Transcatheter Closure of VSD using ADO II

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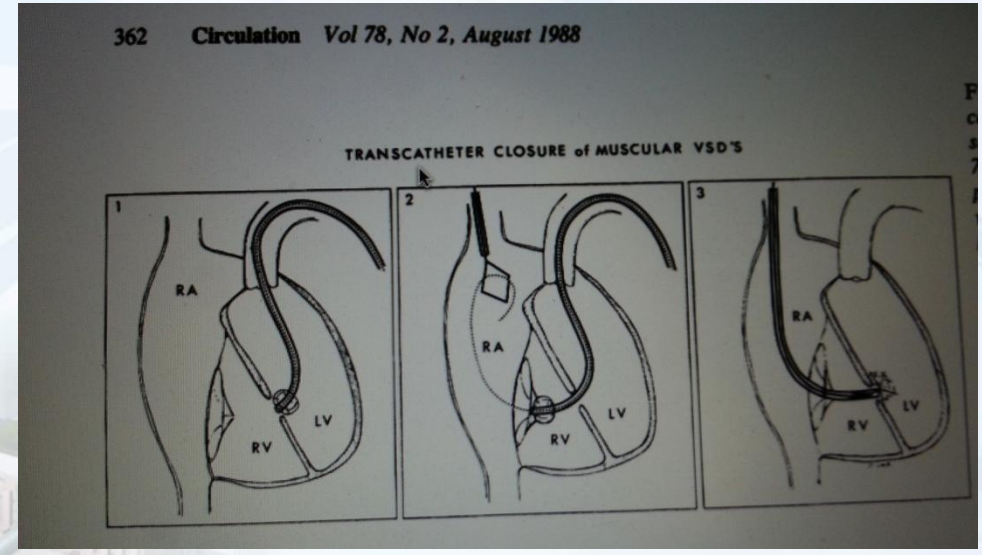
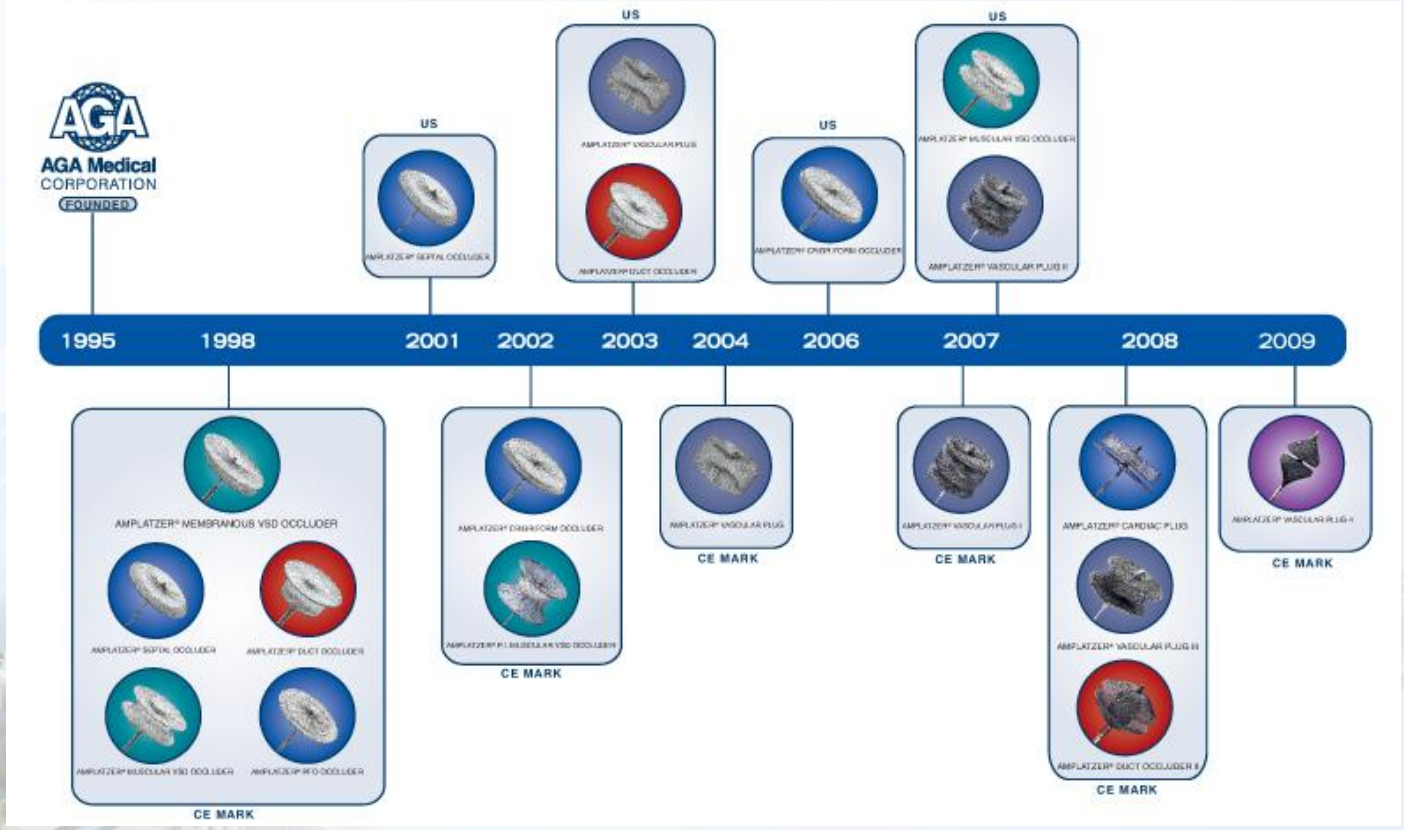
Transcatheter closure of ventricular septal defects.

Lock JE, Block PC, McKay RG, et al. Circulation. 1988 Aug;78(2):361-8.

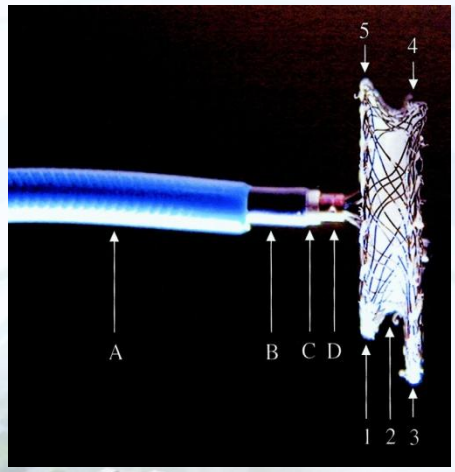
…patients‘ ages ranged from 8 months to 82 years (6.0-70 kg)…



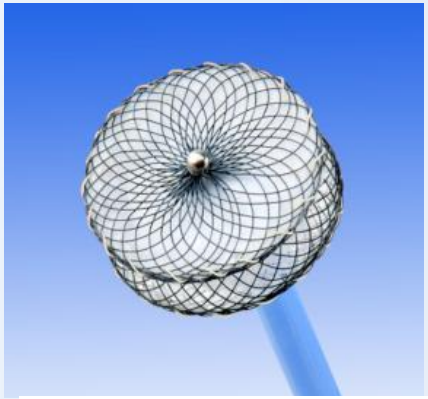
AMPLATZER® Product Family

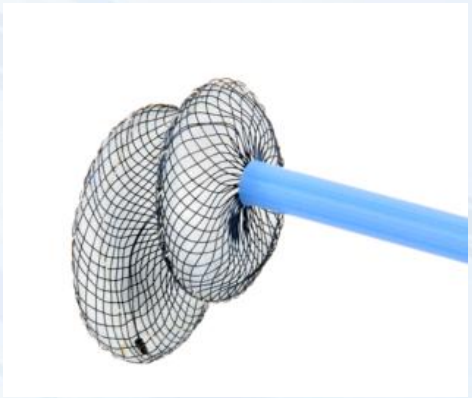


Amplatzer pmVSD occluder



Devices Made in China





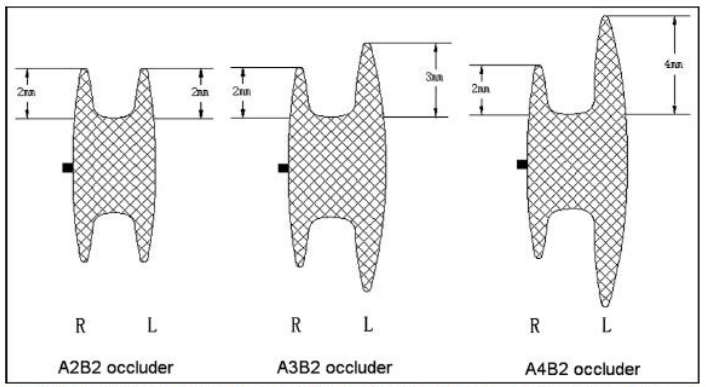


Figure 1. Schematic diagram of ventricular septal defect occluder with a symmetric left disk. The diameter of the left disk is 4, 6, or 8 mm larger than the waist, respectively.

