



Cardiac Center

KING CHULALONGKORN MEMORIAL HOSPITAL
THE THAI RED CROSS SOCIETY

PDA closure in adult

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- **Division of Cardiology**
- **Department of Medicine**
- **King Chulalongkorn Memorial Hospital**

HAT 2017

Are there any differences from pediatrics?

- **Less number of cases**
- **Larger body size (easy puncture, may be more difficult to cross, more space for delivery system and device landing)**
- **More pulmonary hypertension ?**
- **More calcification – difficult to complete closure using device and high risk for surgical closure**

Indications for intervention in PDA

Indications	Class ^a	Level ^b
PDA should be closed in patients with signs of LV volume overload	I	C
PDA should be closed in patients with PAH but PAP <2/3 of systemic pressure or PVR <2/3 of SVR	I	C
Device closure is the method of choice where technically suitable	I	C

Indications for intervention in PDA

Indications	Class ^a	Level ^b
PDA closure should be considered in patients with PAH and PAP >2/3 of systemic pressure or PVR >2/3 of SVR but still net L–R shunt (Qp:Qs >1.5) or when testing (preferably with nitric oxide) or treatment demonstrates pulmonary vascular reactivity	IIa	C
Device closure should be considered in small PDAs with continuous murmur (normal LV and PAP)	IIa	C

Indications for intervention in PDA

Indications	Class ^a	Level ^b
PDA closure should be avoided in silent duct (very small, no murmur)	III	C
PDA closure must be avoided in PDA Eisenmenger and patients with exercise-induced lower limb desaturation	III	C

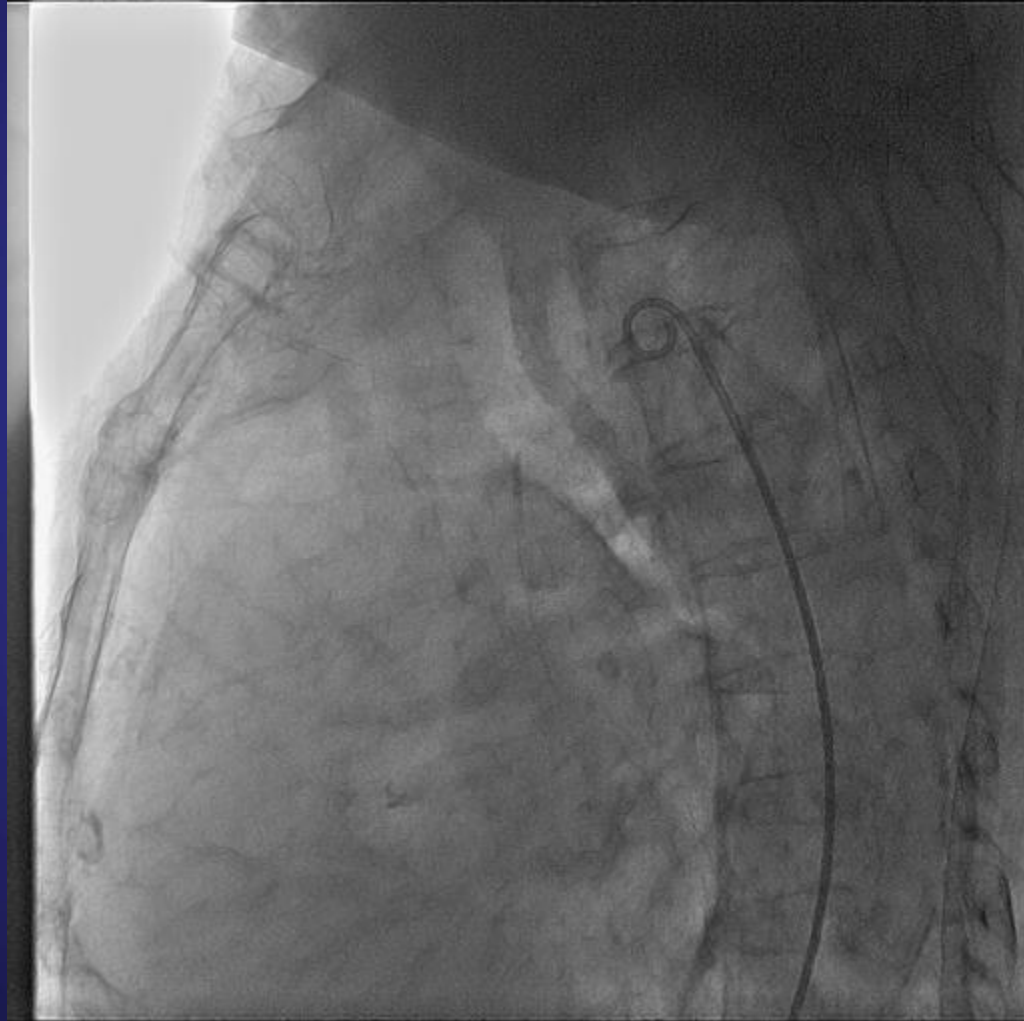
Recommendations for correction of congenital heart disease with prevalent systemic-to-pulmonary shunts

