

Interesting cases of VSD using Multifunctional occluder

Dr. Nageswara Rao Koneti
CARE Hospital
Hyderabad



Disclosure

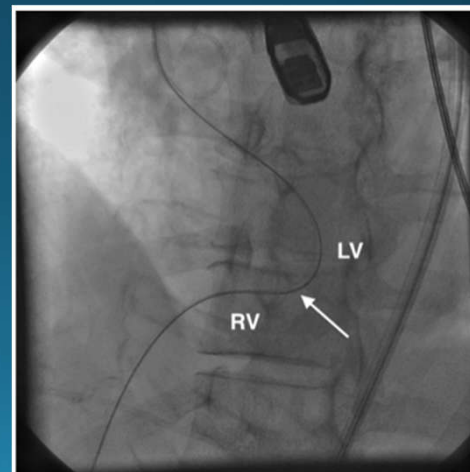
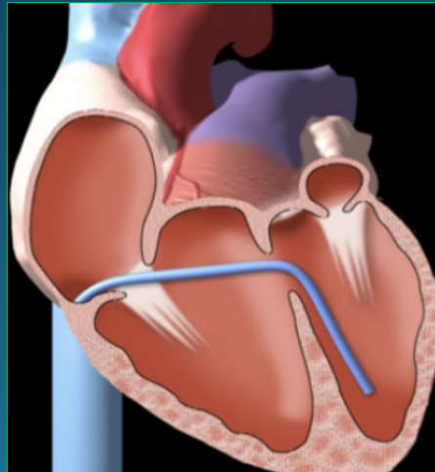
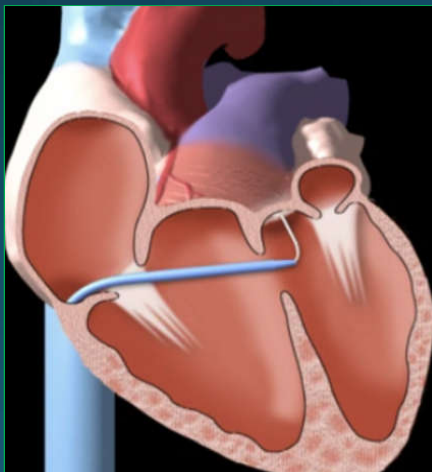
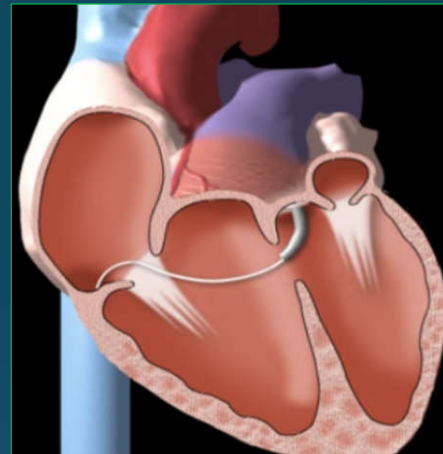
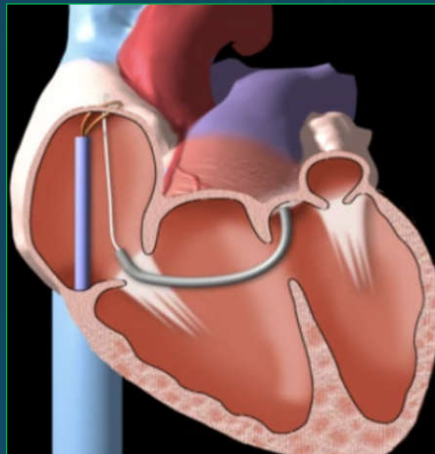
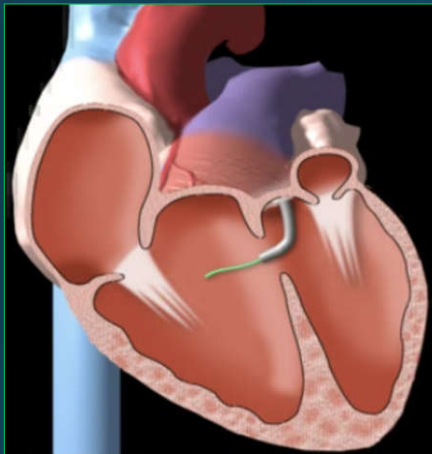
- Principle investigator of KONAR-MF, Lifetech scientific

Acknowledgements

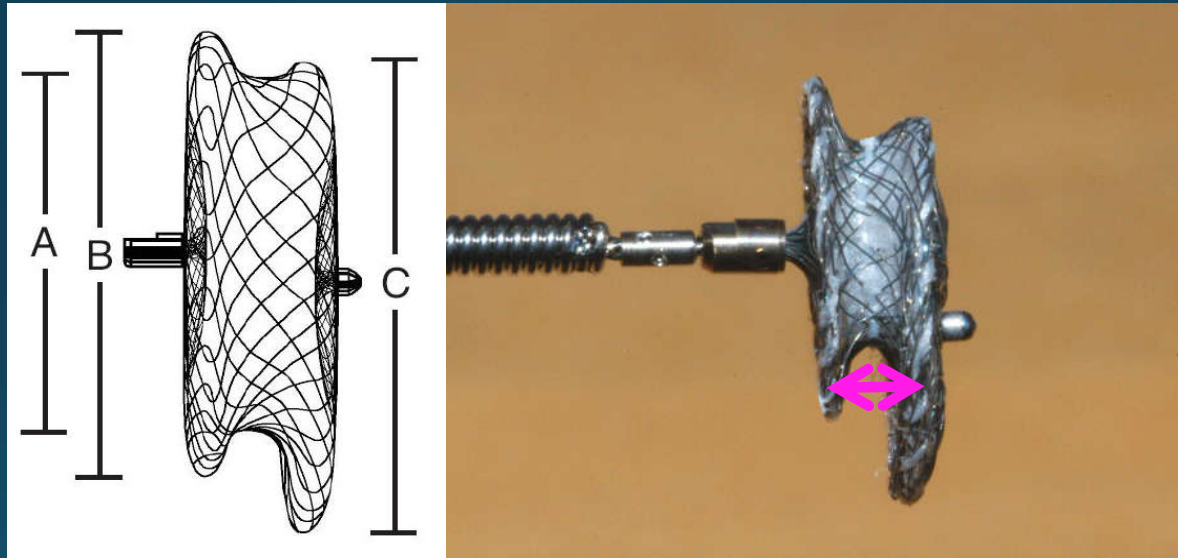
- Mr. Jake Zhang
- Dr. Saileela R
- Dr. Sakshi Sachdeva

Problems with VSD device closure:

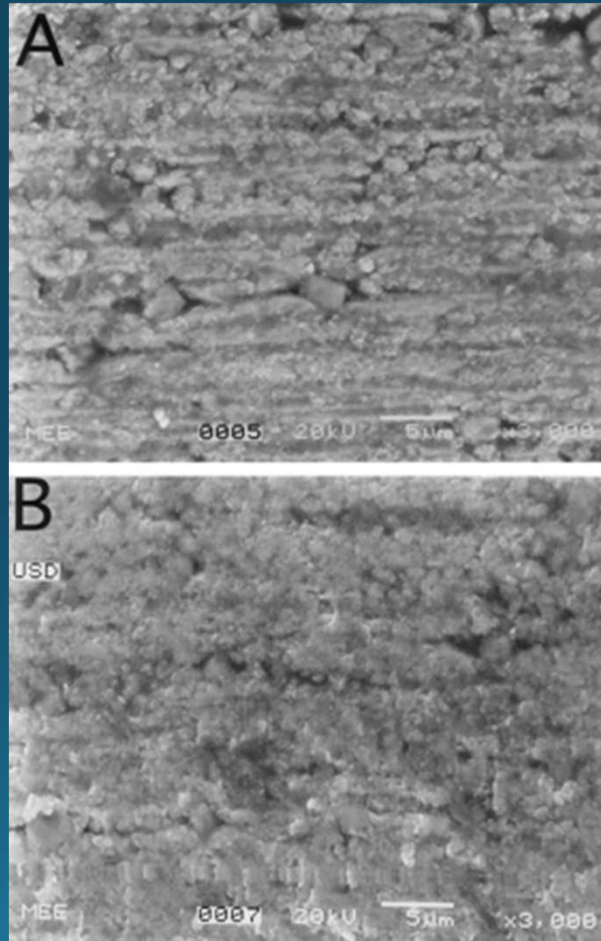
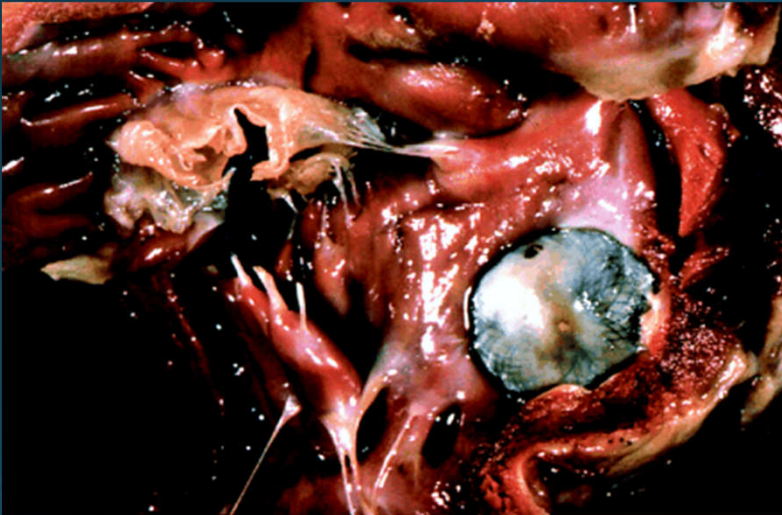
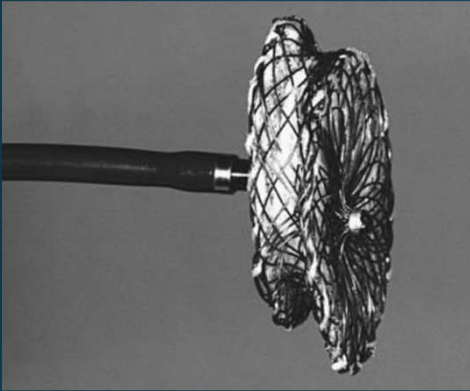
i. Positioning of sheath, Forming AV loop