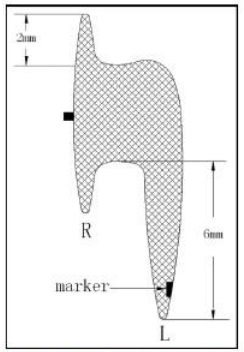
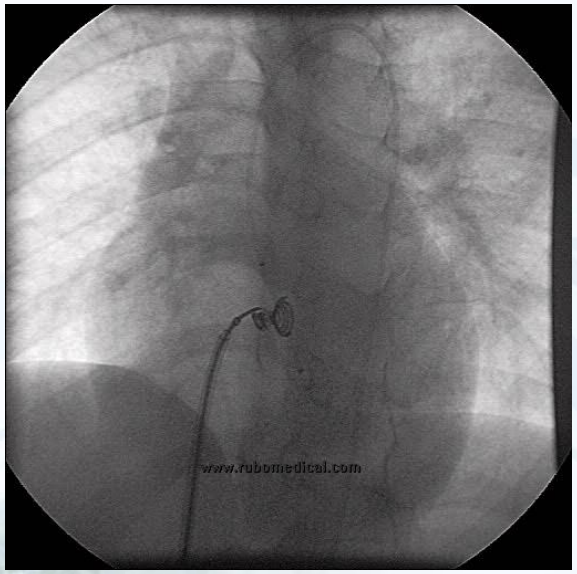


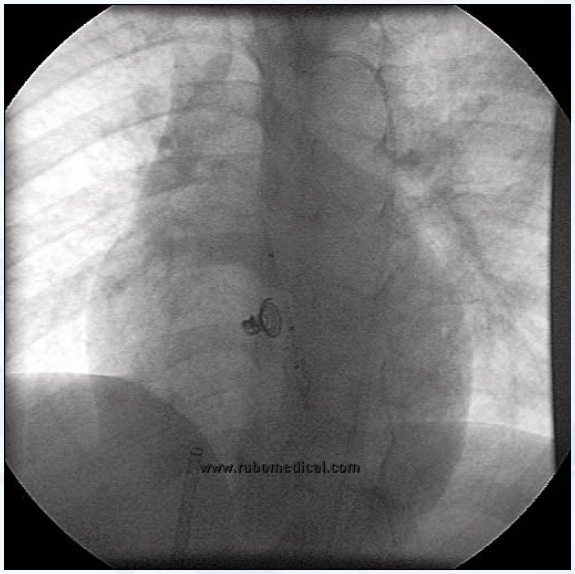
Figure 2. Schematic diagram of ventricular septal defect occluder with an asymmetric left disk. The whole of left disk extends towards the apex and there is no superior margin towards the aorta.

Modified double-disk occluders (MDVO)

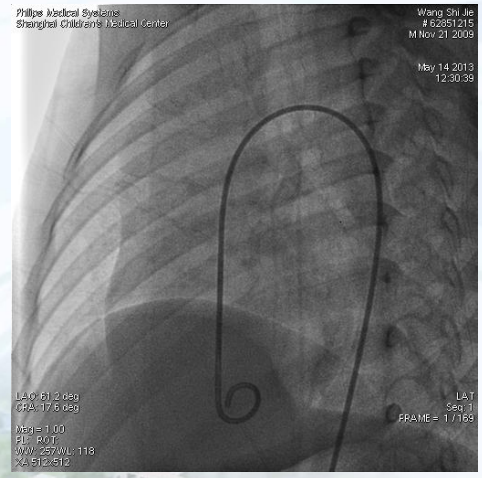
(Am J Cardiol 2008;101:1781–1786)

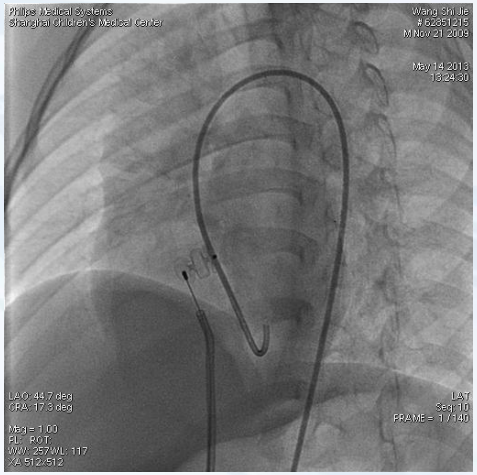
Nit-Occlud® Lê VSD

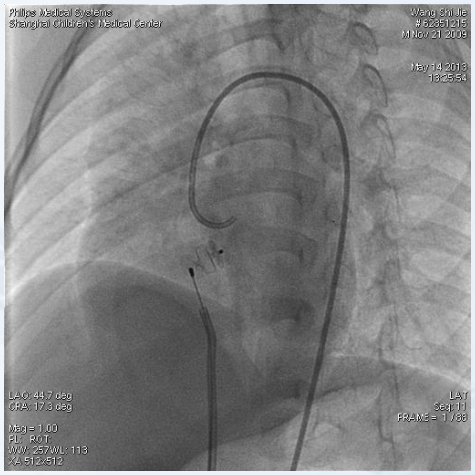




Close VSD with Plug II



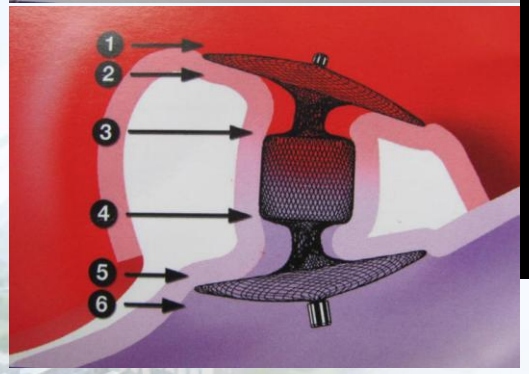


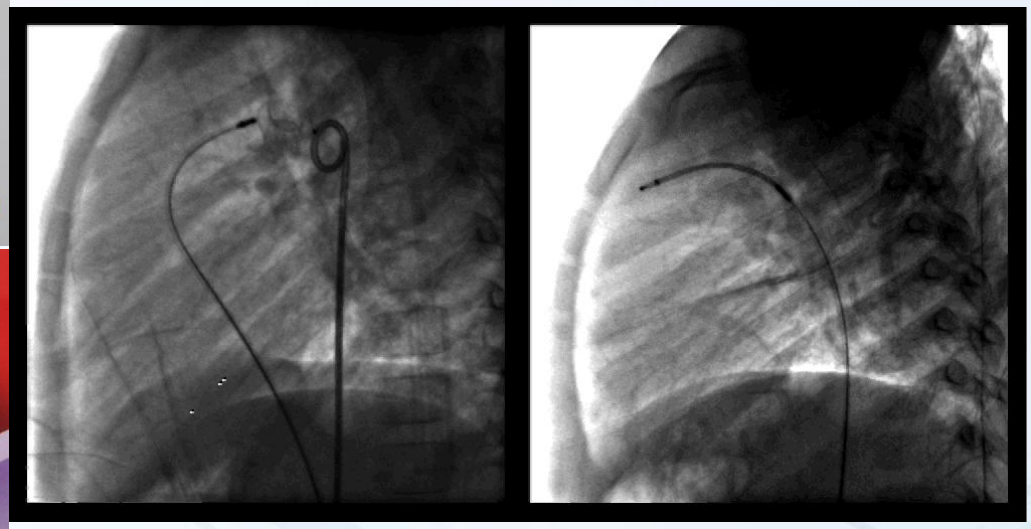


So, what about transcatheter closure of VSD using ADO II?