Recommendations			Class ^a	Level ^b
PVRI (WU • m ²)	PVR (WU)	Correctable ^d		
<4	<2.3	Yes	IIa	C
>8	>4.6	No	IIa	C
4–8	2.3– 4.6	Individual patient evaluation in tertiary centres	IIa	C

Case presentation

- **A 70-y-old woman presented with progressive dyspnea. PDA was detected and tried to close using device occluder but failed to complete closure. Then the patient was referred to us.**

Case presentation



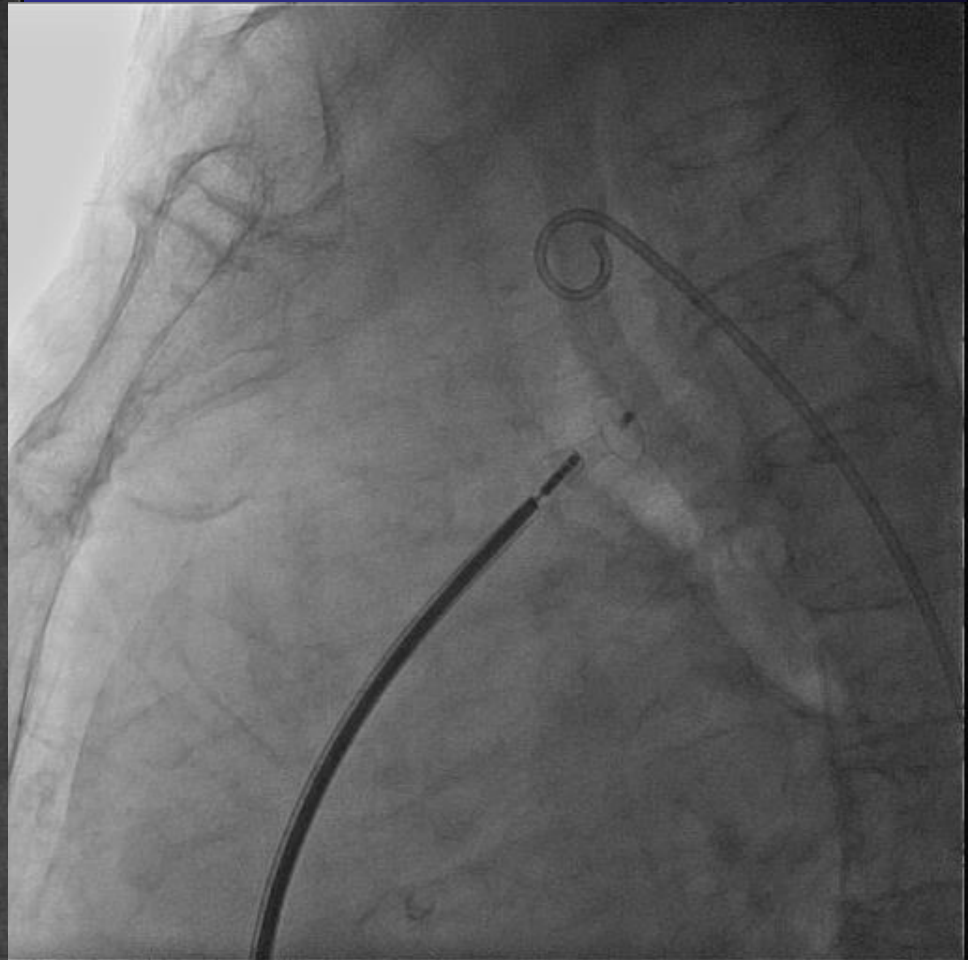
How to manage this patient?

1. Leave it without closure.
2. Sent her for surgical closure.
3. Try to re-close using PDA coil.
4. Try to re-close using ductal occluder.

How to manage this patient?

- If try to use ductal occluder, which size?
 - : 4/6
 - : 6/8
 - : 8/10

Case presentation



Cocoon ductal occluder 6/8

Do you accept this result?

- Yes
- No

If no, how would you do?

: Wait for a few minutes

: Re-position of device

: Change device size

Case presentation



Reposition device 6/8

Do you accept this result?