ii. stress by the device, clamping force



iii. Fabric reaction



CHB after Pm VSD

The Amplatzer[®] Membranous VSD Occluder and the vulnerability of the atrioventricular conduction system

Gunther Fischer,¹ Sotiria C. Apostolopoulou,² Spyros Rammos,² Martin B. Schneider,³ Per G. Bjørnstad,⁴ Hans Heiner Kramer¹

across the aortic valve. Abnormalities of conduction related to the procedure were noted in 7 patients, one-fifth of the cohort. The disturbances were transient in 1 patient, but permanent in 6, in one of the latter progressing after 6 months from left bundle branch block to intermittent Mobitz II second-degree atrioventricular block in association with expansion of the occluder. We conclude that transcatheter closure

Complete heart block associated with device closure of perimembranous ventricular septal defects

Dragos Predescu, MD, Rajiv R. Chaturvedi, MD, PhD, Mark K. Friedberg, MD, Lee N. Benson, MD, Akira Ozawa, MD, and Kyong-Jin Lee, MD

TABLE 1. Patient characteristics and hemodynamic and procedural data

Patient no.	Age (y)	Weight (kg)	Qp/Qs ratio	VSD size (mm)	VSD pressure gradient (mm Hg)	PAPm (mm Hg)	Device size (mm)	Follow-up (mo)	Trisomy 21	CHB
1	0.9	8.1	1.6	12	42	49	14	26.1	+	+
2	1.2	8.2	2.3	7	64	26	8	37.8	+	+
3	1.3	9.9	1.9	10	33	28	12	23.9	-	+
4	1.5	10.3	1.4	10	8	55	12	5.6	+	+
5	0.5	6.2	2.0	7	16	20	8	24.0	+	-
6	0.7	6.8	2.4	9	8	35	12	21.3	-	-
7	1.5	7.5	1.6	10	36	55	12	32.2	-	-
8	1.2	7.9	2.0	6	35	19	8	20.2	+	-
9	1.4	8.2	2.0	9	51	30	10	25.4	-	-
10	0.8	8.4	3.4	14	35	56	14	19.9	-	-
11	1.8	8.8	3.0	12	23	39	14	31.5	-	-
12	1.6	9.4	1.0	11	14	57	14	17.1	-	-
13	1.6	10.3	2.8	12	58	28	14	1	-	-
14	2.1	12.2	1.5	10	66	24	12	11.9	-	-
15	3.0	12.6	1.4	8	56	59	10	20.3	+	-
16	8.4	26.6	2.3	8	74	16	10	36.3	-	-
17	10.5	38.5	1.0	12	112	35	14	22.4	-	-
18	16.2	43.0	3.0	17	67	27	18	34.1	+	-
19*	5.4	19.1	1.0	6	77	17	6	15.9	-	-
20*	7.2	28.8	1.8	6	103	15	8	28.5	-	-
Median (range)	1.6 (0.5–16.2)	9.7 (6.2–43)	2.0 (1–3.4)	9.5 (6–17)	47 (8–112)	29 (15–59)	12 (6–18)	23.1 (1–37.8)		

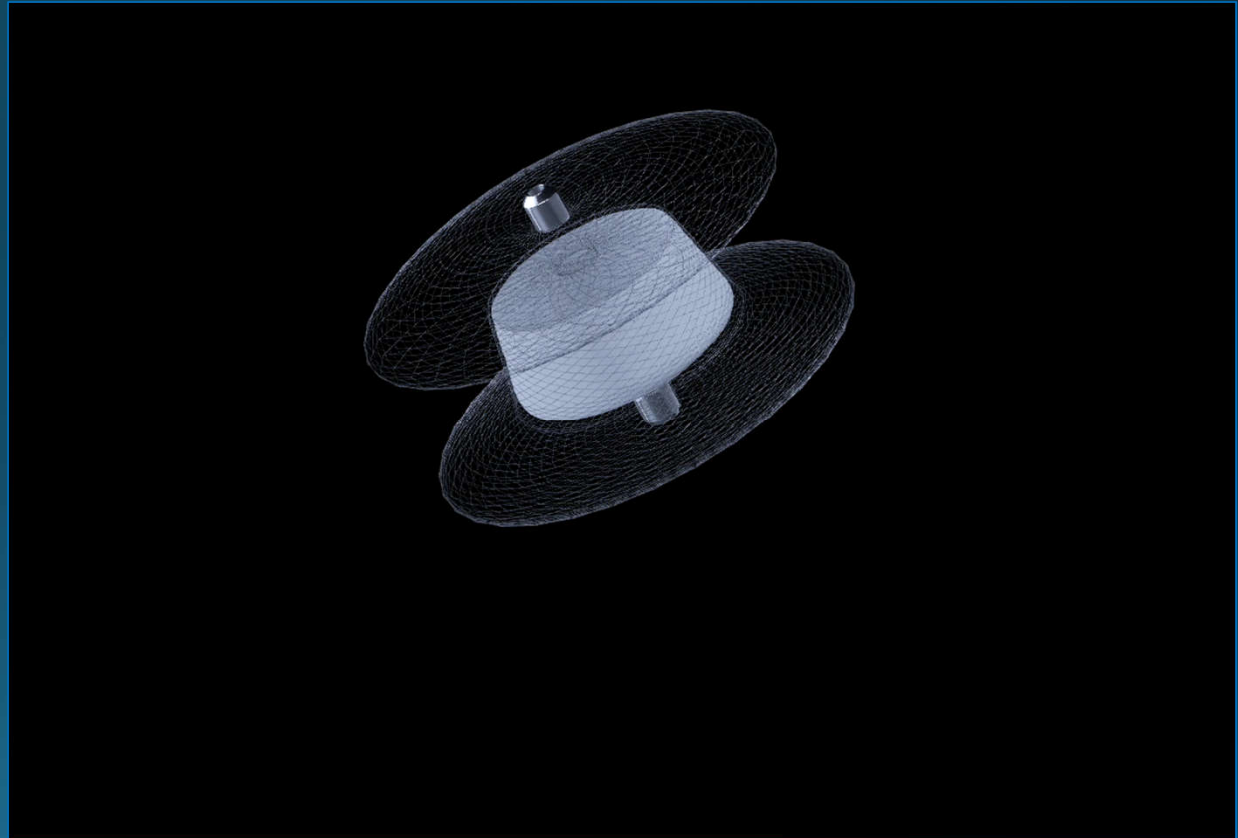
*VSD closure with transcatheter device. PAPm, pulmonary artery pressure; CHB, complete heart block.

What is an ideal device?

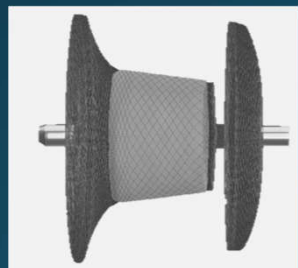
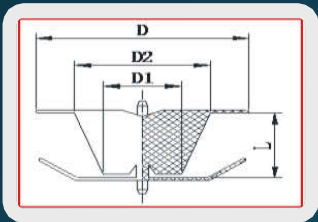
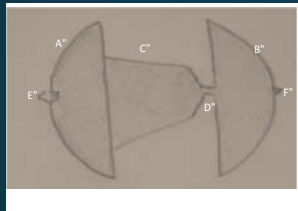
- Low profile
- Effective in closing
- Should be adjusted as per the anatomy
- No complications
- User friendly
- Biocompatible
- Cost effective

KONAR-MF

- Low to medium profile device
- Can be used using smaller size sheaths
- Both side delivery
- Easy positioning of central disc