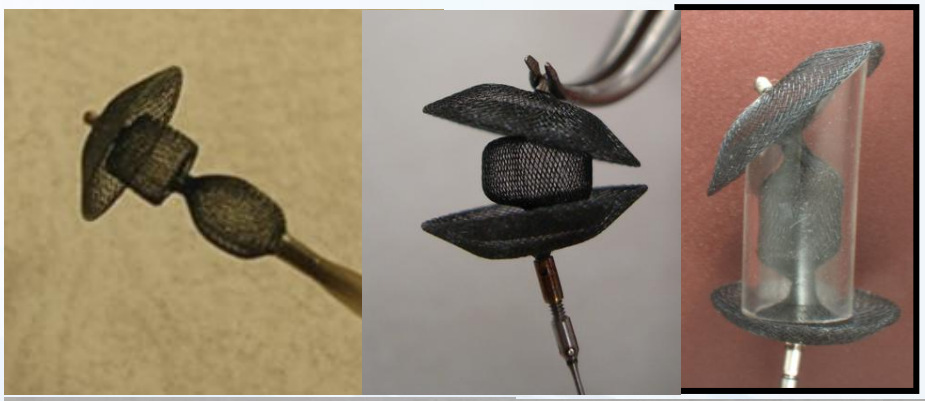
AMPLATZER® Duct Occluder II
© AGA Medical Corporation
Device not available in the US

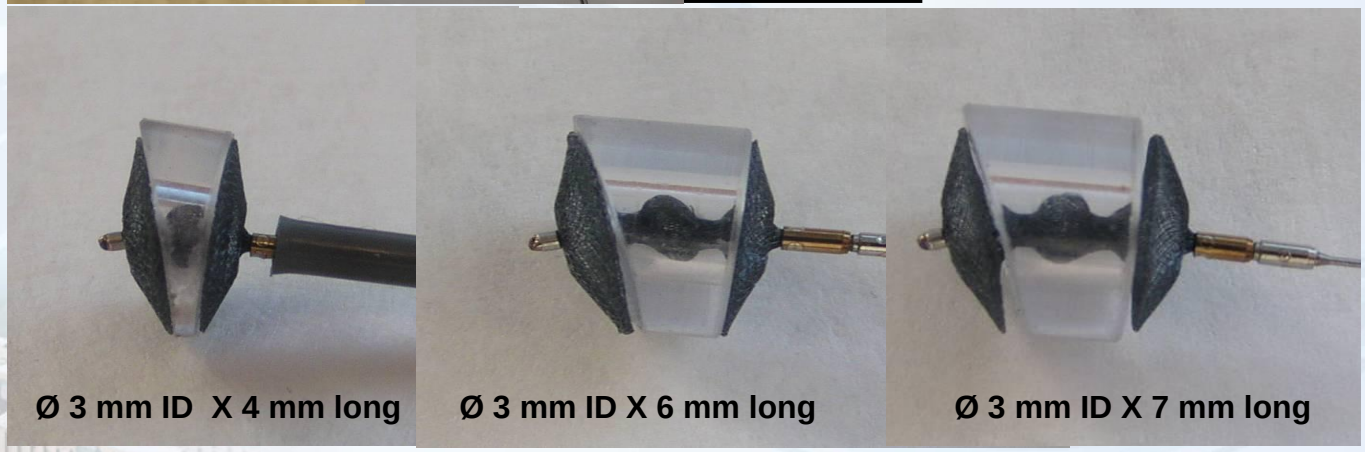
ADO II was designed for small-midsize PDA closure

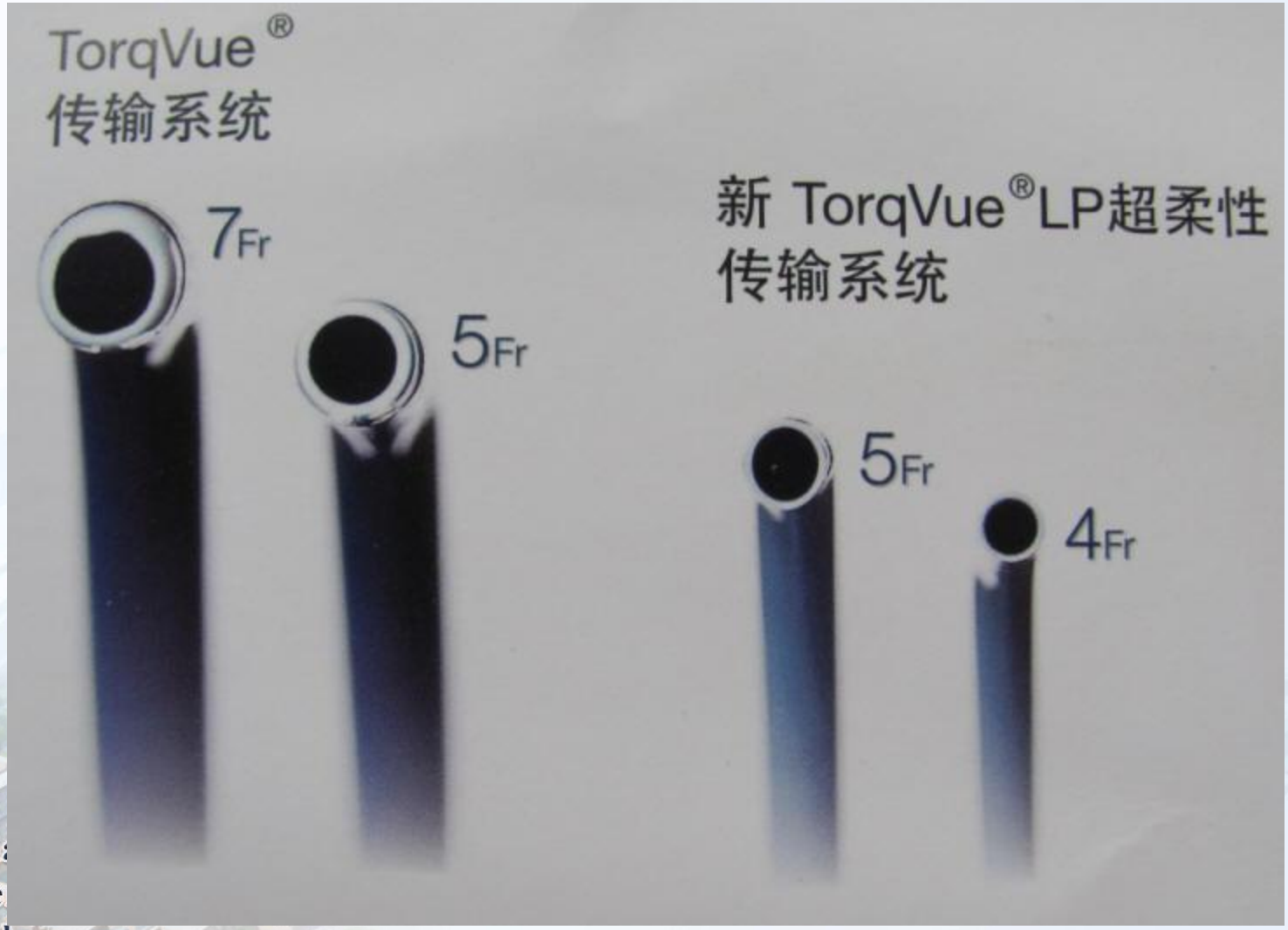




Characteristics of ADO-II



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Percutaneous central access in patients younger than 5 years: **size does matter.**

Janik JE, Conlon SJ, Janik JS. J Pediatr Surg. 2004 Aug;39(8):1252-6.

…Children, who were between
0.5 and 0.99 years old,
5 to 7.49 kg in weight,
7.5 to 9.99 kg in weight,
and 60 to 74.9 cm in height
had higher complication rates (P <.05)
when catheters > or =6F were inserted…

Retrograde Transcatheter Closure of Ventricular Septal Defects in Children Using The Amplatzer Duct Occluder II.

Koneti NR, Penumatsa RR, Kanchi V et al. Catheterization and Cardiovascular Interventions,2011, 77:252–259.