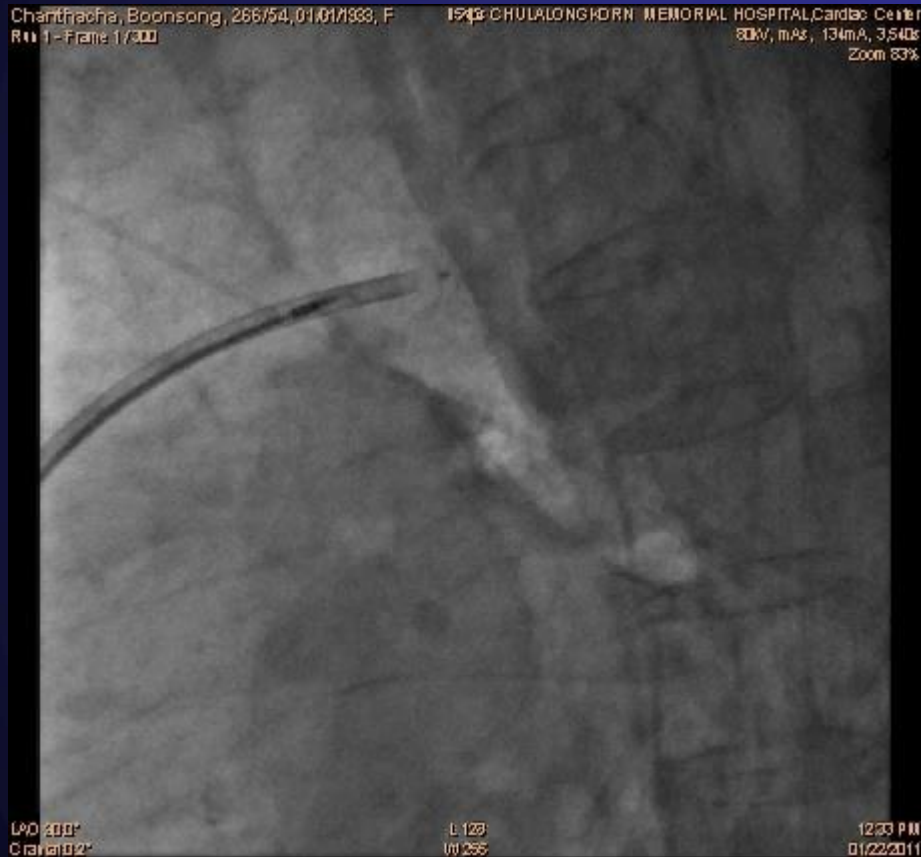
- Yes
- No

If no, how would you do?

: Wait for a few minutes

: Change device size

Case presentation



Cocoon ductal occluder 4/6

Do you accept this result?

- Yes
- No

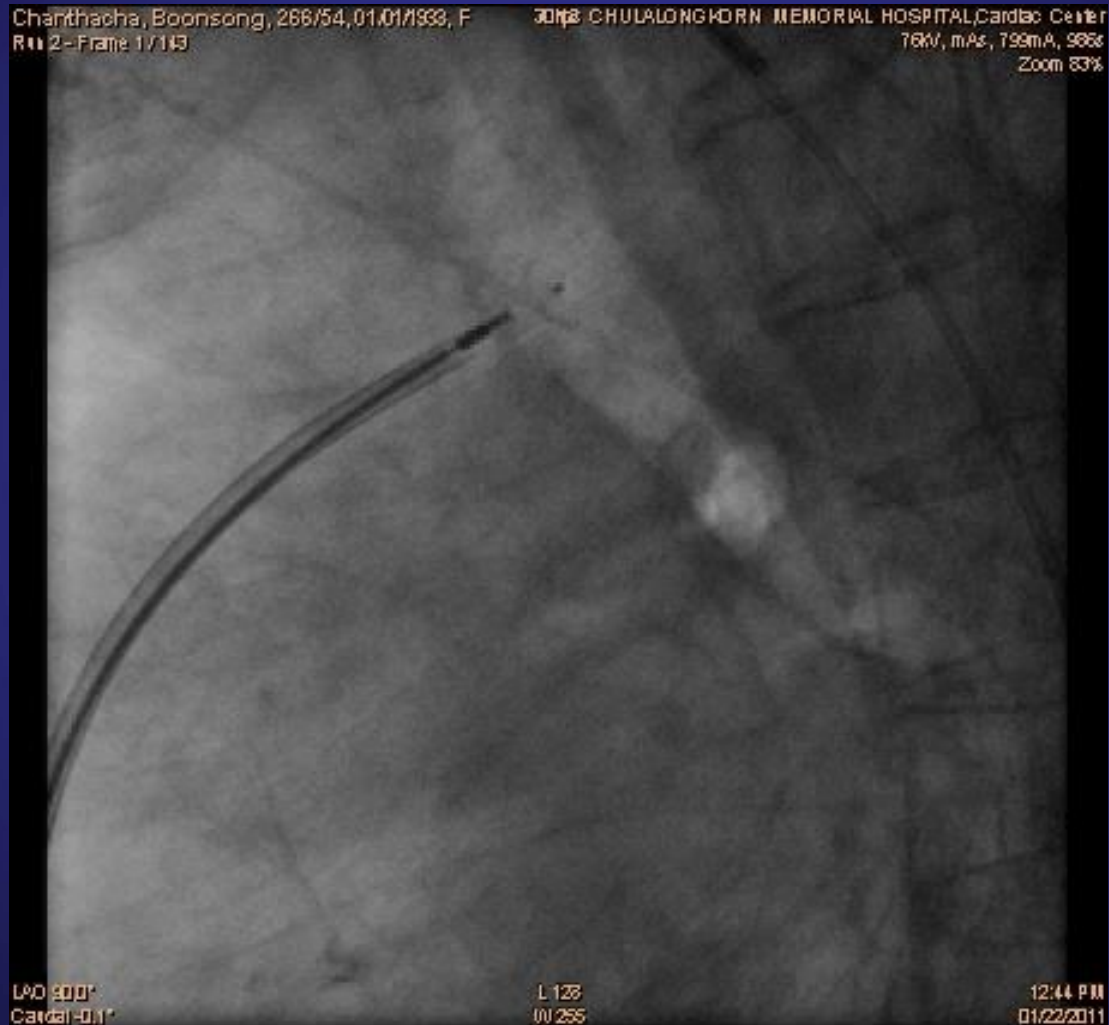
If no, how would you do?