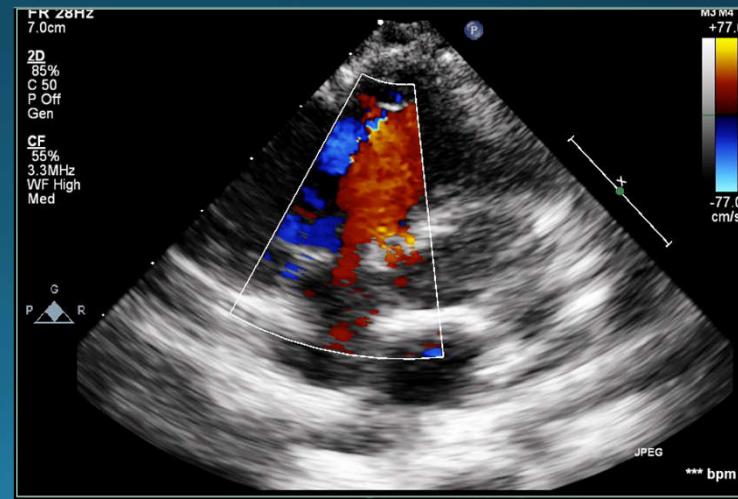
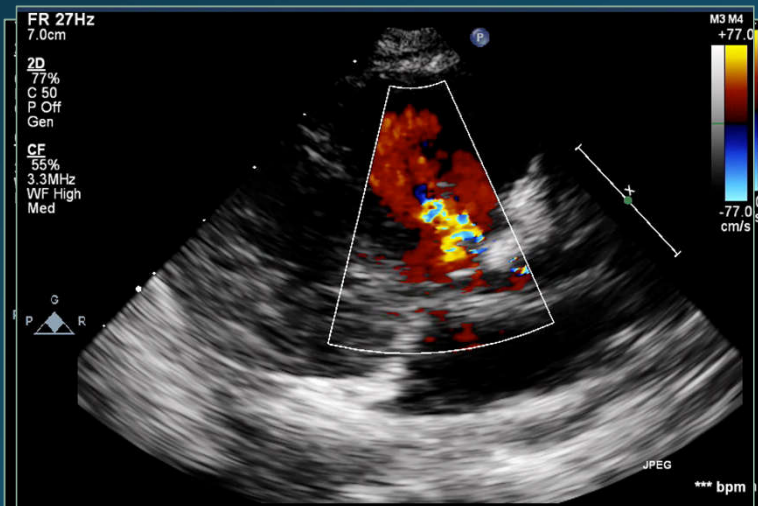
Basic design and development



- 0.0020"~0.0026" wire
- No –membrane from 5/3- 8/6
- Membrane from 9/7- 14/12
- Both sides retention screw
- Low - medium profile : Smaller Guide catheter /delivery sheaths
- Cone shape: Hemodynamic advantage to adjust according to the size of the defect

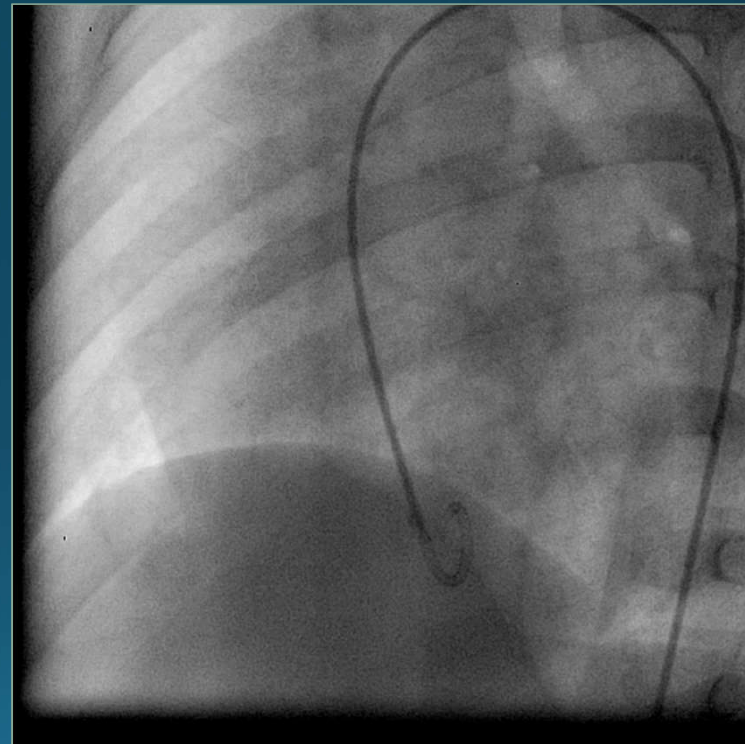
Case: 1

- 5-year- girl asymptomatic
- Diagnosed as small Pm VSD with left to right shunt
- TTE: 4.5 mm Pm VSD with left to right shunt, Mild TR
- LVidD: +2.5, 4.5 mm

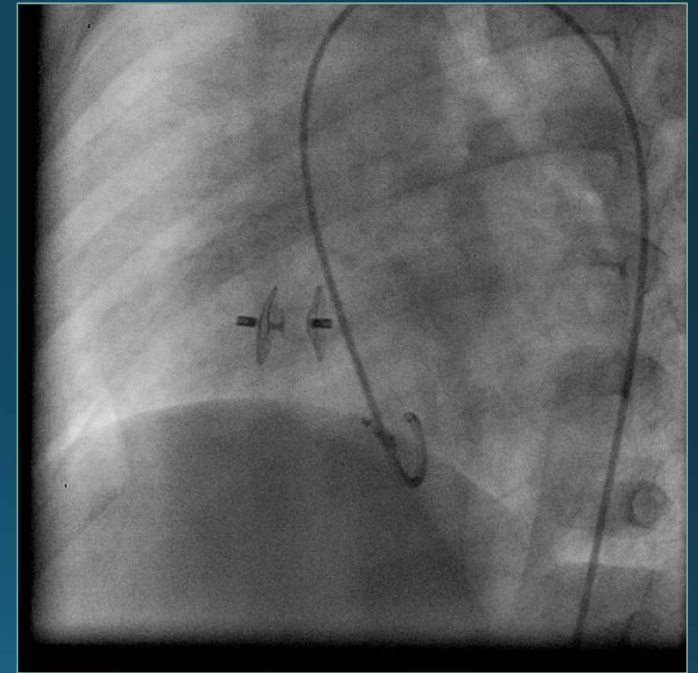
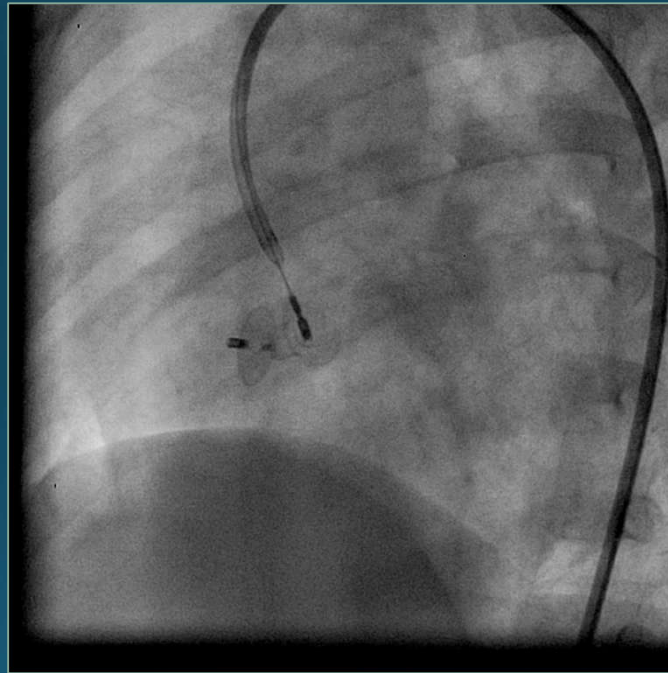
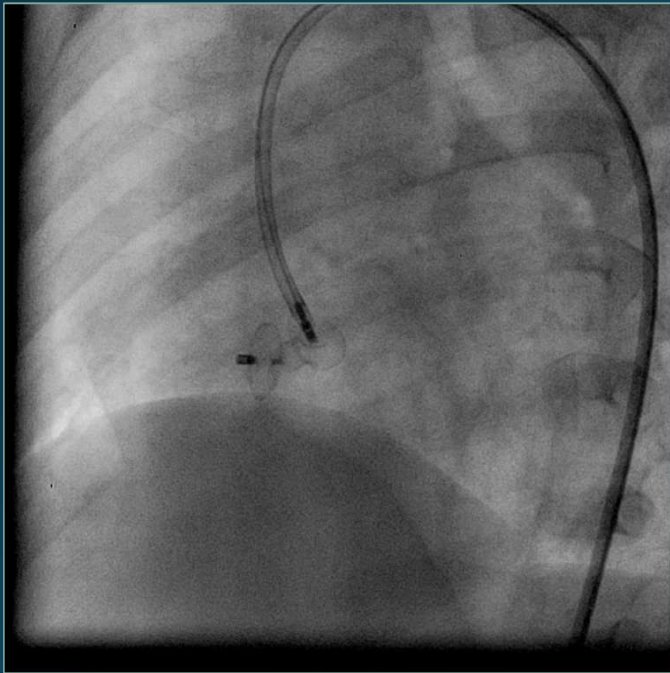


Planned procedure: VSD device closure

- Intravenous sedation
- Under Transthoracic echocardiography
- Single arterial retrograde method
- Using 6fr Judkins right coronary guide catheter



