



# **My Worst PDA case**

**Jou-Kou Wang, MD**  
**Department of Pediatrics,**  
**National Taiwan University Hospital**

**APCASH**

**Oct 11, 2014, 14:45-16:15**



# Brief history

- Patient 代X華 21-year-old female, from China
- symptomatic since early childhood, CHD was told,
- No operation was performed
- exercise intolerance, Palpitation




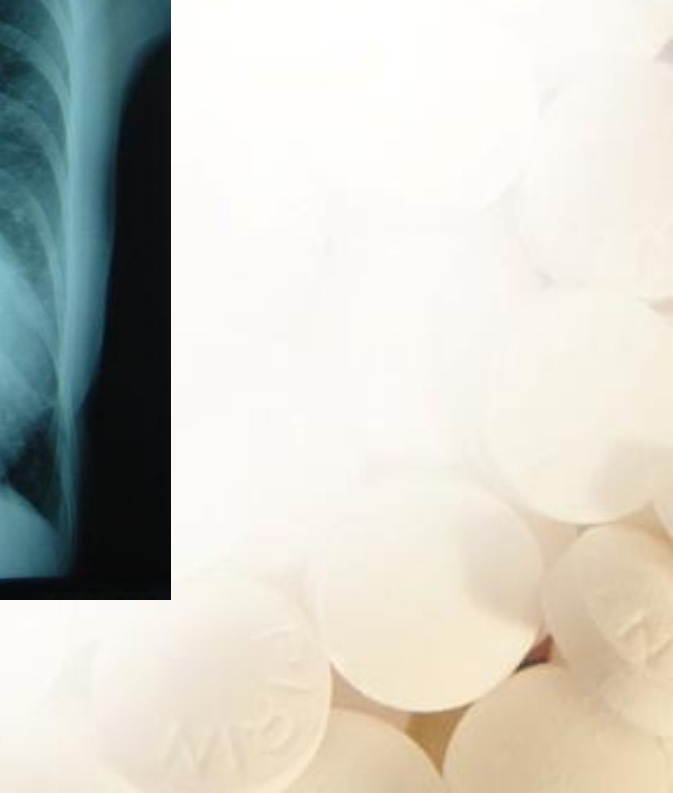
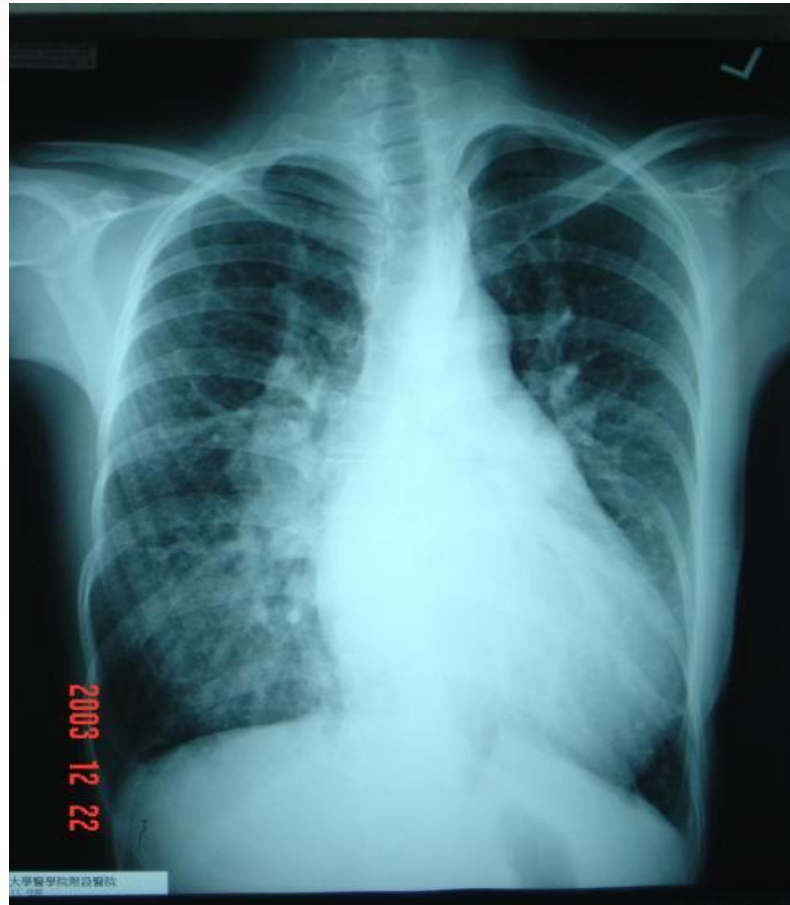
# Physical examination