: Wait for a few minutes

: Re-position of device

: Change device size

After 10 minutes



Cocoon ductal occluder 4/6



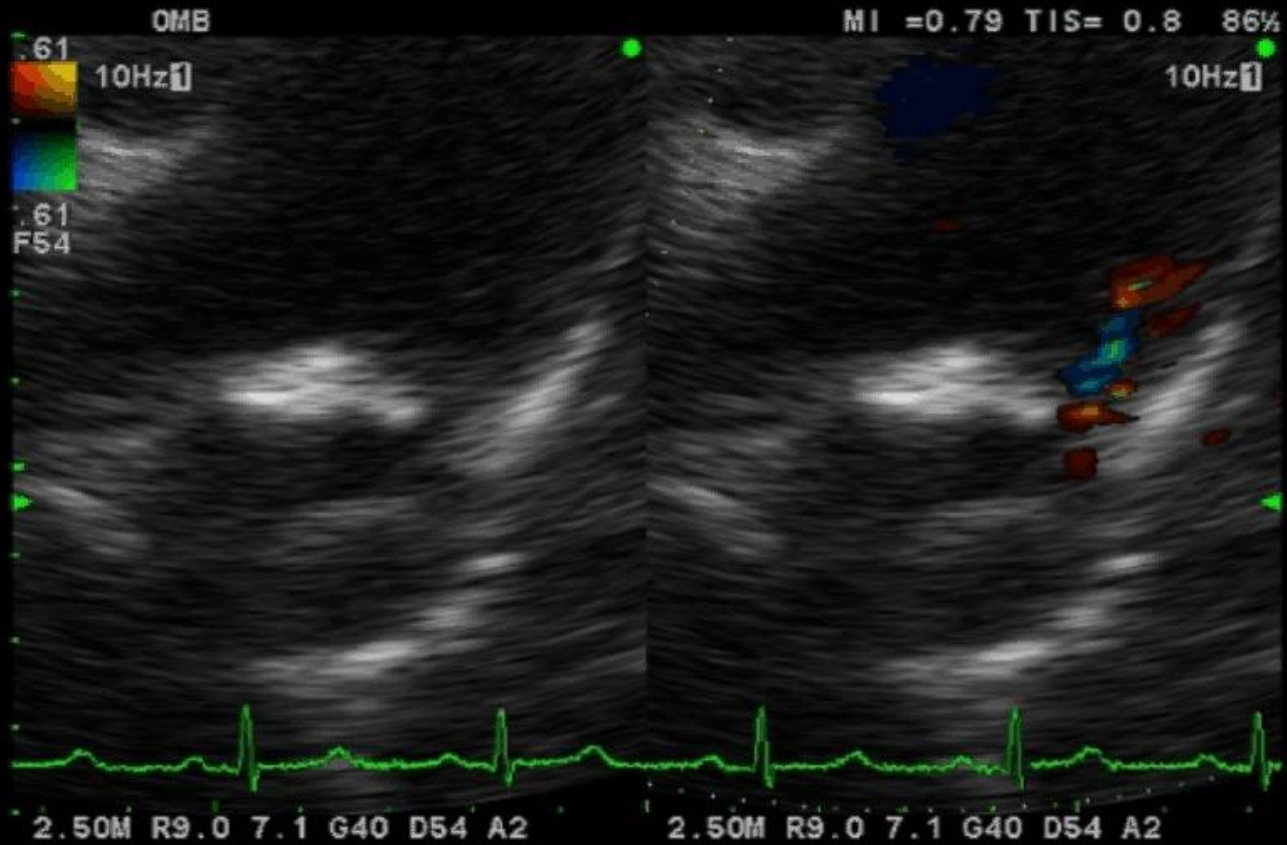
Case presentation

- **30-y-old woman presented with progressive dyspnea 1yr.**
- **PE: Sign of pulmonary HT, RV heaving and loud P2, diastolic blowing murmur at LUSB**