TABLE I. Baseline Characteristics

Case no.	Age (mo)	Sex	Weight (kg)	Defect size (mm)	Defect type	LVEDD in mm ("Z" score)	Qp/ Qs
1	60	m	14	5.5	pmVSD with MSA	40 (3.3)	2.8
2	48	m	15	5	pmVSD with MSA	39 (2.64)	1.8
3	44	m	10	4.5	pmVSD with MSA	30 (1.16)	1.4
4	48	m	14	6	pmVSD	44 (4.07)	2.4
5	78	m	20	4.6	pmVSD with MSA	42 (3.11)	1.8
6	22	f	10	4	pmVSD	34 (2.76)	1.6
7	59	f	15	6.5	mVSD	38 (2.29)	NA
8	36	f	9.5	4.2	mVSD	31 (2.0)	NA
9	66	f	20	6	pmVSD	44 (3.11)	NA
10	23	f	11.5	4.5	mVSD	34 (1.79)	NA
11	15	f	7.5	4.6	mVSD	32 (4.67)	NA
12[a]	24	m	14.5	7	pmVSD	46 (5.56)	3.2
13[a]	22	f	12	5.5	pmVSD with MSA	39 (3.57)	2.0

The study group is limited to those with VSDs less than 6.5 mm in size, essentially because the maximum waist diameter of ADO II available is 6 mm at present

Efficacy of the transcatheter closure of perimembranous and muscular ventricular septal defects with the Amplazter duct occluder II.

Zhao PJ, Yu ZQ, Gao W et al. Chin J Cardiol, 2012,40:817-820.

From Feb.2011 to March 2012,
48 cases(pm VSD + mVSD)

Clinical experiences

- From Feb. 2011 to Feb.2013，

  104 patients with VSD(98 pmVSDs and 6 mVSDs) received VSD closure with ADO II in our hospital

  Age 5.21y(1.8-15y)， Wt. 16.2kg（11-44kg）

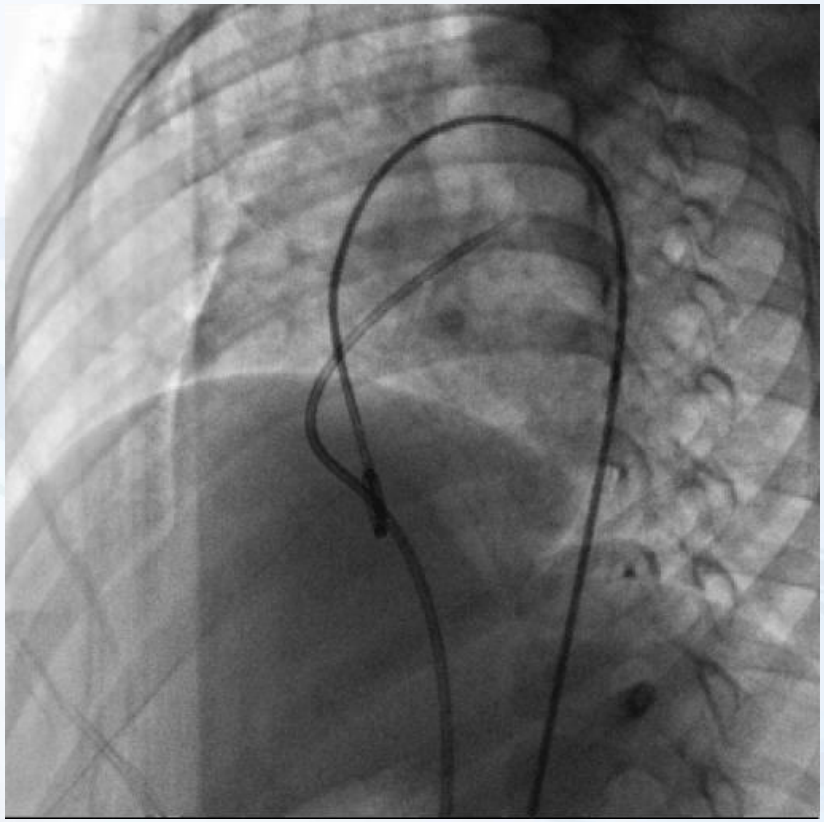
  VSD 2.5mm(1.8-3.5mm)， Qp/Qs：1.51 ± 0.15 （1.4-1.9）

- Complications

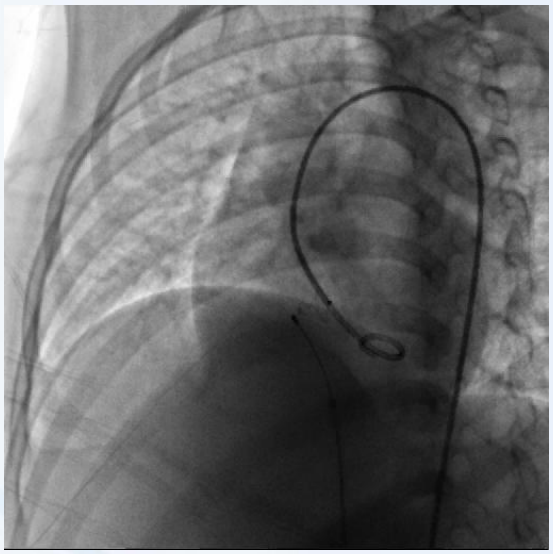
residual shunt	2 cases(Follow-up more than 1year)
LAH	2 cases
transient CAVB	1
TR (mild)	4 cases

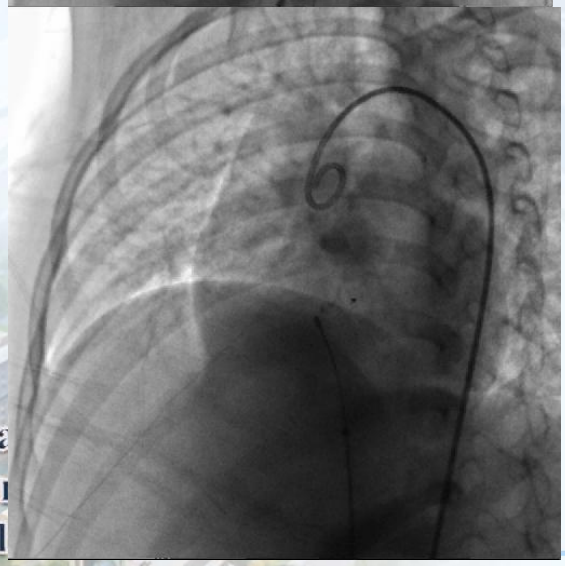
It seems potentially more effective and safe in selected cases