- **BP 130/55, HR 80/min, RR 22/min**
- **pulse: bounding**
- **A grade IV/ VI continuous murmur heard at LUSB, thrill at LUSB**



# Lab

- Echo showed a large PDA, mild MR
  - ECG atrial flutter, LVH
  - CxR cardiomegaly, markedly increased pulmonary blood flow
- 



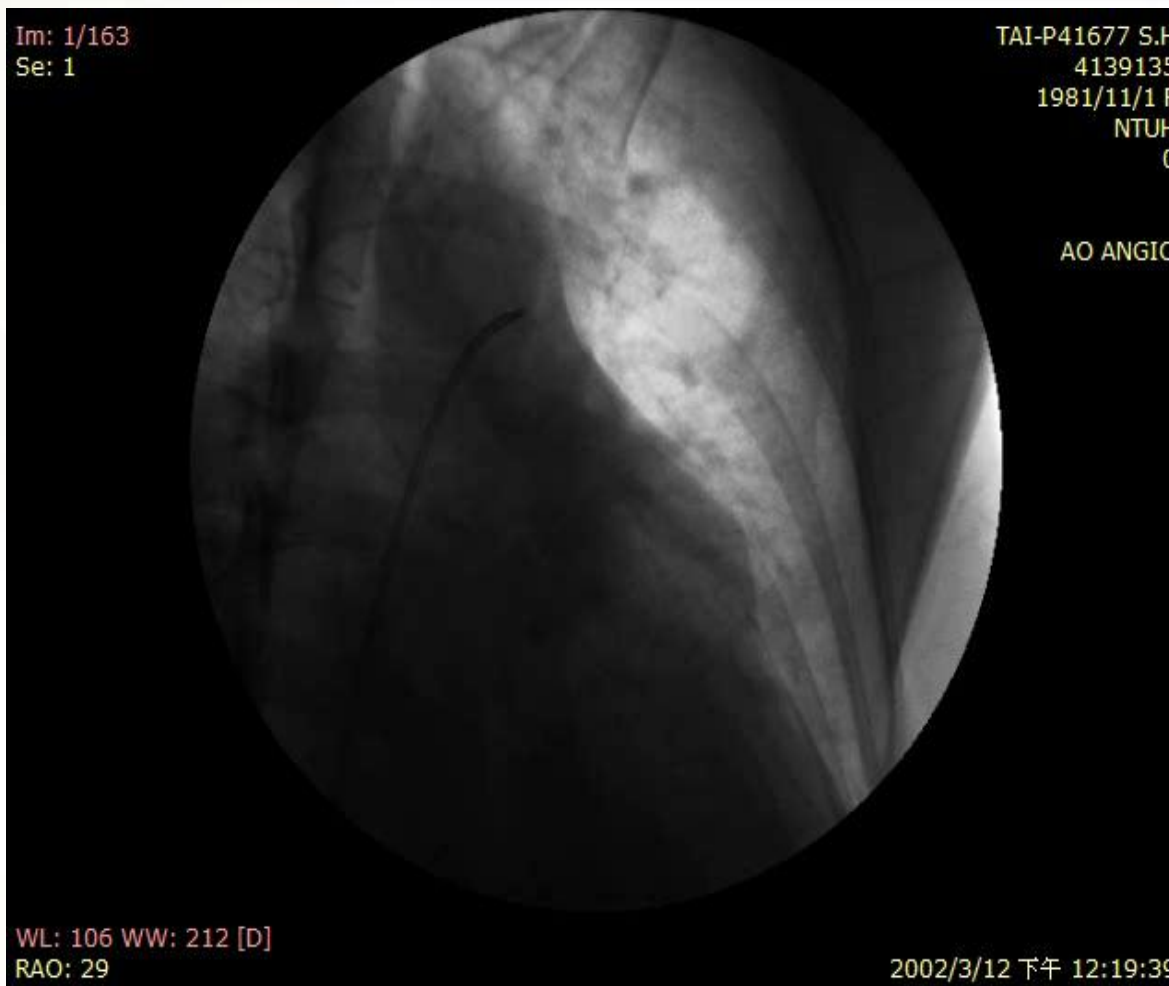
# Hemodynamics

	pressure (mmHg)	O <sub>2</sub> Sat (%)
IVC		79
RA	<u>4</u>	81
SVC		70
RV	39/4	73.3
MPA	34/18 <u>26</u>	96
LPA	34/18 <u>26</u>	94
Ao	116/53 <u>79</u>	98.3
LV	111/9	99