ALOKA

:60132/51 : Y HR76
:Jaipook Numpeung :F

23-JUN-10
09:39:31

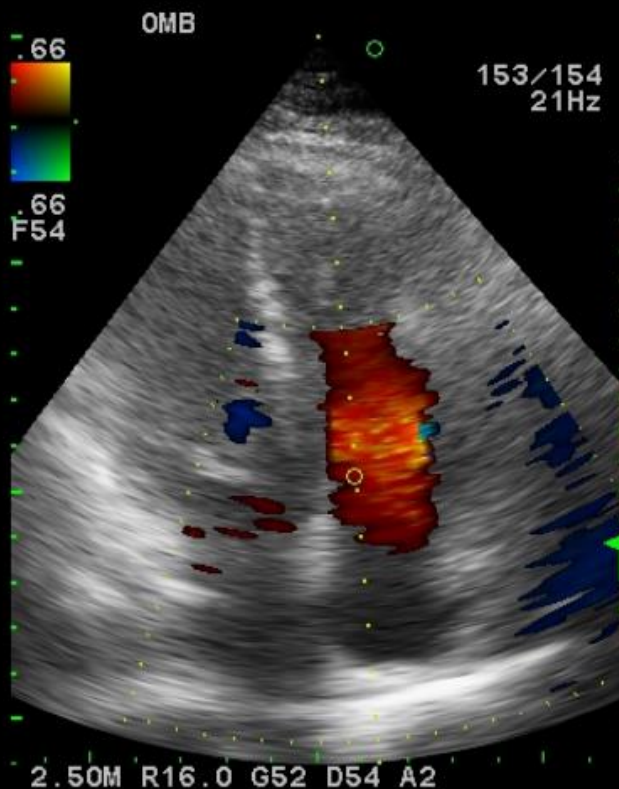


2:Cardiac Adult2 Probe:52101

ALOKA

:60132/51 : Y HR77
:Jaipook Numpeung :F

23-JUN-10
09:54:50



D.VEL2
v1: 510.5cm/s
PG1:104.2mmHg

2:Cardiac Adult2 Probe:52101

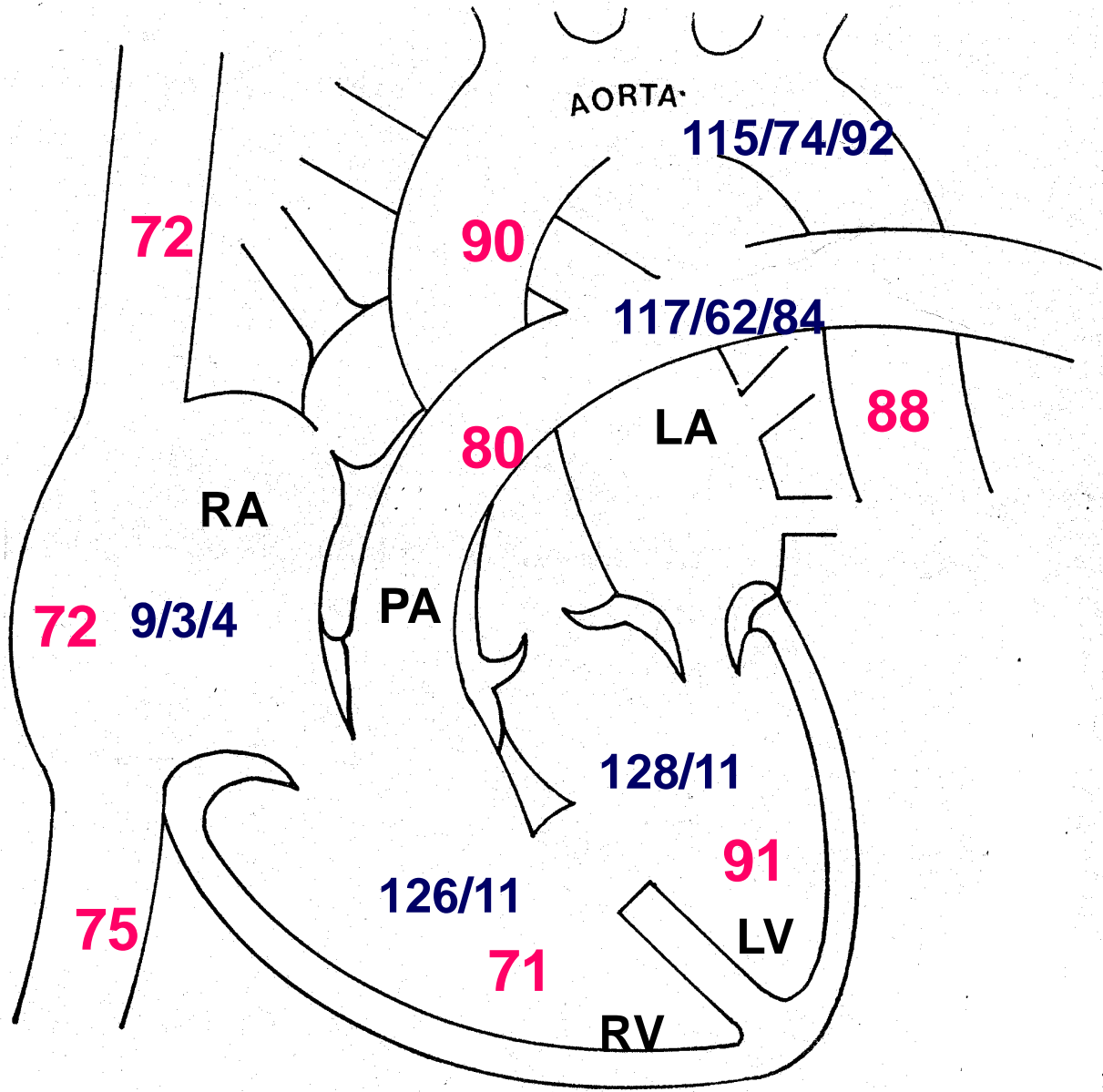
S.V. : 3.5mm
Depth: 9.7cm

Case presentation

- **How to manage this patient?**
 - : **Closure with device**
 - : **Closure with surgery**
 - : **Medication with pulm. vasodilatation**
 - : **Cardiac cath.**
 - : **I have no idea..... refer**

Case presentation

- She received 300 mg/d of sildenafil for almost 1 year.
- Then, she was scheduled for Rt and Lt-heart cath.