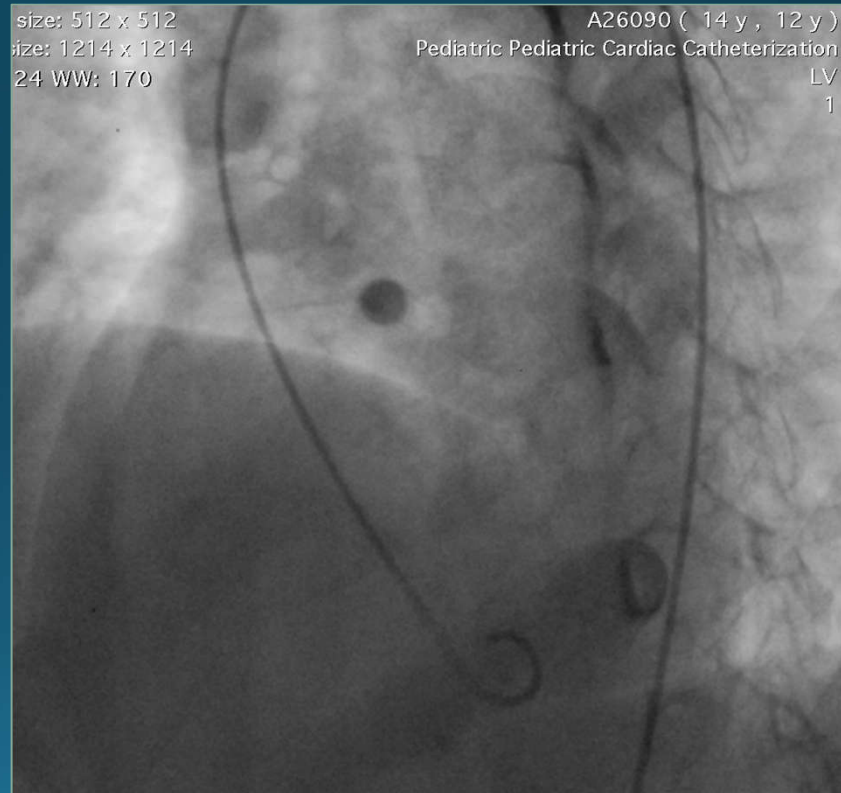
PmVSD closure using 6/4 KONAR-MF Retrograde technique



- Procedure time: 50 minutes
- Fluoroscopy time: 3.6 minutes
- No complications

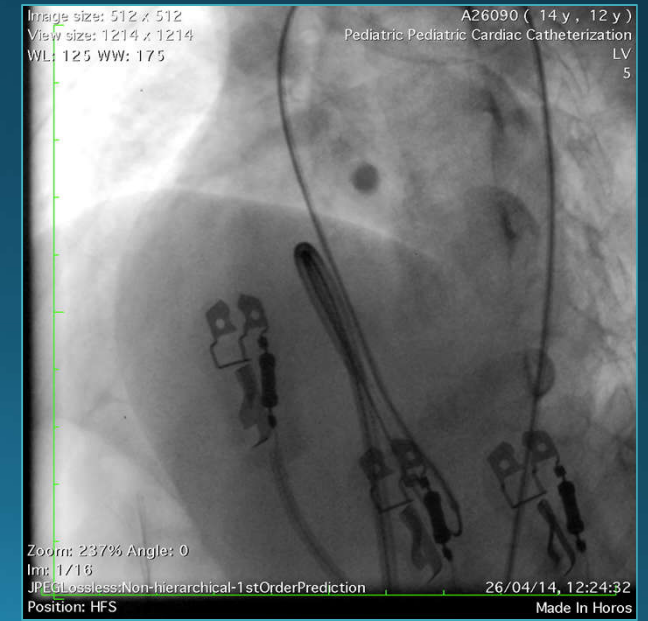
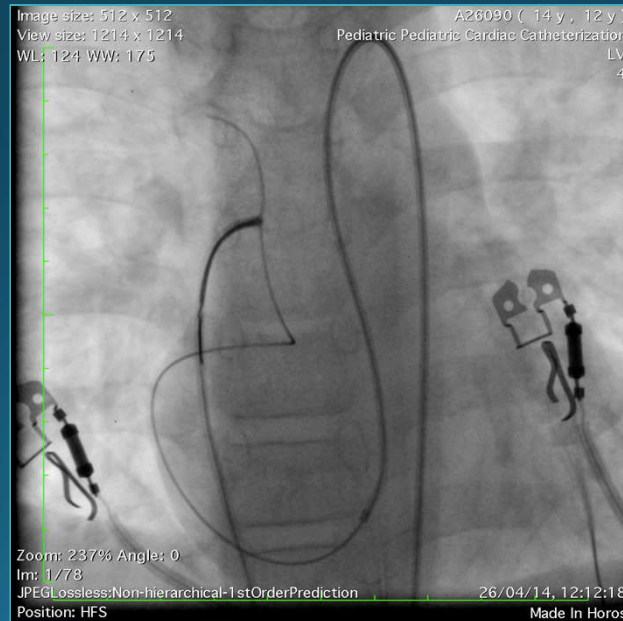
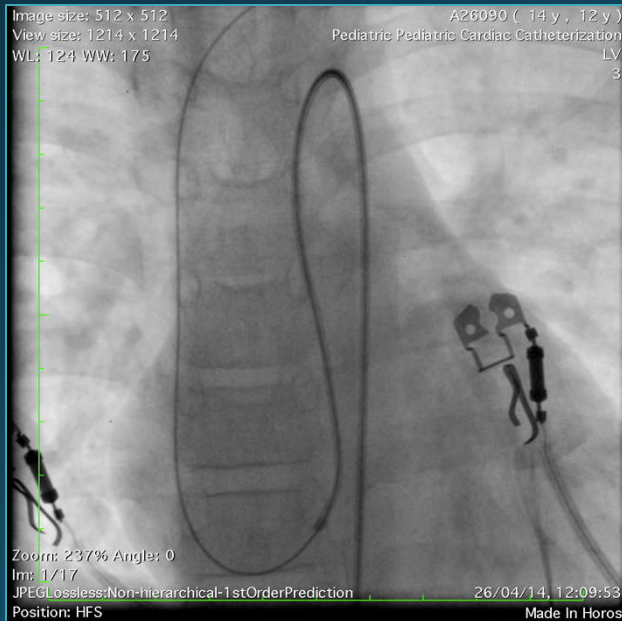
Case: 2

- 8-year-boy large Pm VSD with left to right shunt
- ECG: NSR, High voltage mid Precardial complexes
- TTE: 8.7 mm large PmVSD with left to right shunt
- Qp/Qs: 2.6:1

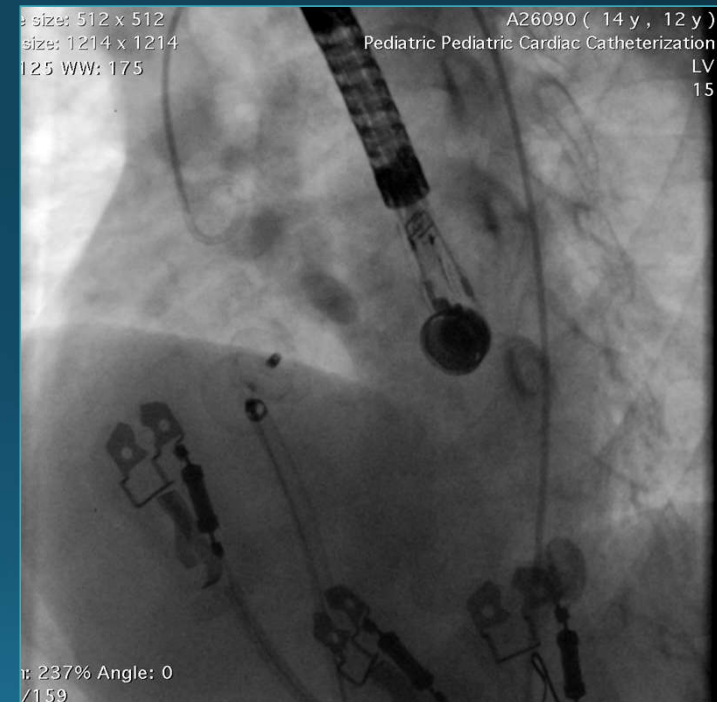
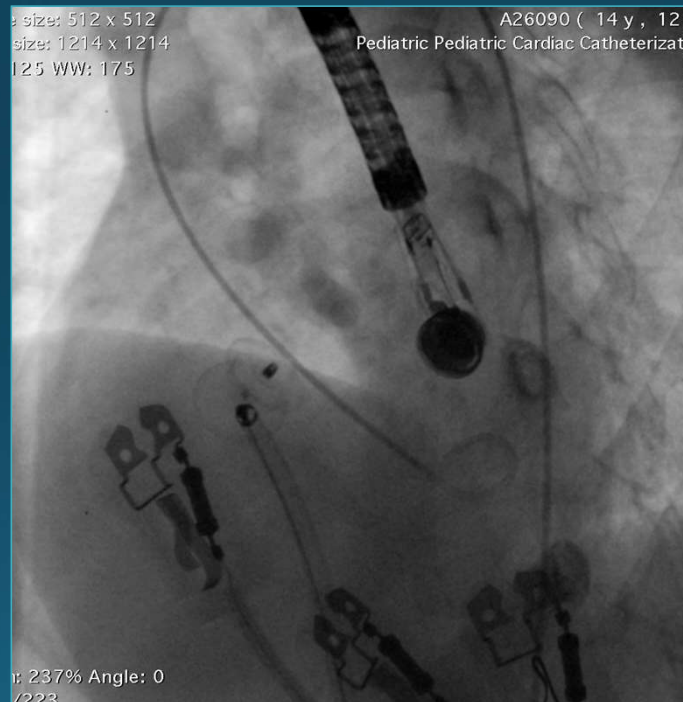
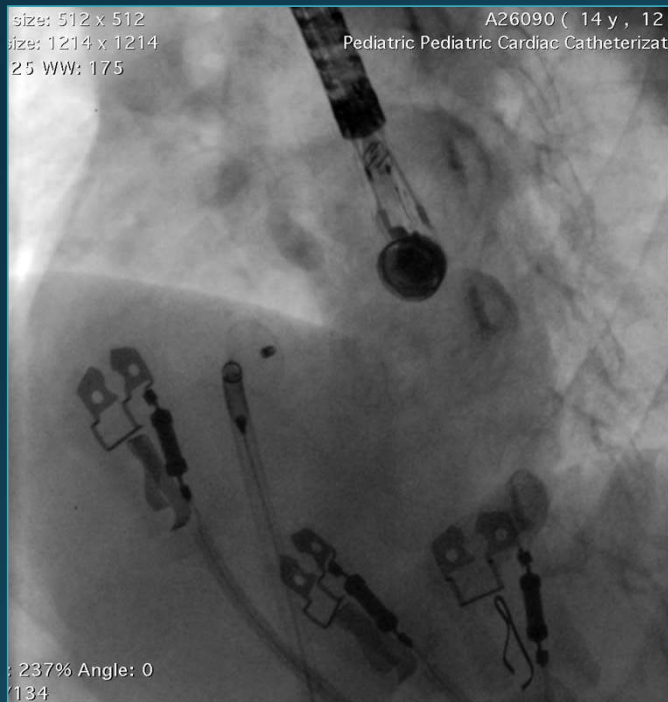