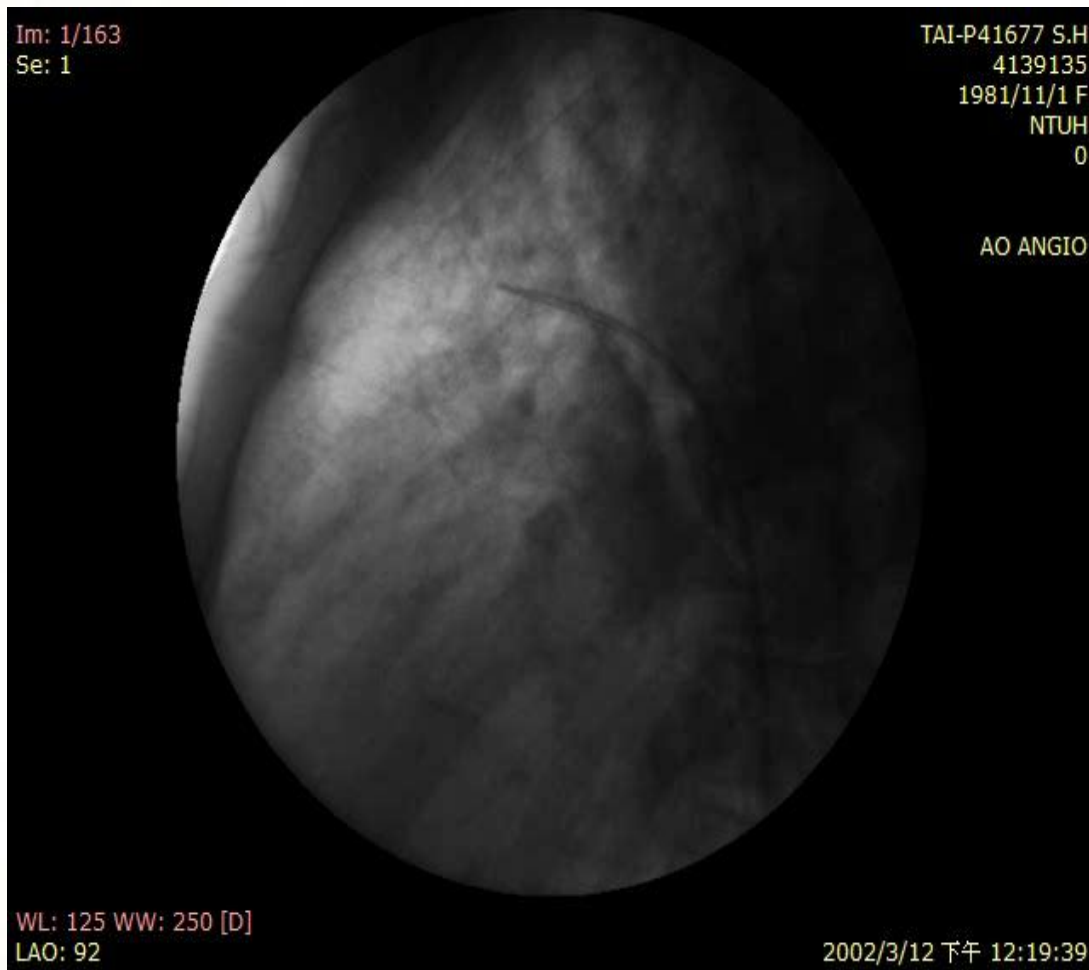
Qp/Qs > 5



# Large PDA



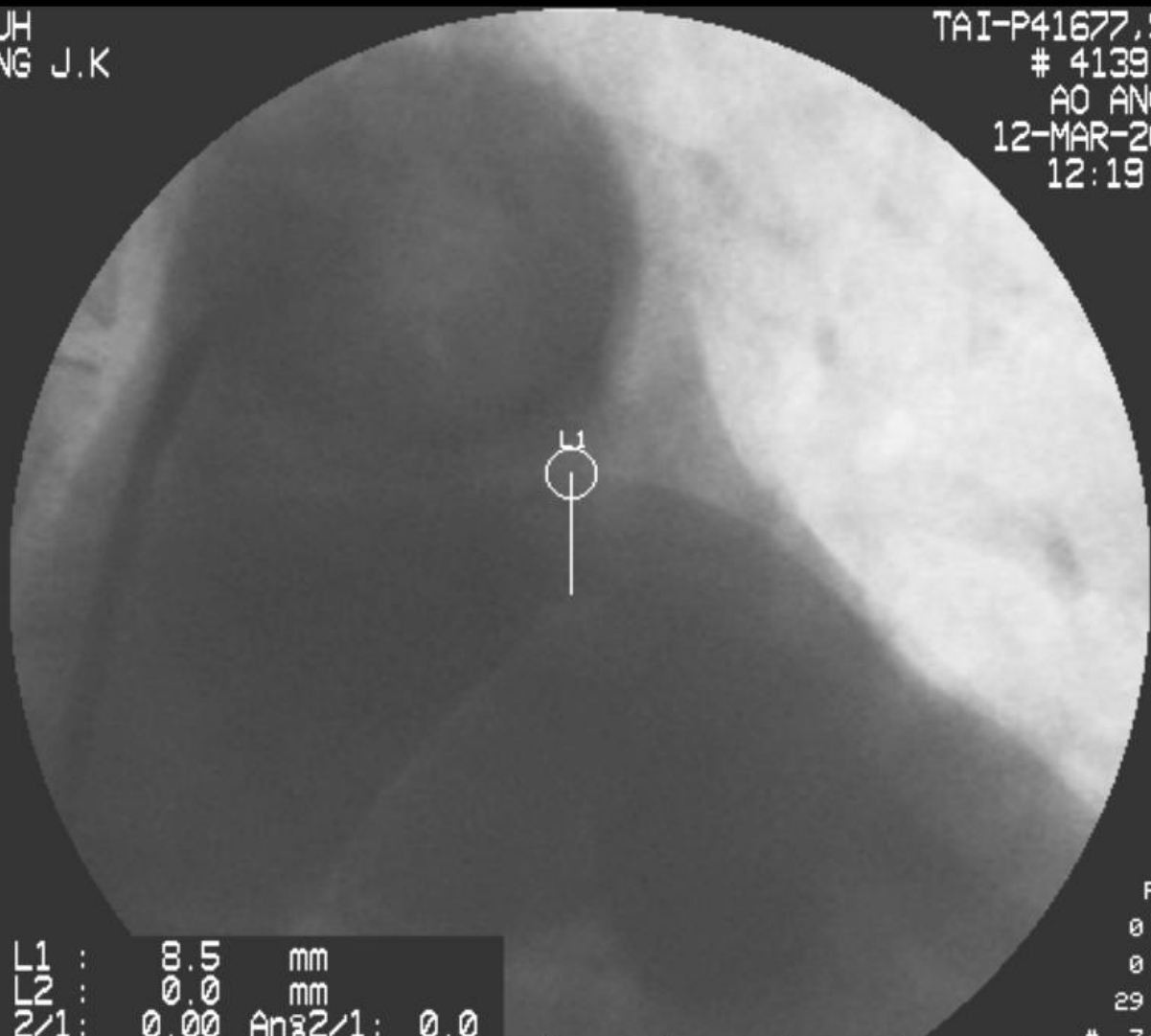
# PDA lateral view





NTUH  
WANG J.K

TAI-P41677.S.H  