- **pmVSD**

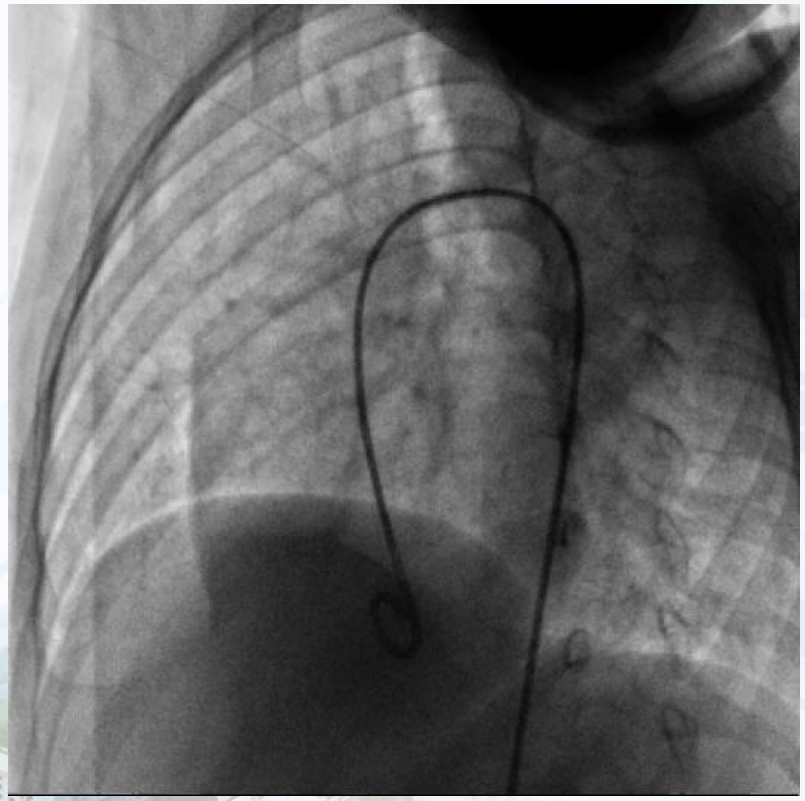


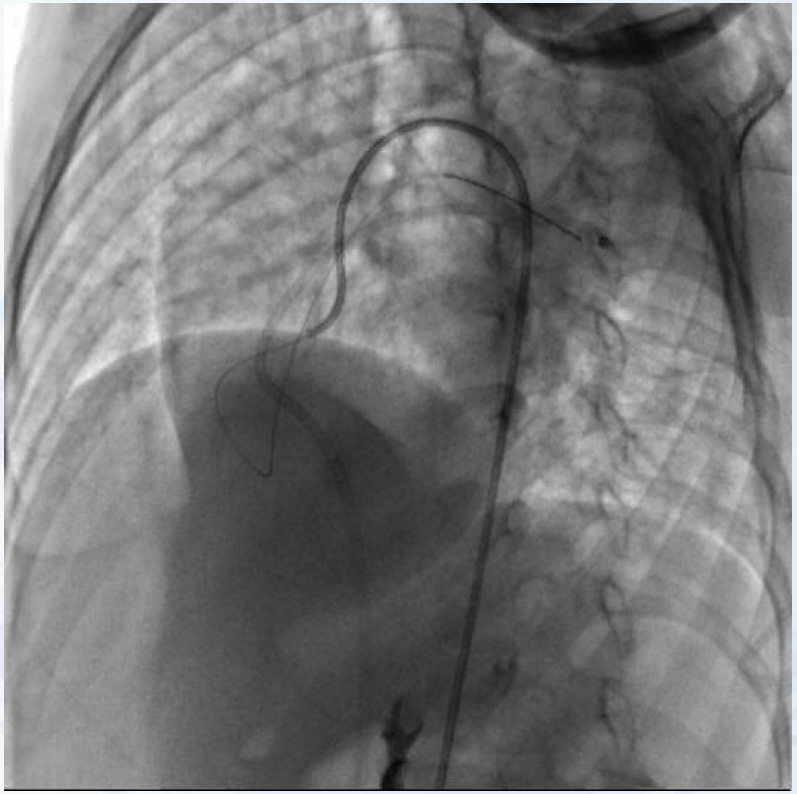
Antegrade release

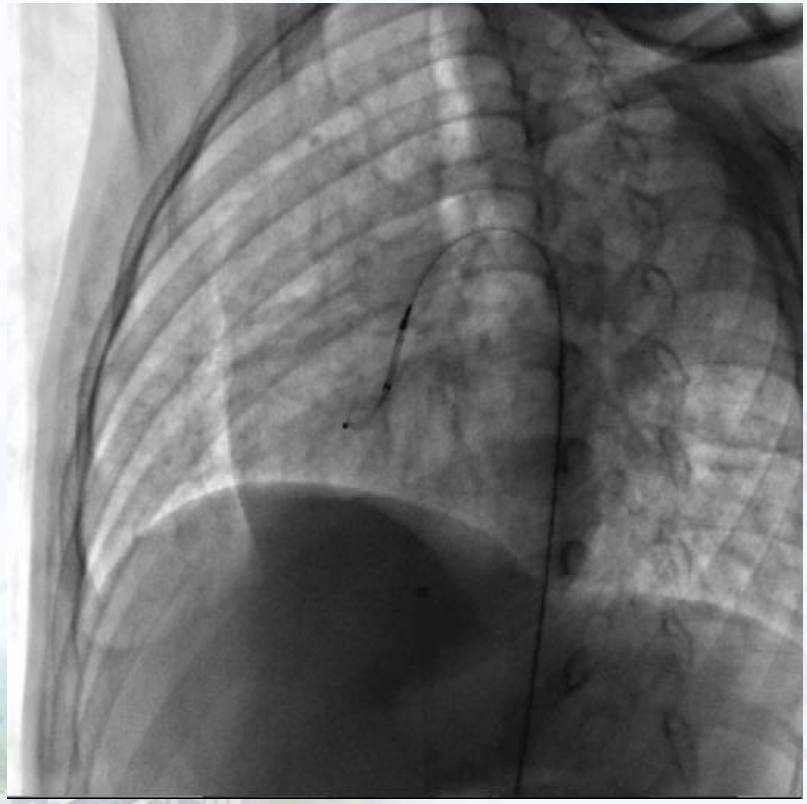


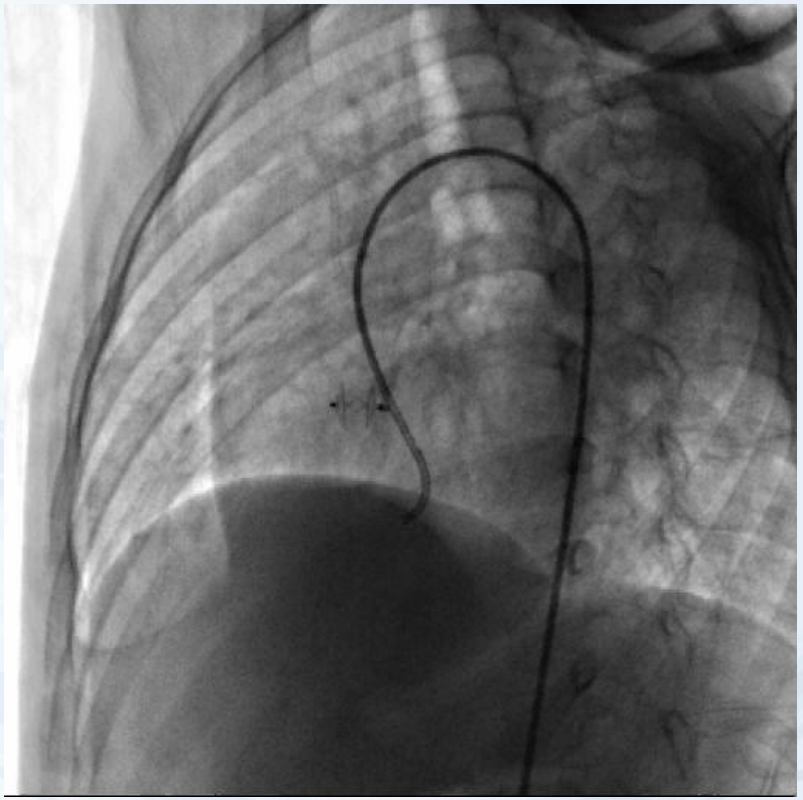


Retrograde-

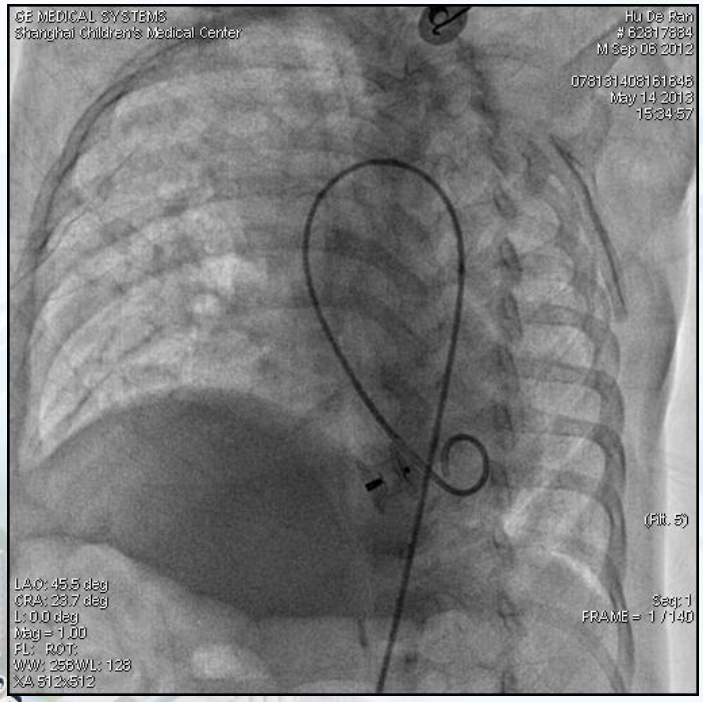


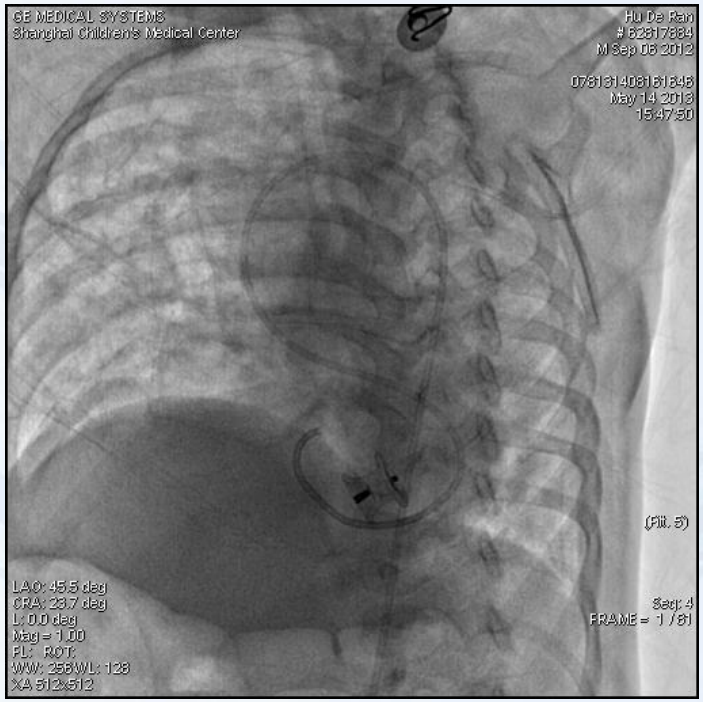


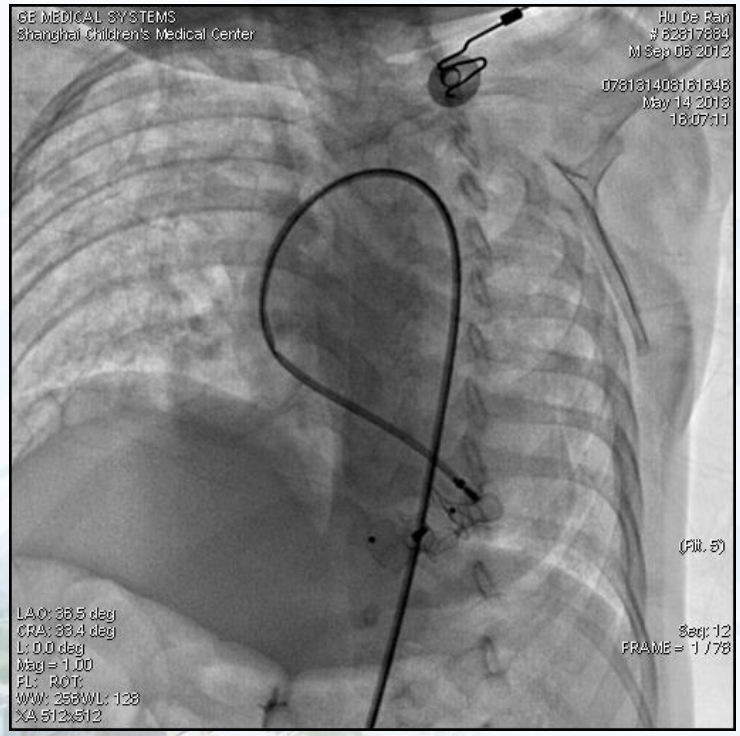




8m, 5.8kg, s/p hybrid procedure for pmVSD + multi-mVSD, residual shunt