Planned procedure

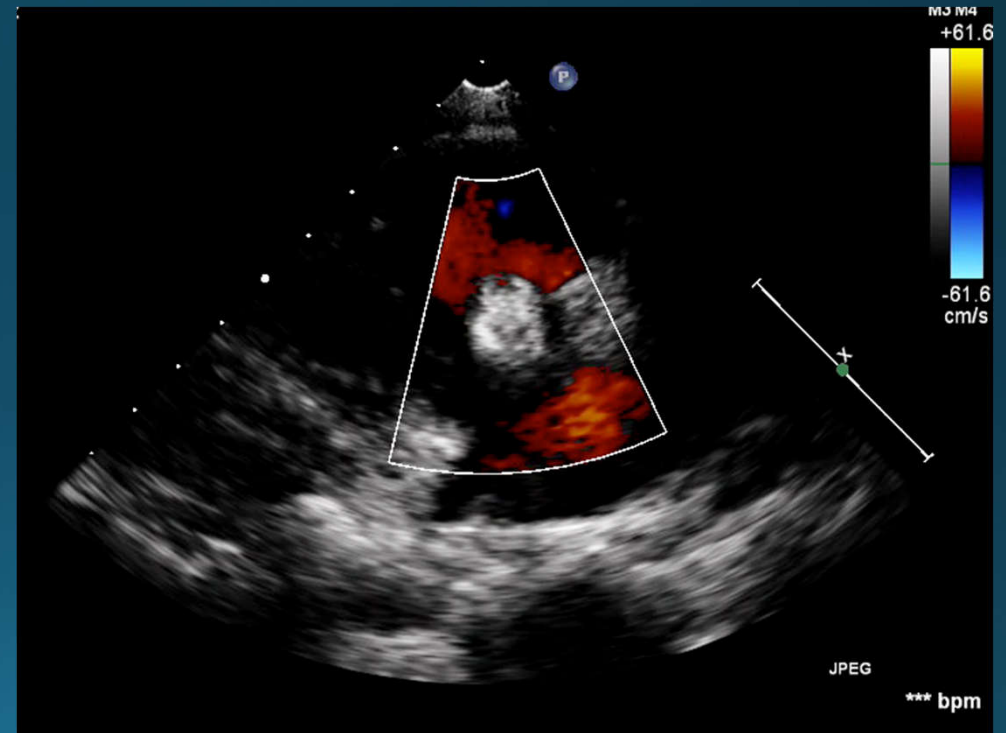
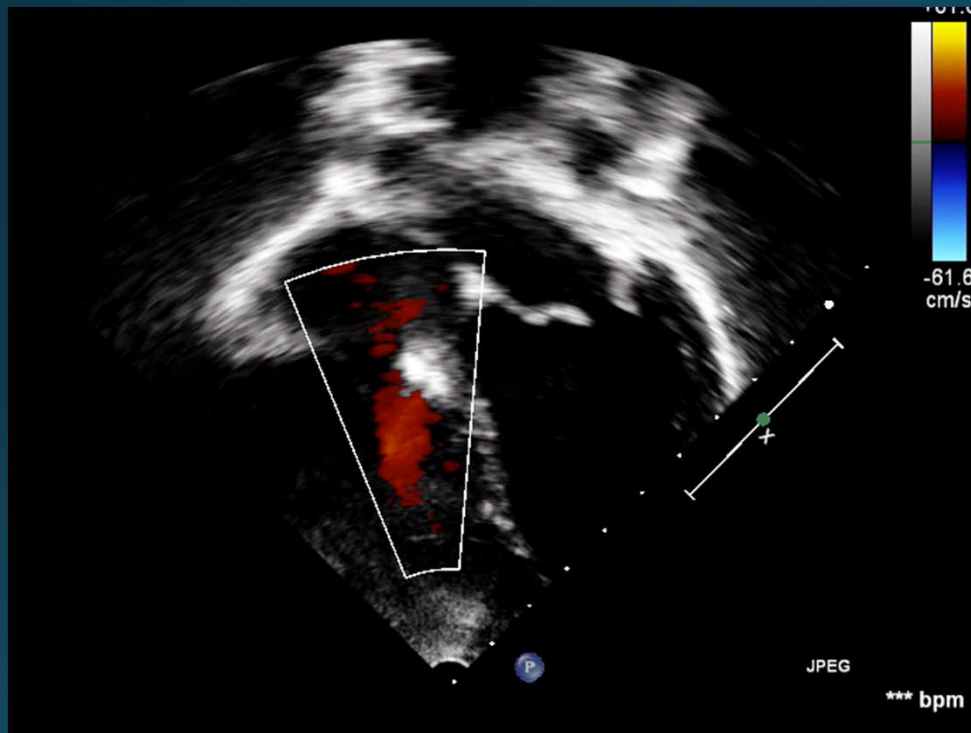
- Antegrade method forming AV loop
- Deployment from LV
- Using **12/10 KONAR-MF**



Transcatheter closure of PmVSD using 12/10 KONAR-MF

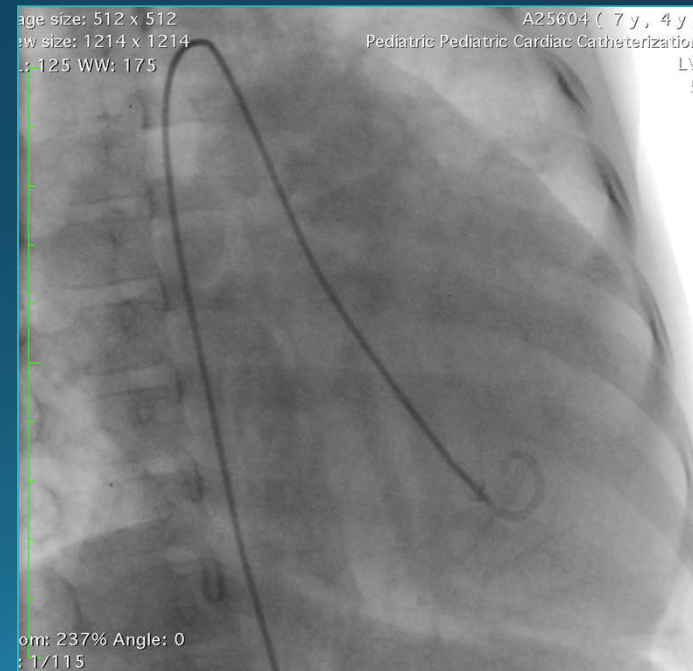
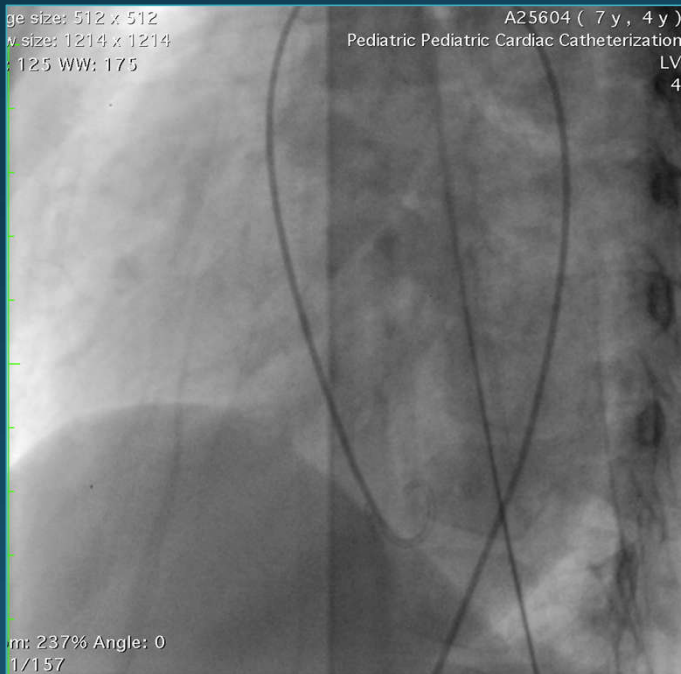