# 4139135  
AO ANGIO  
12-MAR-2002  
12:19:39



L1 : 8.5 mm  
L2 : 0.0 mm  
2/1: 0.00 An32/1: 0.0

FRNT  
0 L  
0 CAU  
29 RAO  
# 3/ 3



IMAGE  
166

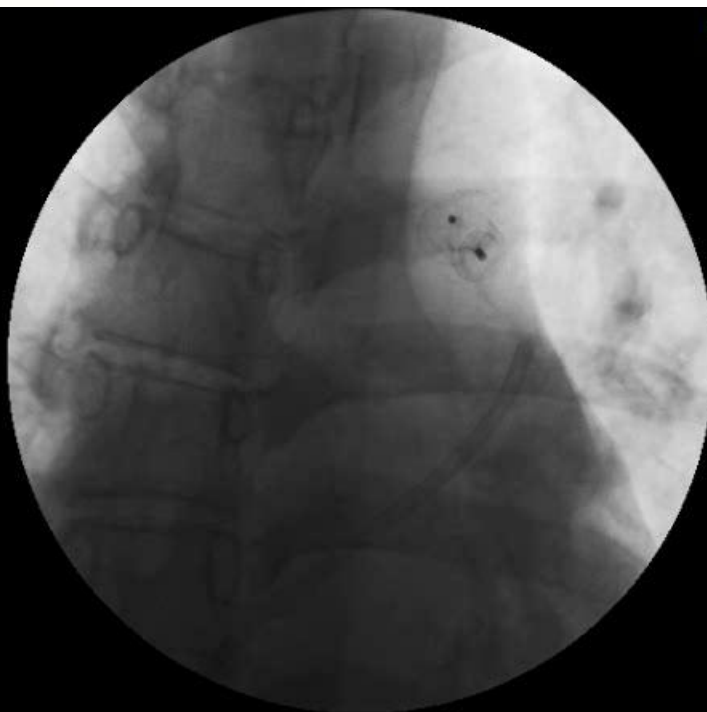
# Deployment of ADOI 12-10

Im: 1/78  
Se: 1

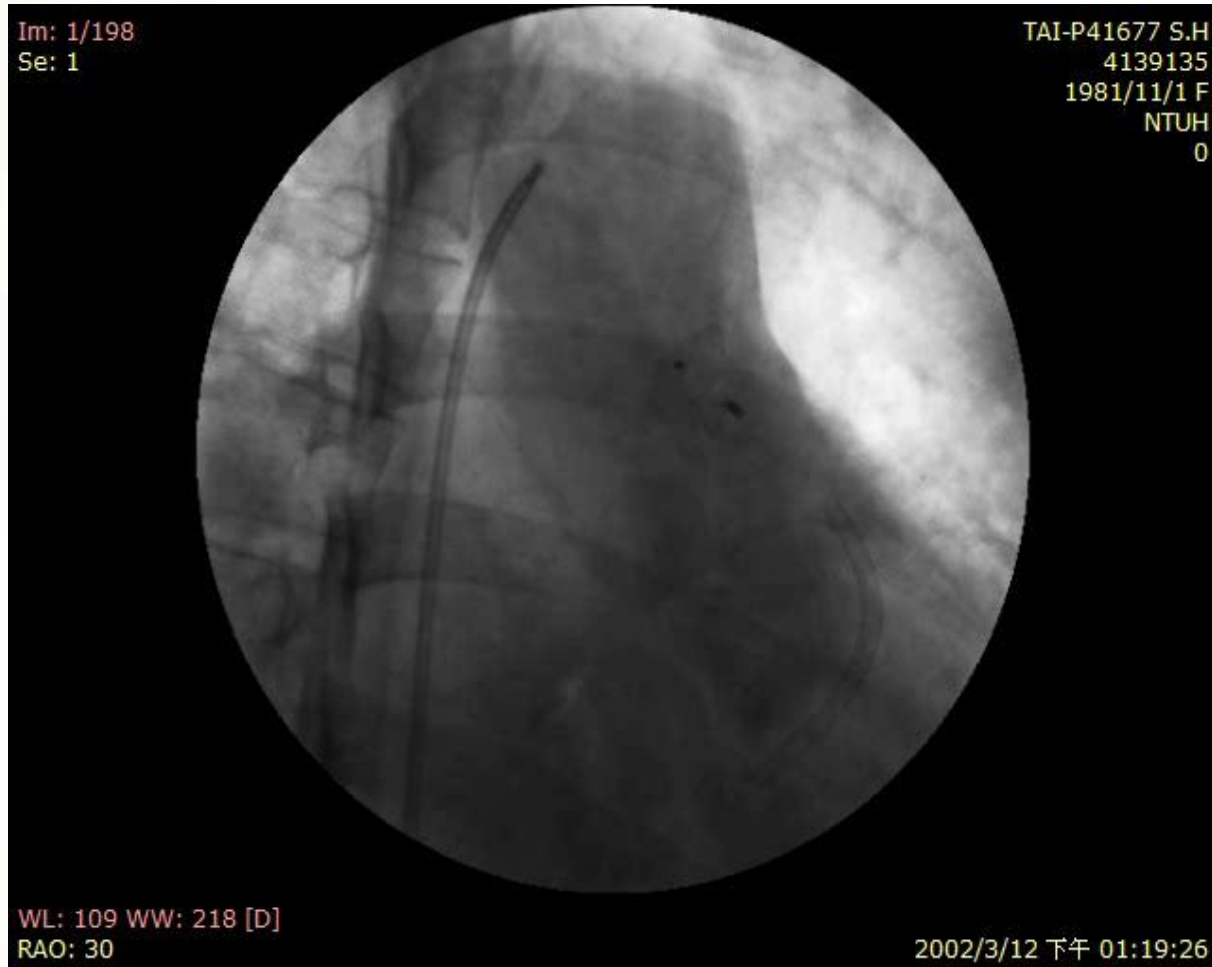
TAI-P41677 S.H  
4139135  
1981/11/1 F  
NTUH  
0

