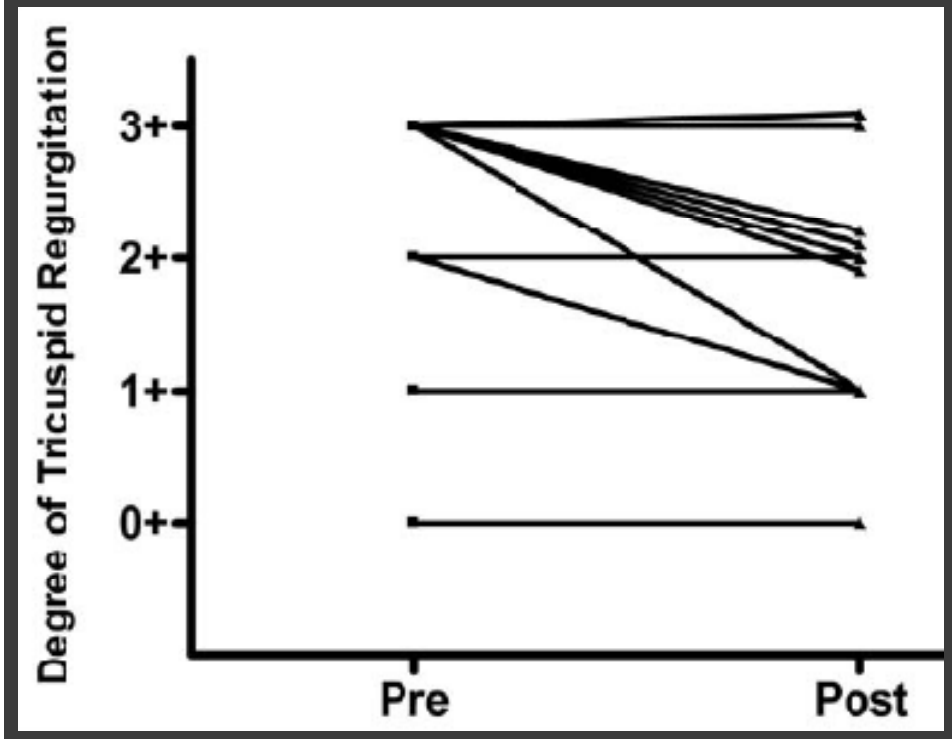
Effects of Morphologic Left Ventricular Pressure on Right Ventricular Geometry and Tricuspid Valve Regurgitation in Patients With Congenitally Corrected Transposition of the Great Arteries

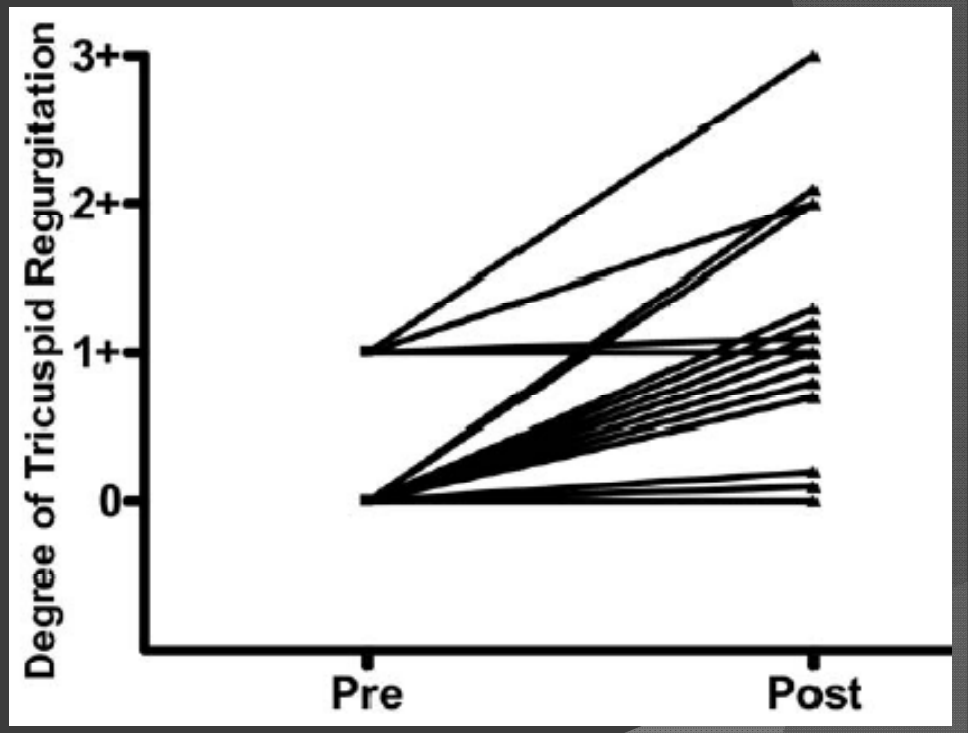
Catharine A. Kral Kollars, MD[a], Sarah Gelehrter, MD[a], Edward L. Bove, MD[b], and Gregory Ensing, MD[a,*]