Post procedure TTE

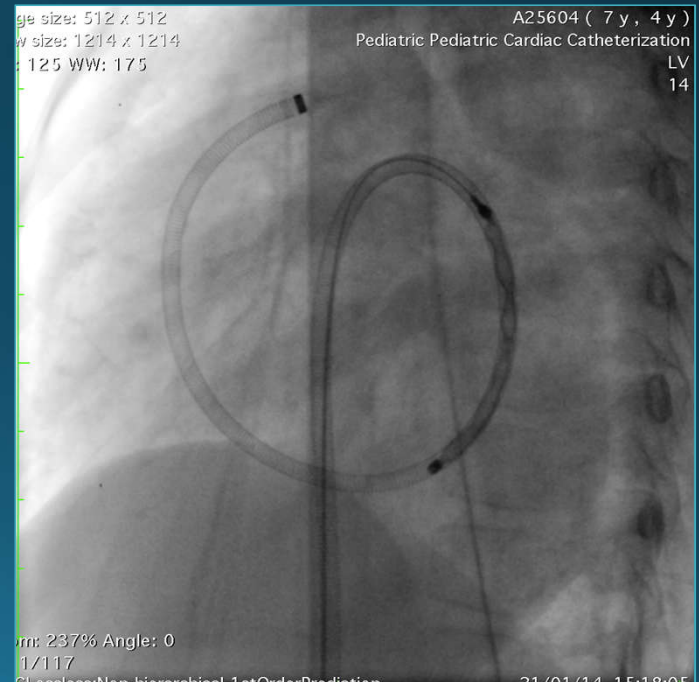
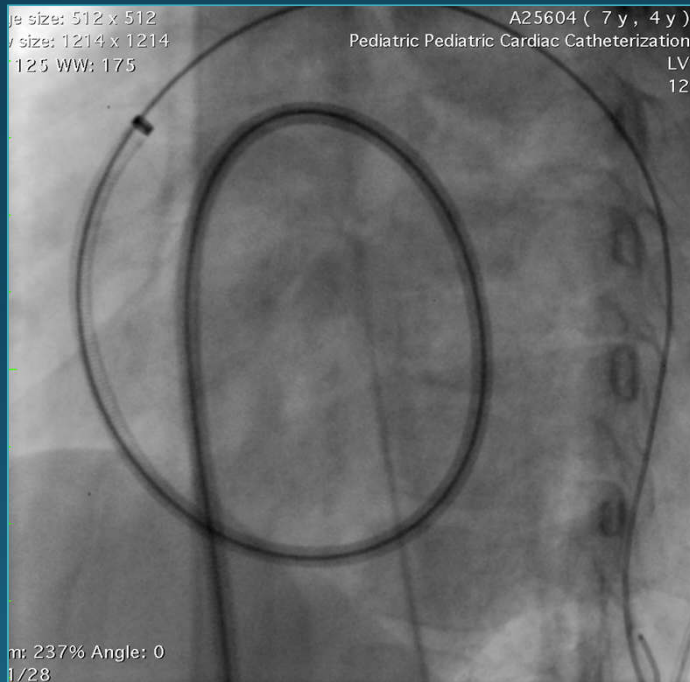
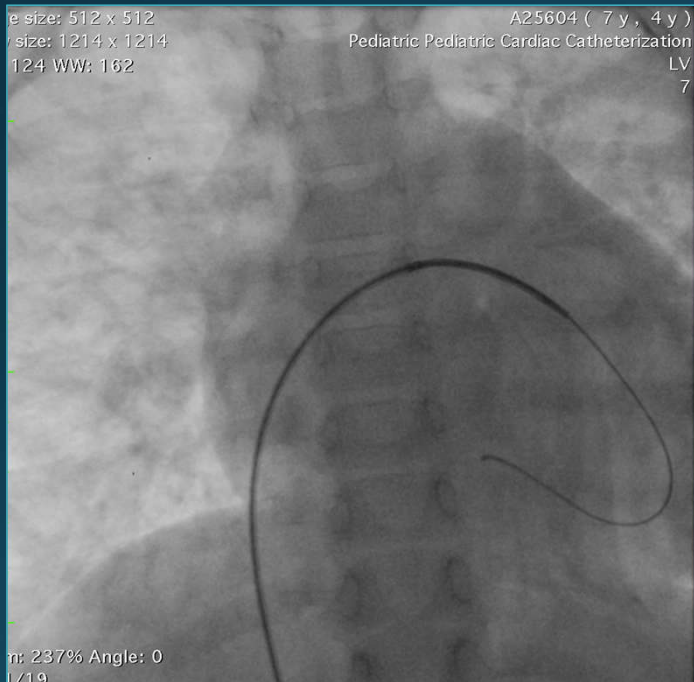


Case:3

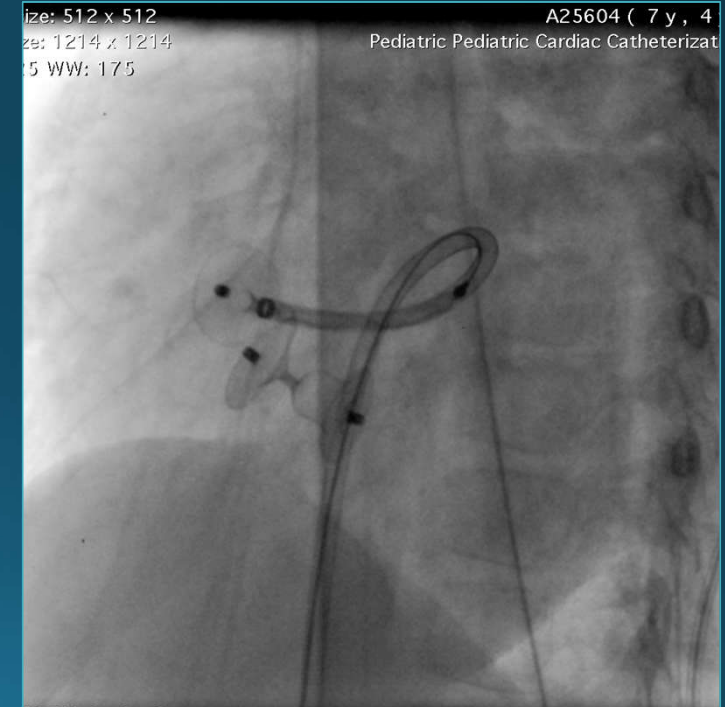
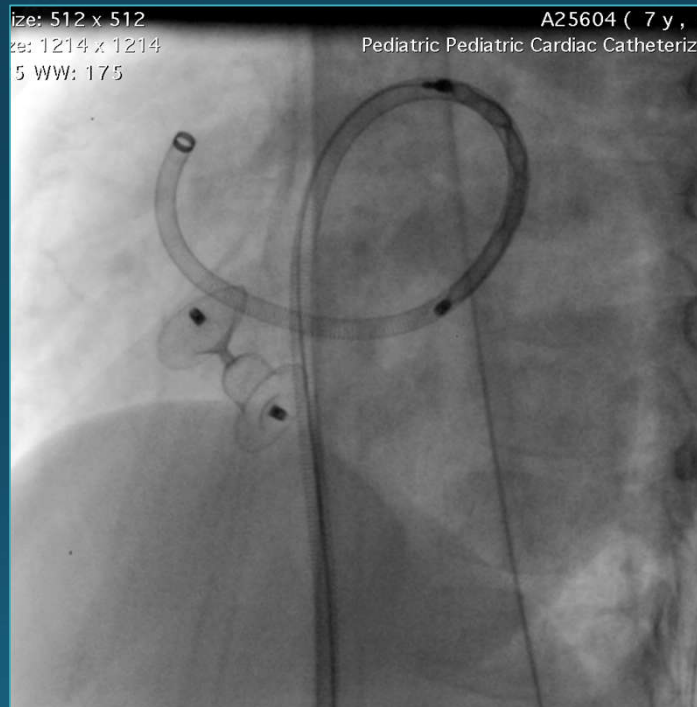
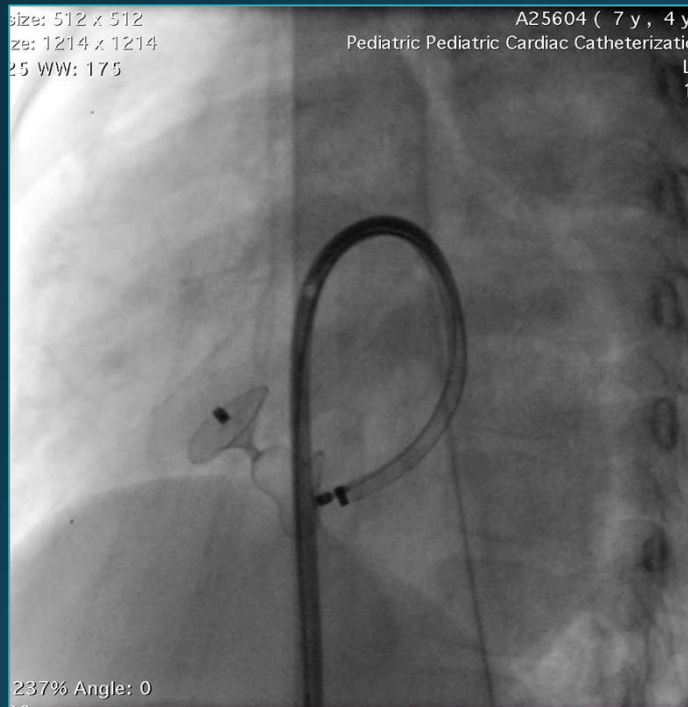
- 6-year- girl diagnosed to have multiple muscular VSD with left to right shunt ($Q_p / Q_s: 1.6:1$) and high PVR > 5 units