WL: 121 WW: 241 [D]  
AP

2002/3/12 下午 12:59:42



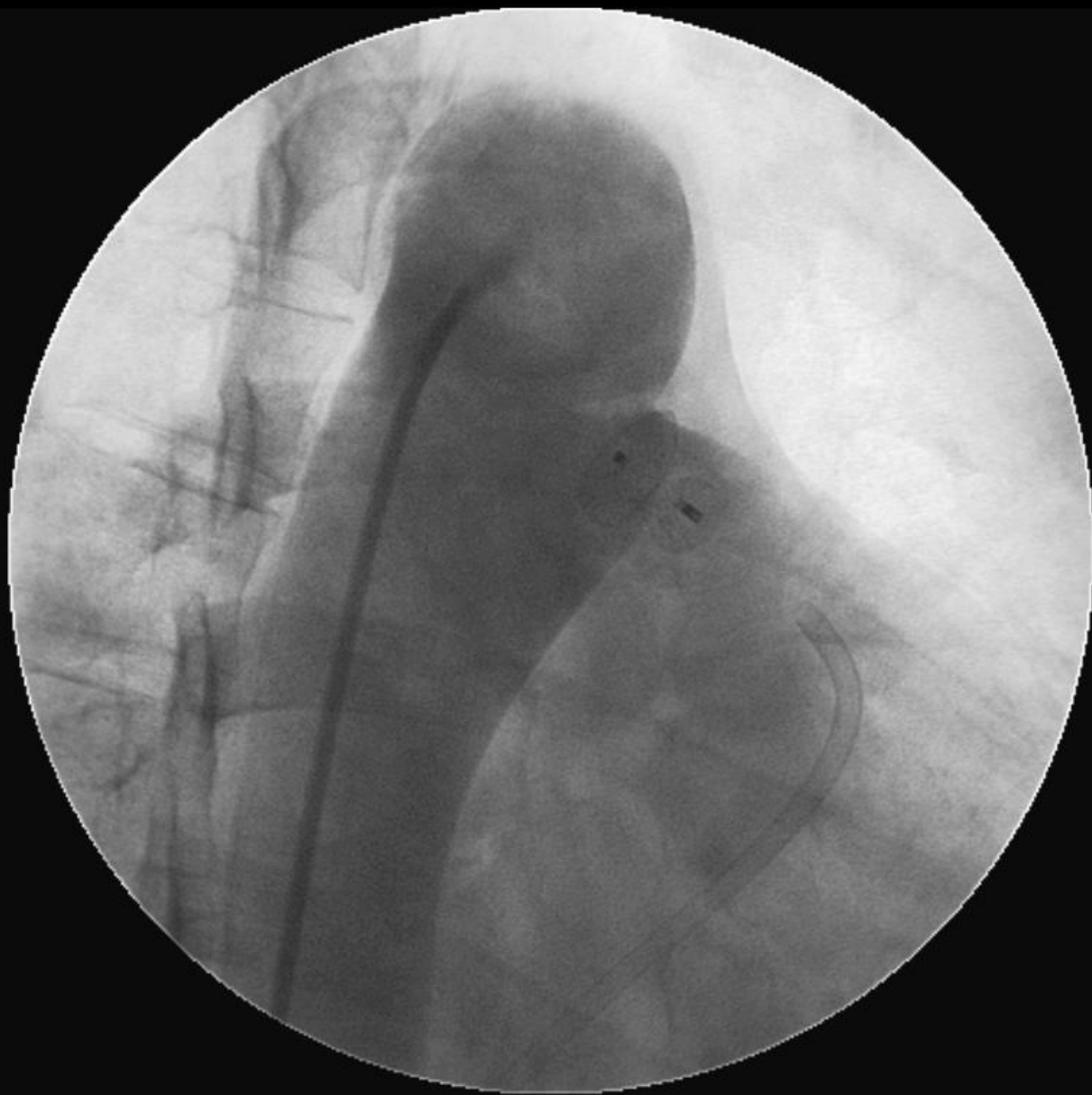
# Significant residual shunt





# Residual shunt



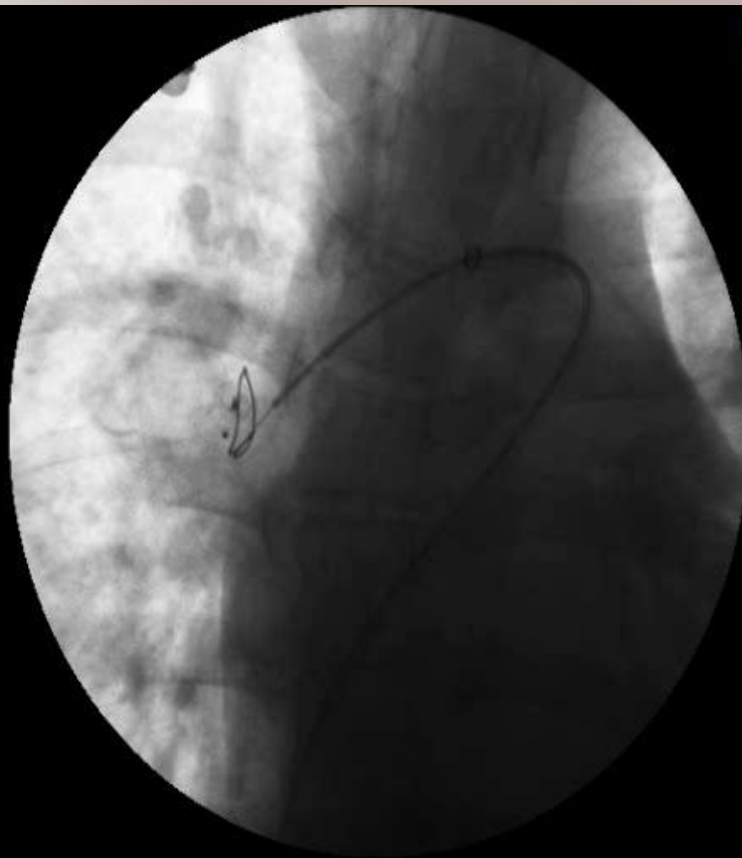


# Retrieving the ADOI





Im: 1/18  
Se: 1



TAI-P41677 S.H  
4139135  
1981/11/1 F  
NTUH  
0

WL: 101 WW: 201 [D]  
AP

2002/3/12 下午 05:49:48



# Device was stuck in iliac vein







# Final result


- The device was snared & partially retrieved into a 7 Fr sheath
- The device was stuck in right iliac vein. It was removed after right femoral vein cut down
- Surgical ligation, but residual shunt was present.



# Follow-up after surgery

- Symptomatic improvement, but a residual shunt was found.
- A second catheterization to close PDA was performed with success.