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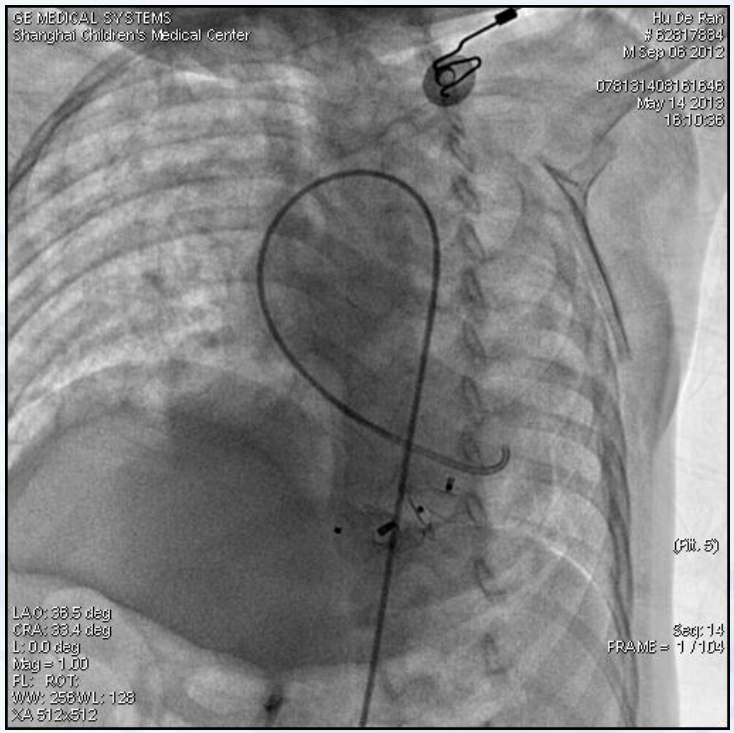
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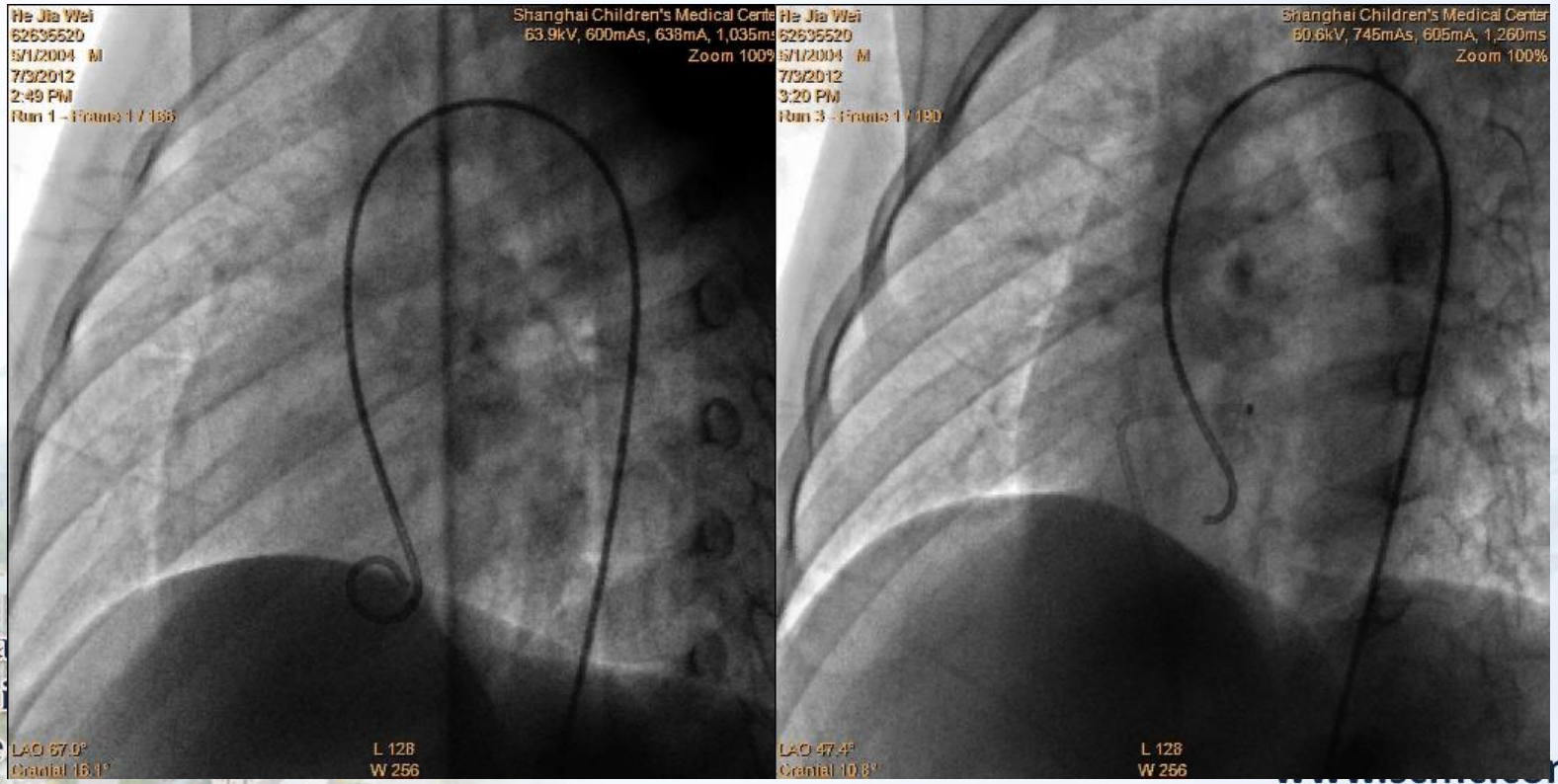
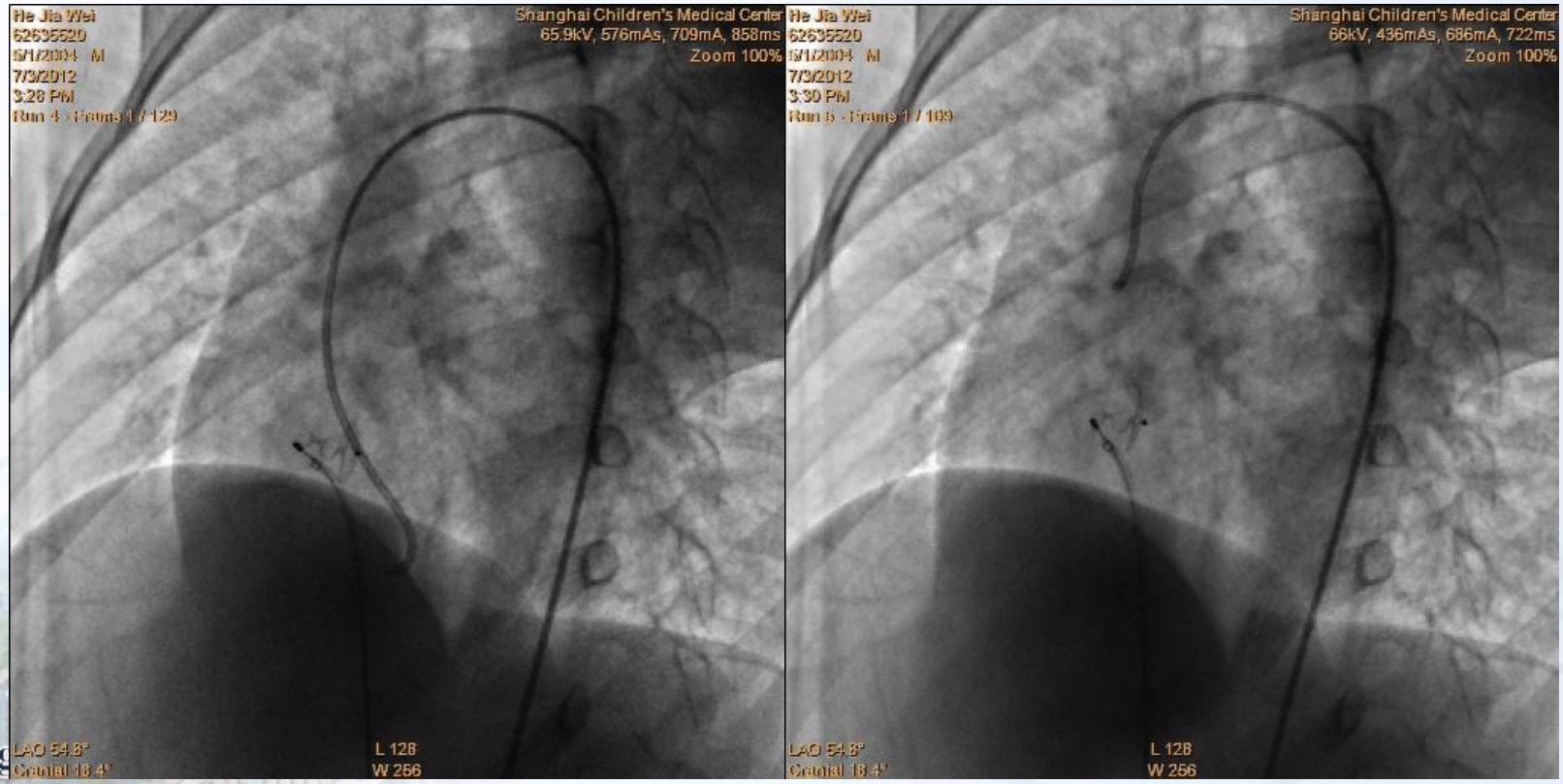
Transient CAVB after VSD closure with ADO II

M, 6yrs, 21kg, pmVSD with aneurysm, 2 holes in the right side, Qp/Qs 1.5