Transcatheter closure of multiple VSD

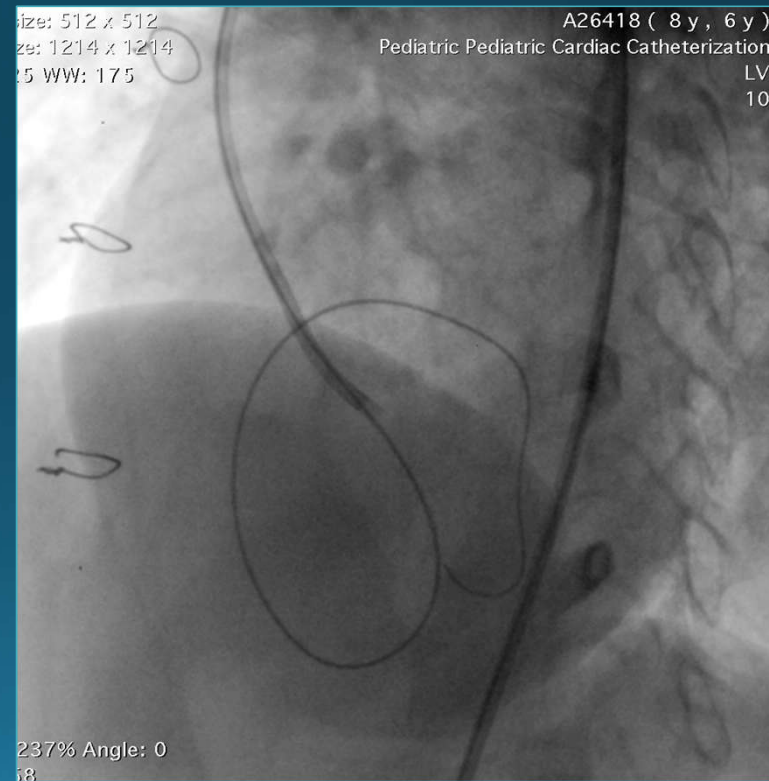


7/5 and 8/6 KONAR-MF

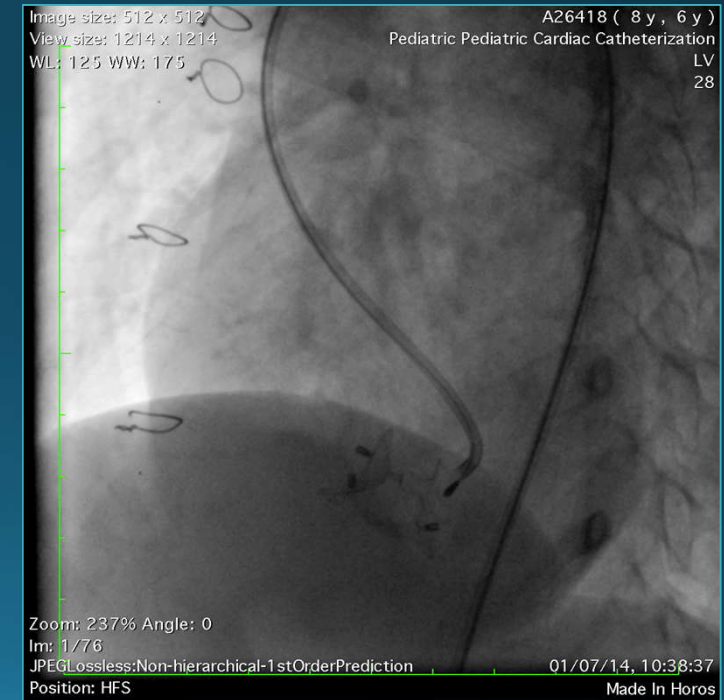
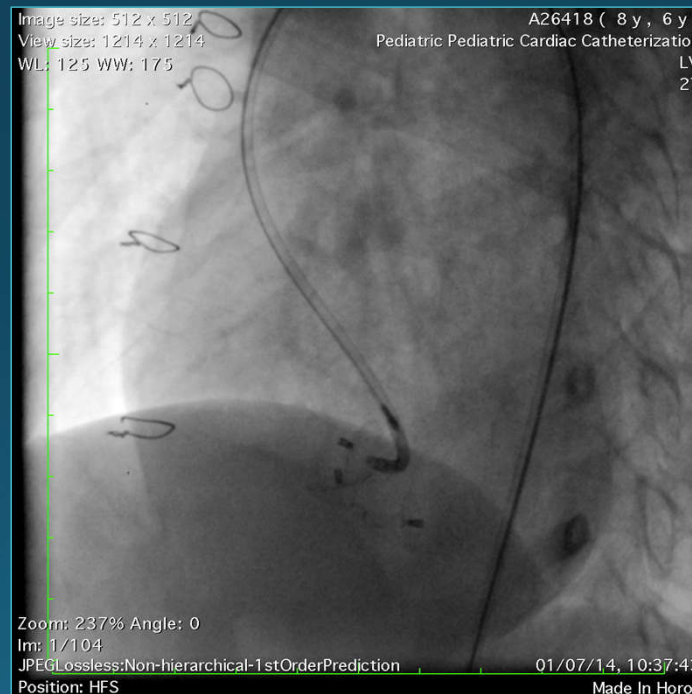
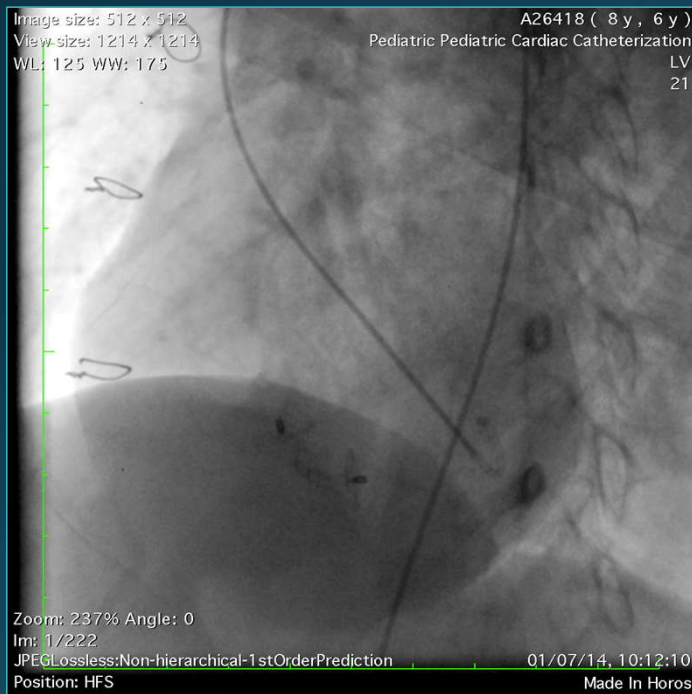