Jet width 4.5 mm. Device  
ADO 10-8



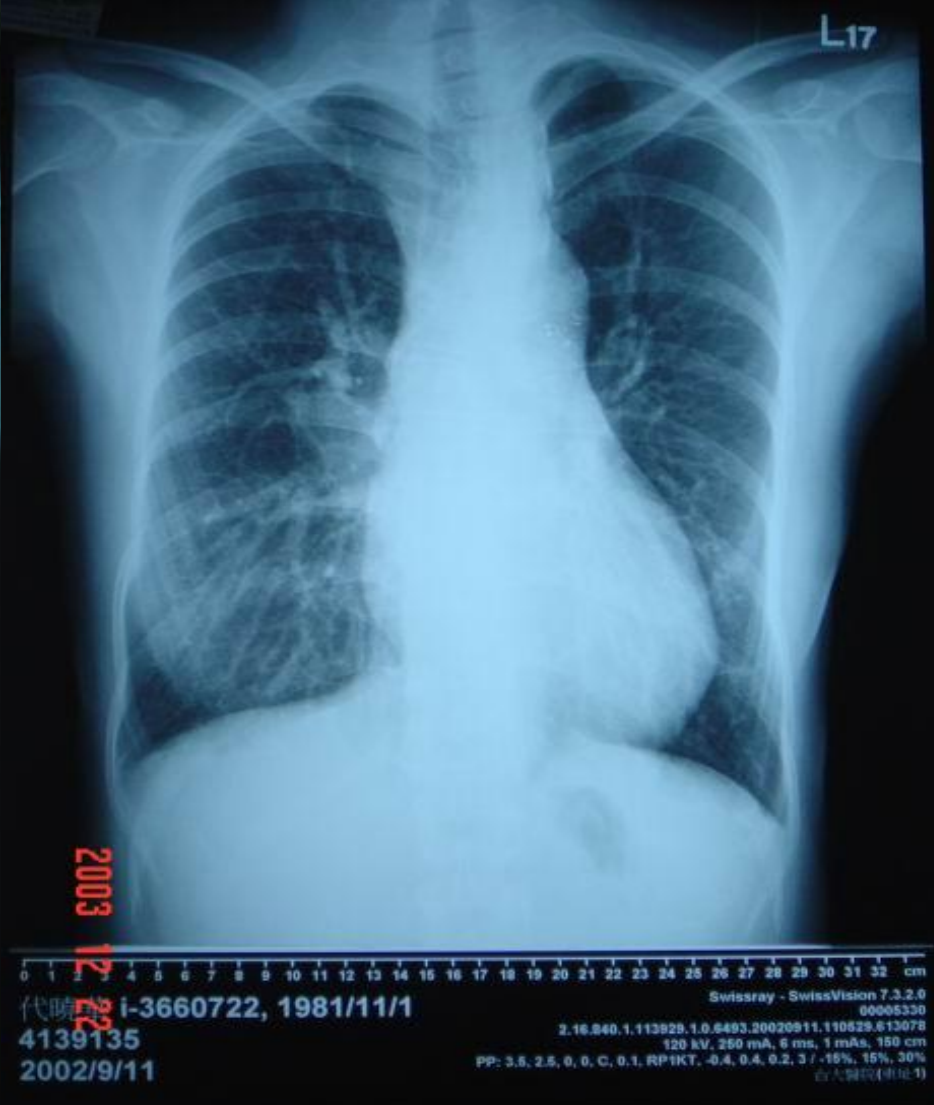
# Hemodynamics

	pressure (mmHg)	O <sub>2</sub> Sat (%)
IVC		85
RA	<u>3</u>	79
SVC		75
RV	25/2	81
MPA	25/5 <u>14</u>	89
LPA	25/4 <u>14</u>	86
Ao	120/67 <u>89</u>	99
LV	130/11	99

$$Q_p/Q_s = 1.5$$



# PDA S/p closure





# Large PDA

- Severe heart failure
- Pulmonary hypertension
- Arrhythmias
- Valve regurgitation



# Complications of transcatheter PDA closure

- Device embolization
- acquired CoA/ LPA stenosis
- hemolysis (more common in coil)
- arrhythmia
- mortality: very rare

# Adverse event in PDA closure

Adverse Events Associated With PDA Closure *El-Said et al*


**Table 3.** Adverse Events (AEs) in the Coil and Device Closure Groups

AEs	Total (n=496)	Coil (n=158)	Device (n=338)	P Value
Any AE, n (%)	46 (9)	21 (13)	25 (7)	0.02
Any high-severity AE (levels 3, 4, 5), n (%)	11 (2)	2 (1)	9 (3)	1.0
Any coil- or device-related AE, n (%)	24 (5)	17 (10)	7 (2)	<0.001
Embolization*	11 (2)	8 (5)	3 (<1)	0.003
Malposition*	13 (3)	9 (6)	4 (1)	
Highest-severity AE, n (%)				0.04
0—no AE	450 (91)	137 (87)	313 (93)	
1—very minor	5 (<1)	1 (<1)	4 (<1)	
2—minor	30 (6)	18 (11)	12 (4)	
3—moderate	9 (2)	1 (<1)	8 (2)	
4—major	2 (<1)	1 (1)	1 (<1)	

\*Embolization and malposition are subcategories and included in the total of any coil- or device-related AE.



# Discussions

- Closing large ductus using ADO, the size selected should be at least 3 mm larger than narrowest diameter of PDA
  - The optimal device size should be 12 mm in this case. Muscular VSD device is also an ideal device for this patient.
- 





# Measurement of a large PDA diameter

- In patients with a large PDA, a large volume of contrast media with fast injection should be used to delineate the size & morphology of ductus.
- Sometimes, balloon sizing may be required.



## Take home message

- In closing a large ductus, the device diameter selected should be at least 3 mm > than ductus diameter. A muscular VSD occluder can also be used.
- Snaring migrated ADO<sub>I</sub> is possible, but an 1-2 Fr larger sheath is required
- Significant residual shunt indicates suboptimal size ADO or malposition. Use a larger size device.



# PICS-AICS AP

Pediatric and Adult Interventional Cardiac Symposium, Asia-Pacific

## TAIPEI

April 1-4, 2015