Congenitally corrected transposition of the great arteries (CCTGA) is associated with tricuspid regurgitation (TR), which has been postulated to arise from the effect of ventricular septal position on the attachments of the tricuspid valve. This study was performed to determine the effect of left ventricular (LV) pressure on right ventricular (RV) and LV geometry and the degree of TR. Serial echocardiograms were reviewed from, 30 patients with CCTGA who underwent pulmonary artery banding to train the morphologic left ventricle (n = 14) or left ventricle–to–pulmonary artery conduit placement and ventricular septal defect closure in conjunction with physiologic repair (n = 16). The degree of TR, the LV/RV pressure ratio, RV and LV sphericity indexes, and tricuspid valve tethering distance and coaptation length were analyzed. After pulmonary artery banding, an increase in LV systolic pressure to ≥2/3 systemic resulted in a decrease in TR from severe to moderate ($p = 0.02$). The percentage of patients with severe TR decreased from 64% to 18% ($p = 0.06$). The RV sphericity index decreased ($p = 0.05$), and the LV sphericity index increased ($p = 0.02$). After left ventricle–to–pulmonary artery conduit placement, a decrease in LV pressure to ≤1/2 systemic resulted in an increase in TR from none to mild ($p = 0.003$). In conclusion, these data indicate that LV pressure in patients with CCTGA affects the degree of TR and that septal shift caused by changes in LV and RV pressure is an important mechanism. (Am J Cardiol 2010;105:735–739)

Effects of mLV Pr. on mRV Geometry and TR

(Kral Kollars et al, 2010 Am J Cardiol)

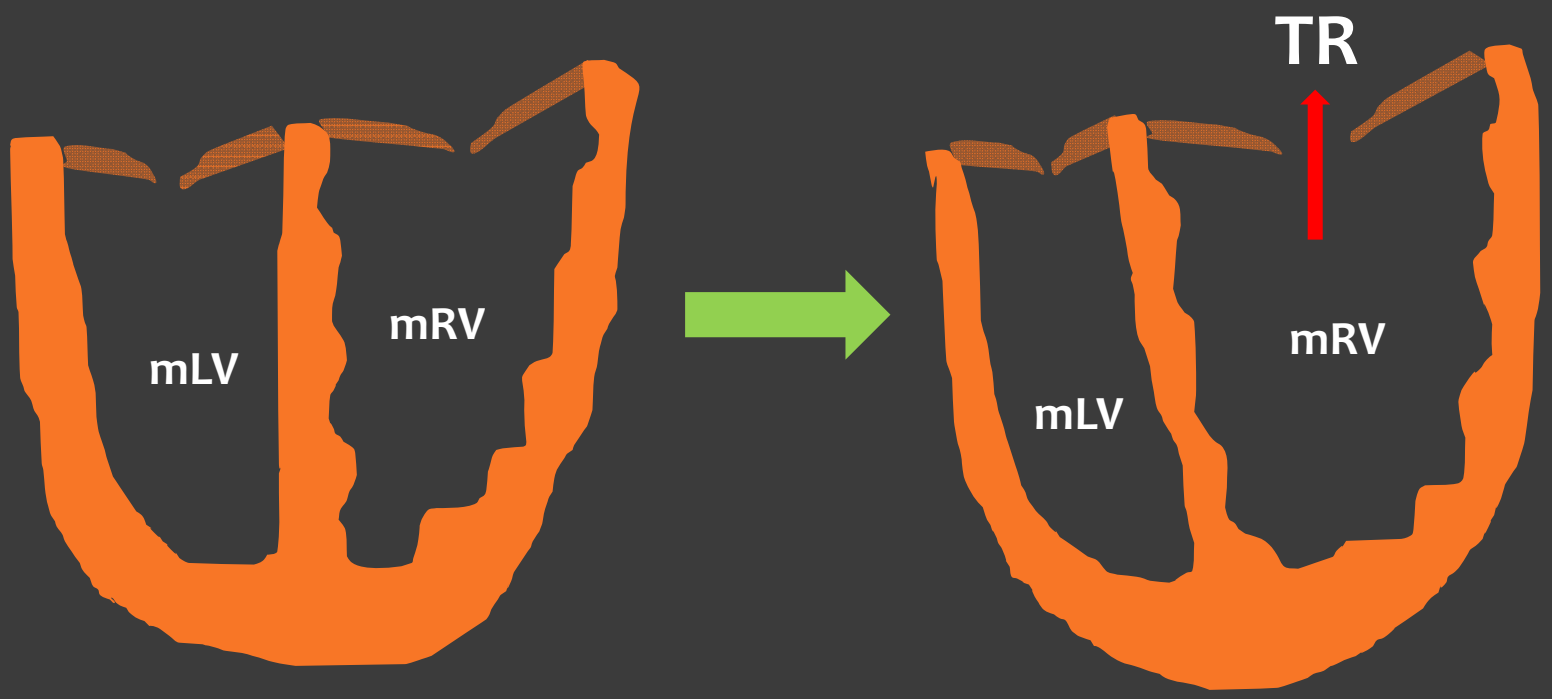




PA banding for LV training (n=14)
: LV Pr. > 2/3 RV Pr.

Physiologic repair (n=16)
: LV Pr. < 1/2 RV Pr.

Effects of mLV Pr. on mRV Geometry and TR



LV/RV Pr. ratio ↓↓ → more spherical RV

→ aggravated tricuspid valve coaptation → TR ↑↑

Summary for ccTGA with LV-PA conduit

- The indication of conduit change
  - LV-PA conduit ≠ RV-PA conduit
- For long-term survival in ccTGA patients
  - good RV function and lesser TR !!
    - some degree of increased LV/RV pressure ratio can be beneficial
      - How much degree of LV/RV pressure ratio ?

        : mLV Pr. > 1/2 mRV Pr. !!!

Thank you for your attention !