PA 143/73 (100)



87



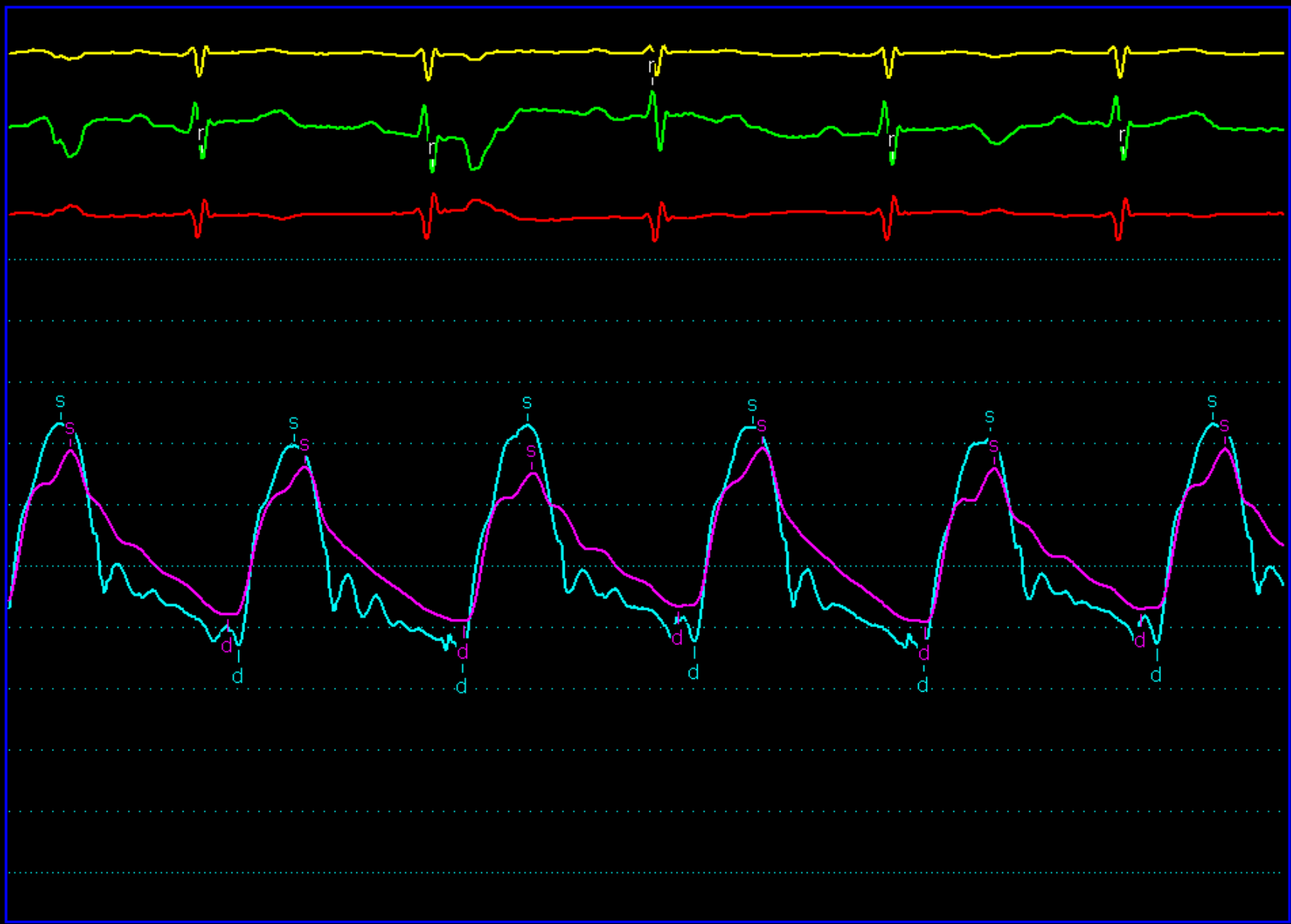
BPM

AO

134/83 (105)



MONITOR



I
(50)

II
(50)