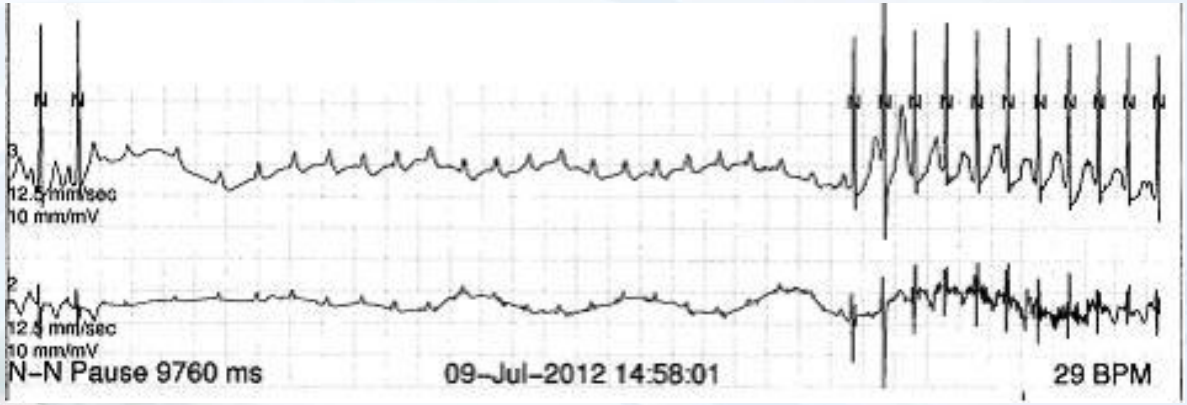
VSD closure with ADO II (4-4mm)

without any procedural complication. It was observed that the defect was totally closed and there was no rhythm or conduction abnormality.



6 days after procedure…

He suffered from syncope. ECG monitoring showed paroxysmal CAVB with multiple nonconducted P waves and prolonged ventricular pauses (up to 9.7s)