Case:4

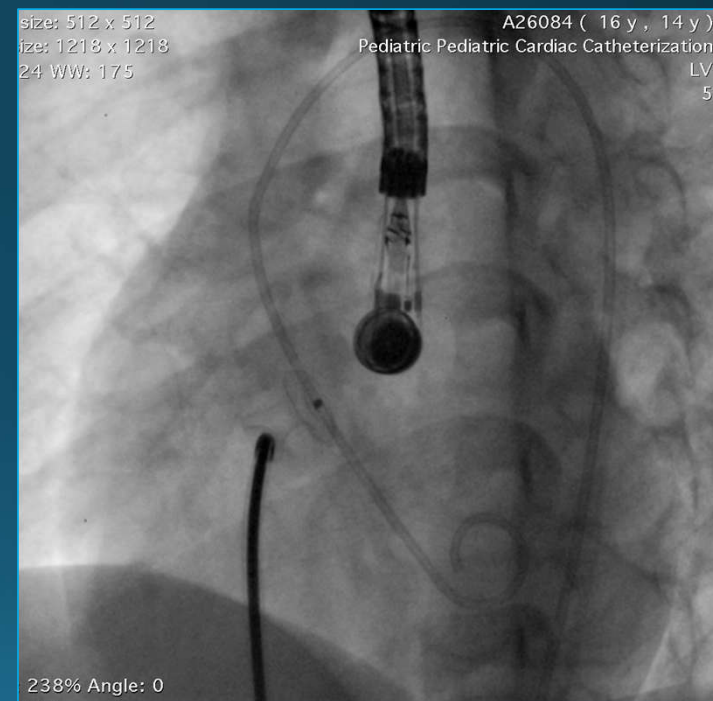
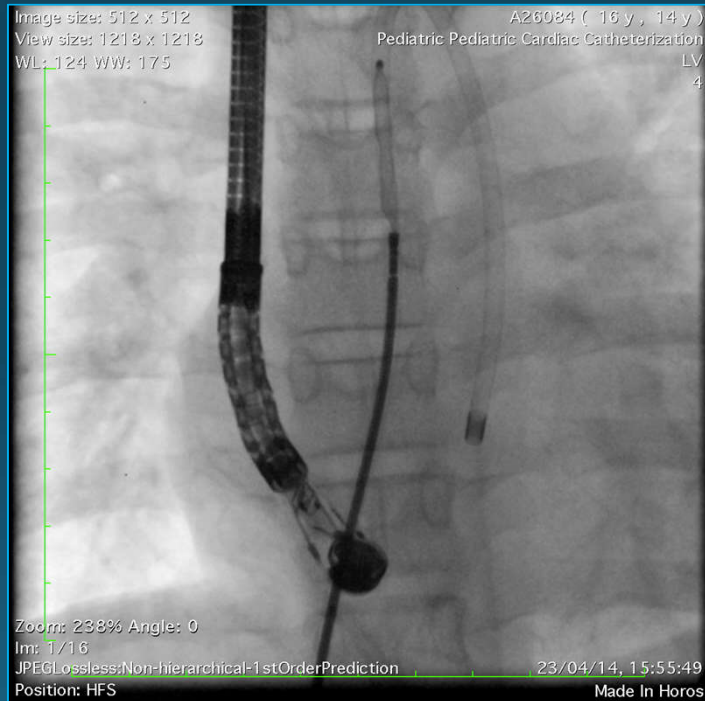
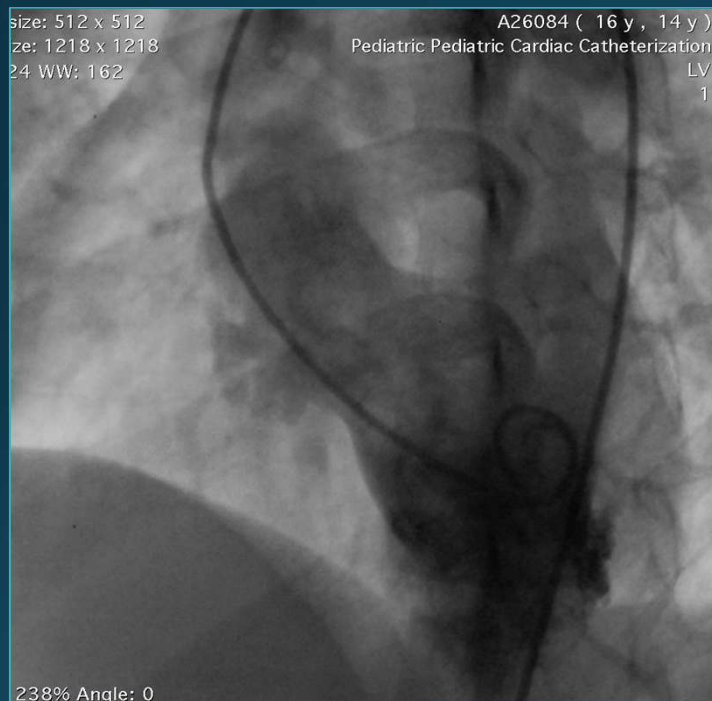
- 7-year-girl underwent PA banding for DORV, multiple VSD, NREGA
- Planned for surgical correction after transcatheter closures of apical muscular VSD



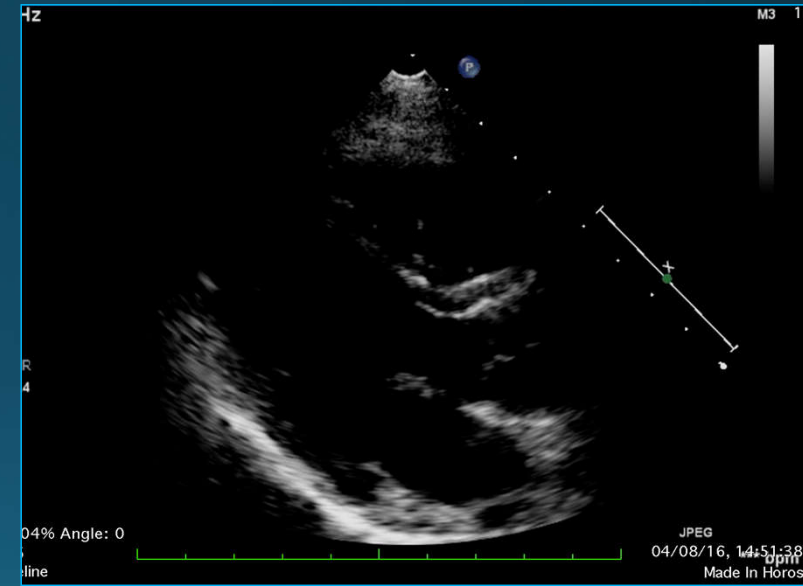
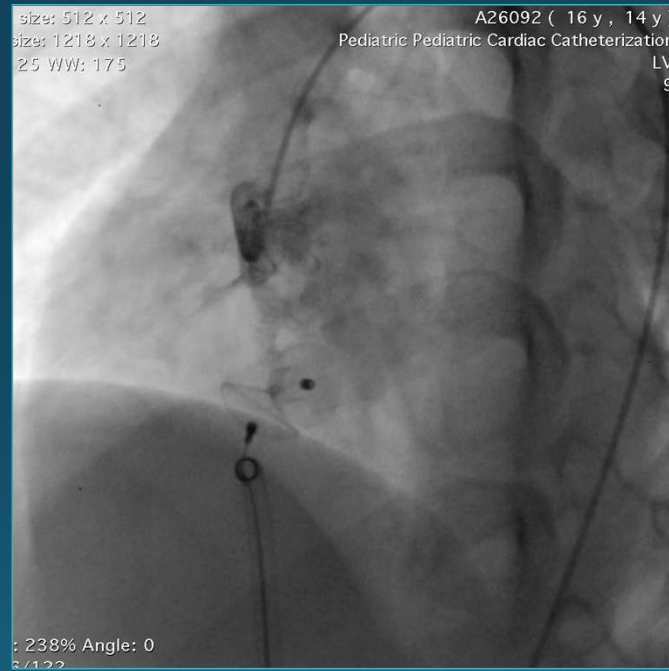
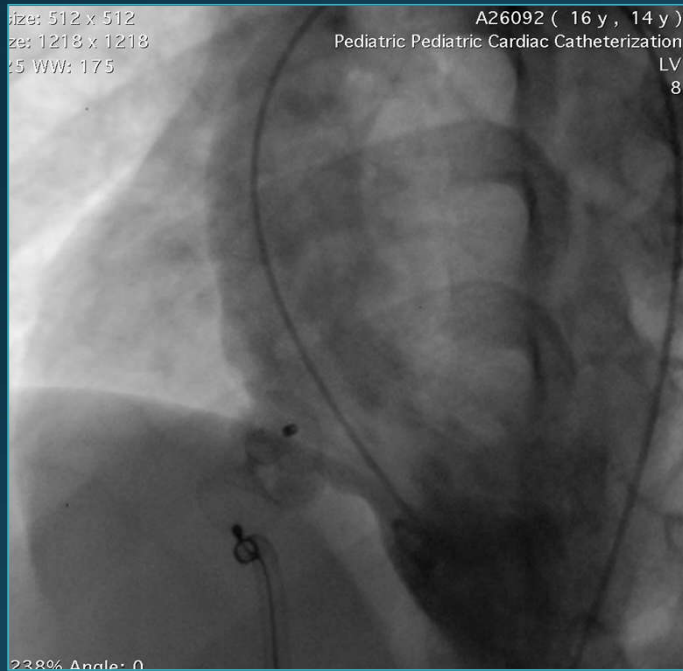
Retrograde closure of multiple muscular VSDs



Case 5: 7-year- child with moderate PmVSD with multiple openings (Qp/Qs: 1.8:1)



KONAR-MF 10/8



Summary

- The low - medium profile KONAR-MF may be useful in closing variety of VSD
- Retention screw on both sides has more advantage to deploy from either side
- Small size sheaths may used in children to deploy the device