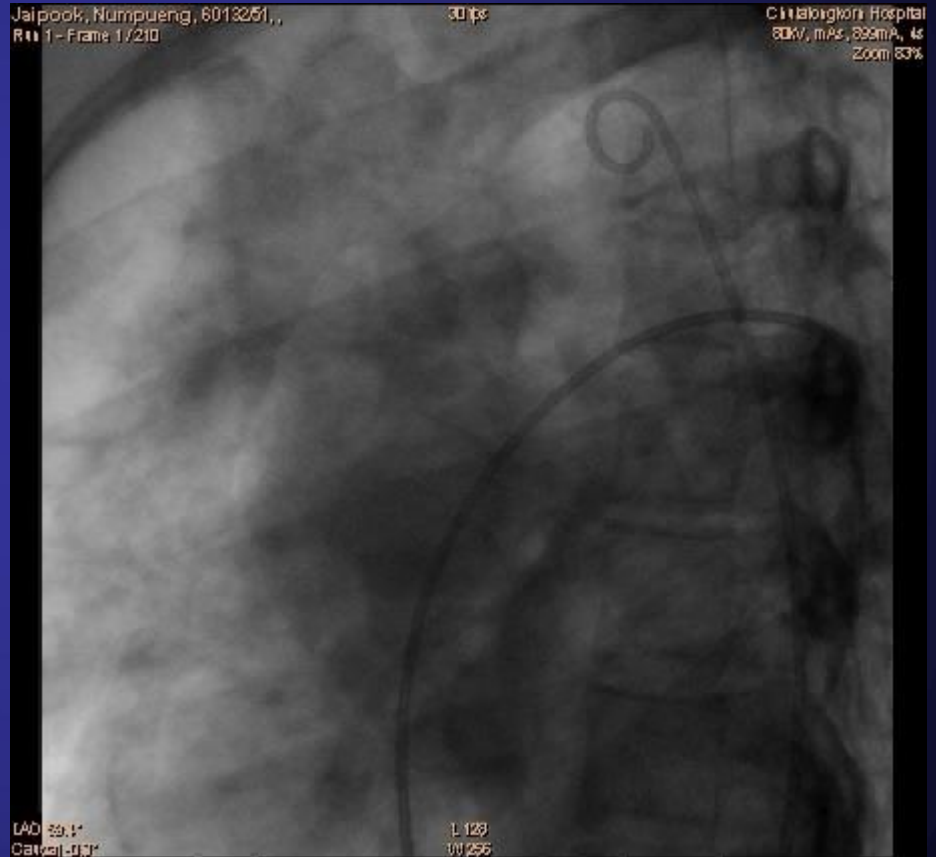
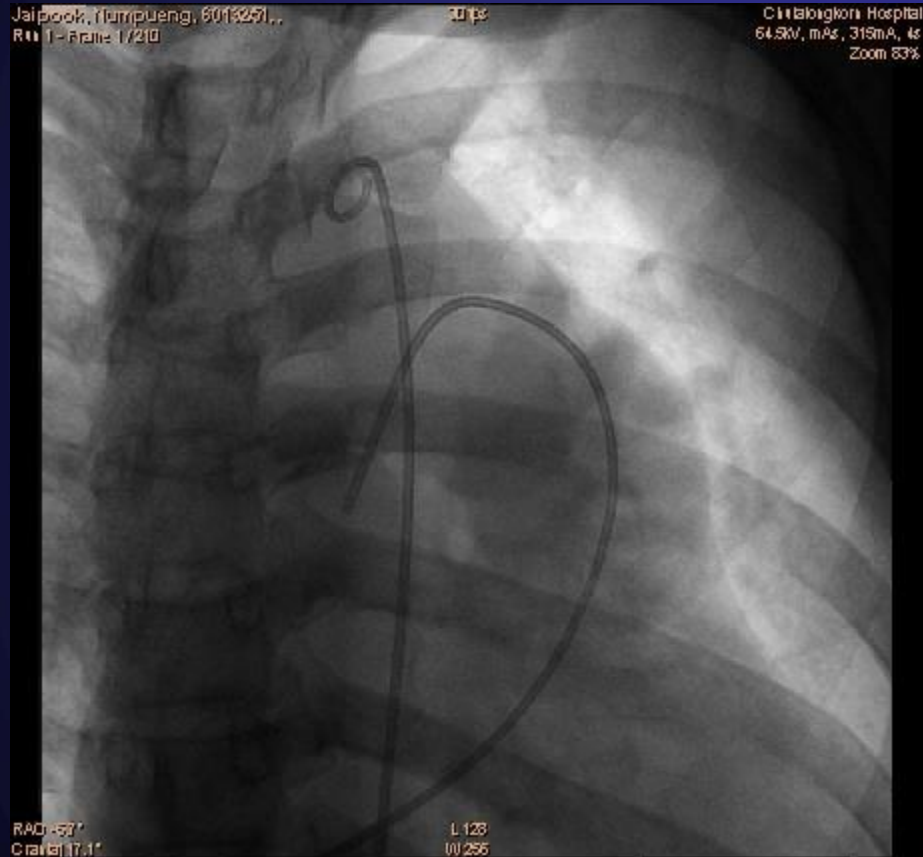
aL
(50)

10 sec

Case presentation

	Qp : Qs	Rp : Rs
At rest	1.39	0.84
Post 100% O ₂	1.8	0.44
Post Iloprost	1.33	1.05

Aortography



Case presentation

- **How to manage this patient?**
 - : Leave her with medication**
 - : Closure with device**
 - : Closure with open surgery**
 - : I have no idea.....**
 - : Other option.....**