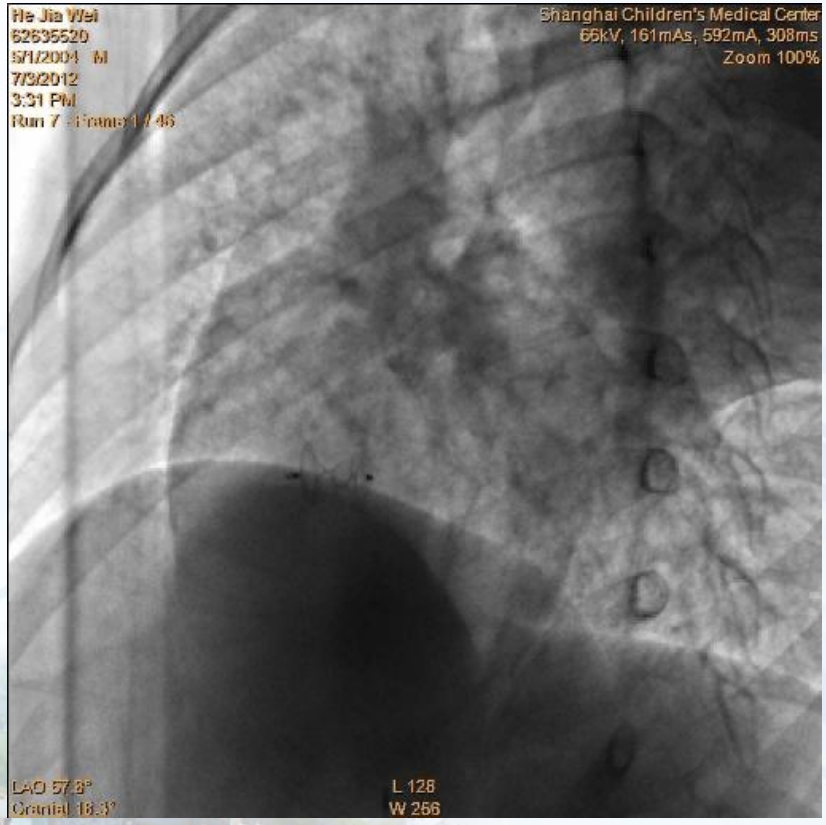


Intravenous methylprednisolone at a dose of 2mg/kg was administered every 12 hours. Intravenous isoproterenol was maintained in order to keep the heart rate above 75 bpm. The paroxysmal CAVB disappeared 36 hours later. Temporary pacemaker was not implanted.

6 days

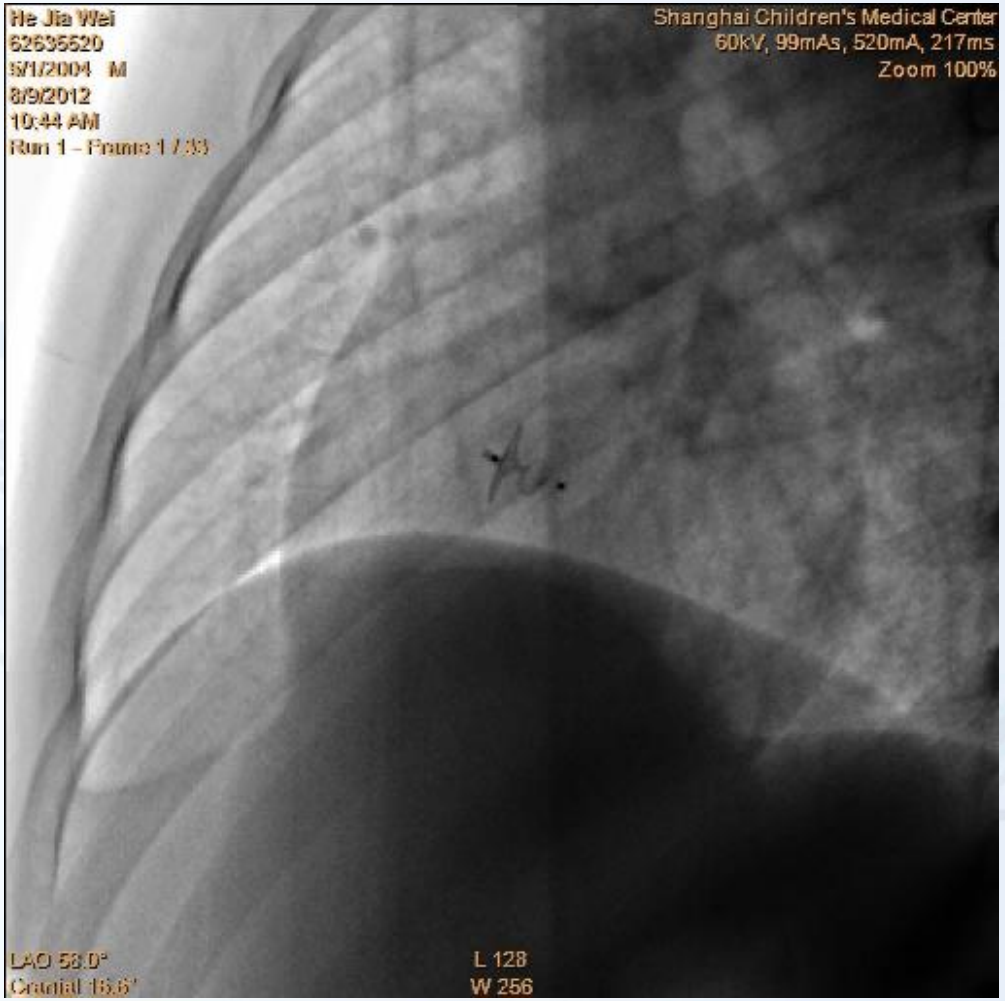
8 days

18 moths later



Accordion-like motion

1 month after closure, the device had the stable shape



Device Picture

Membranous VSD occluder 2

Left Ventricular

"Sail" / "Wing"

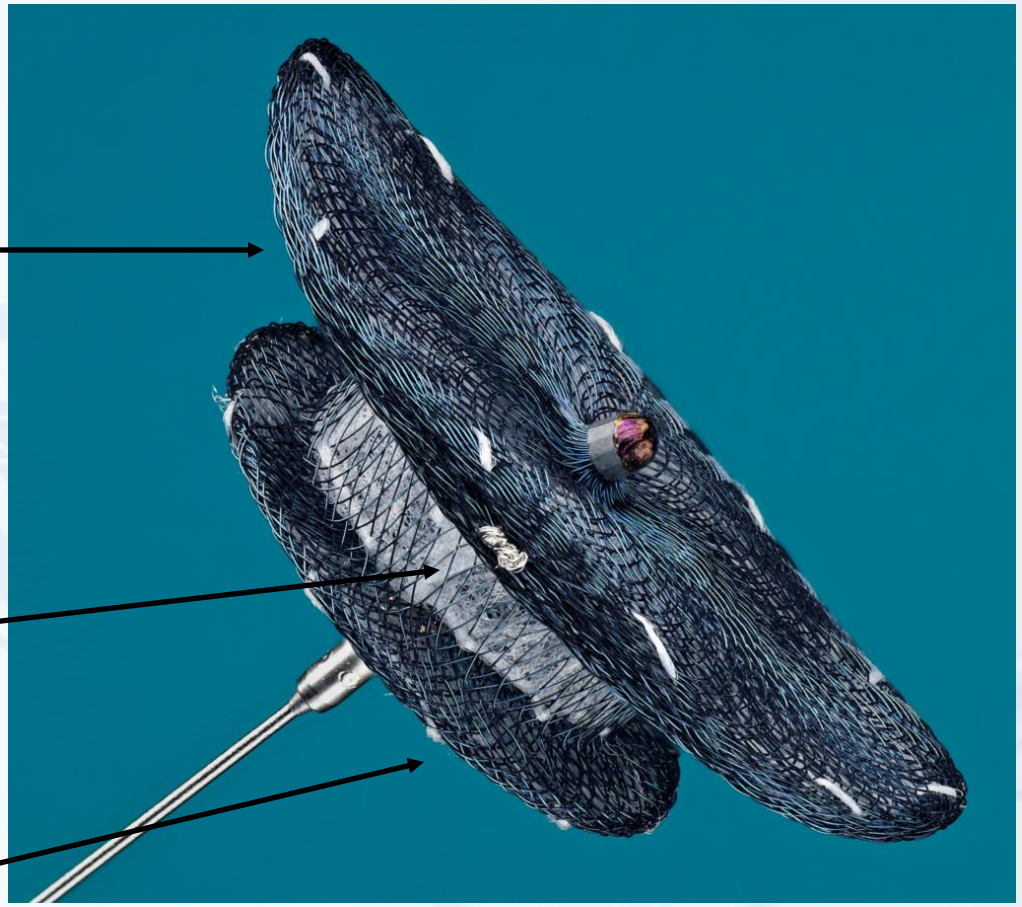
- Designed to place minimal clamp force on the ventricular septum
- Designed to provide stable device positioning

Device Waist

- Designed to exert minimal radial force against the ventricular septum

Right Ventricular

"Disc"



Transcatheter closure of perimembranous ventricular septal defects: Initial human experience with the amplatzer® membranous VSD occluder 2.

Velasco-Sanchez D, Tzikas A, Ibrahim R, Miró J.
Catheter Cardiovasc Interv. 2012 Mar 16.

Thanks !