PA 138/53 (83)

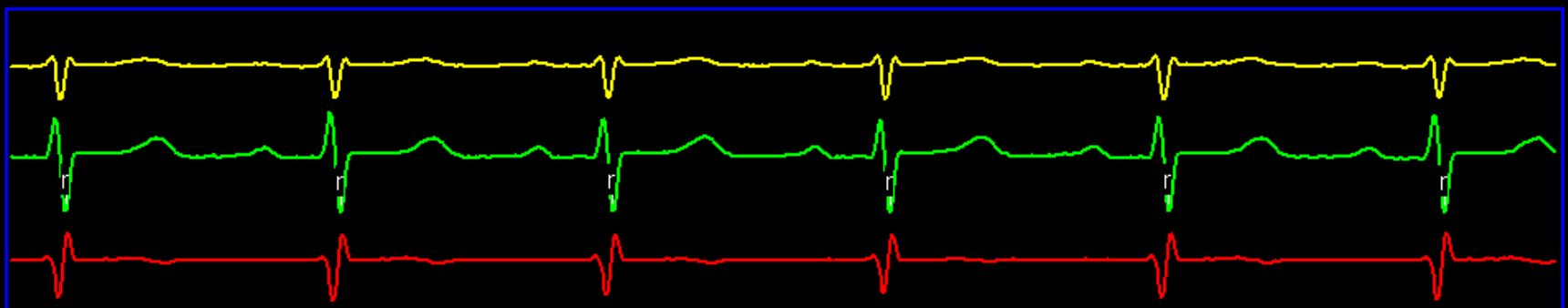


89
MONITOR

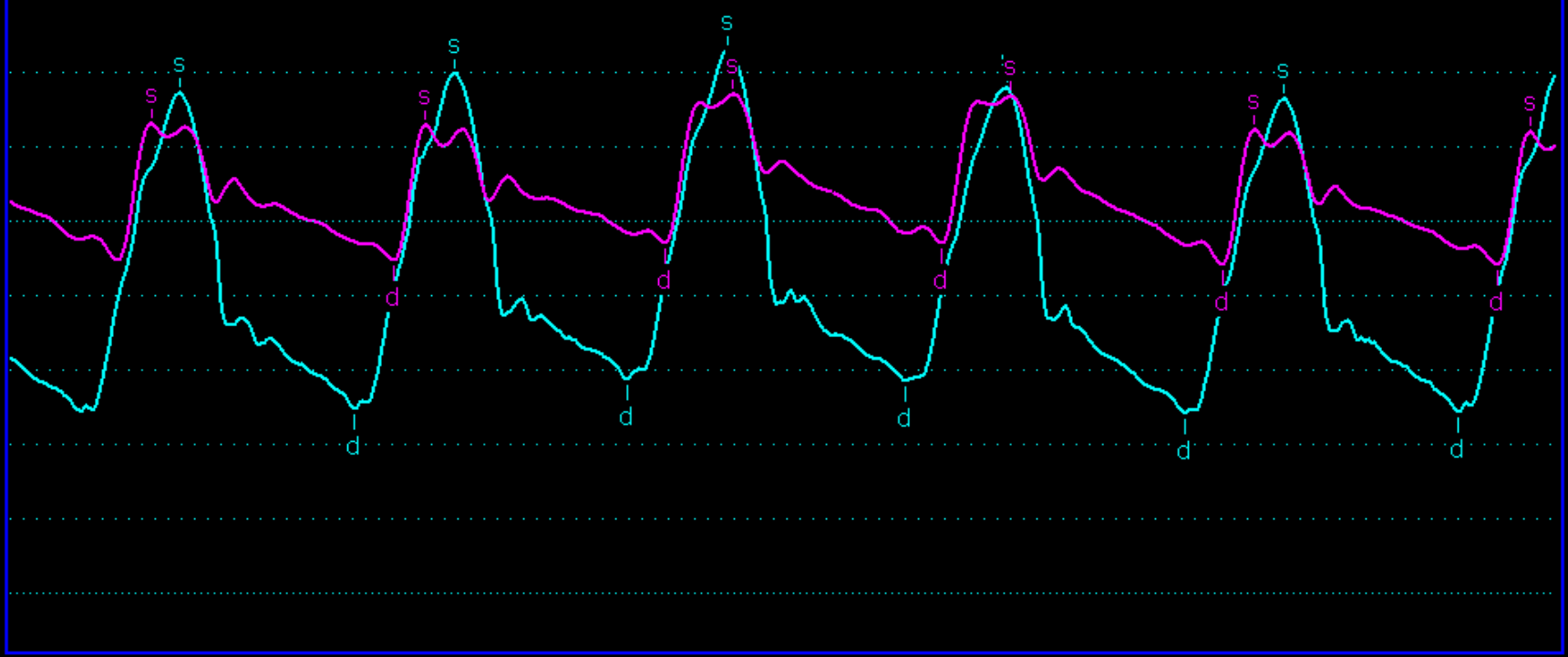


AO

128/91 (108)



Post balloon occlusion



PA 125/53 (80)

Ⓜ
M

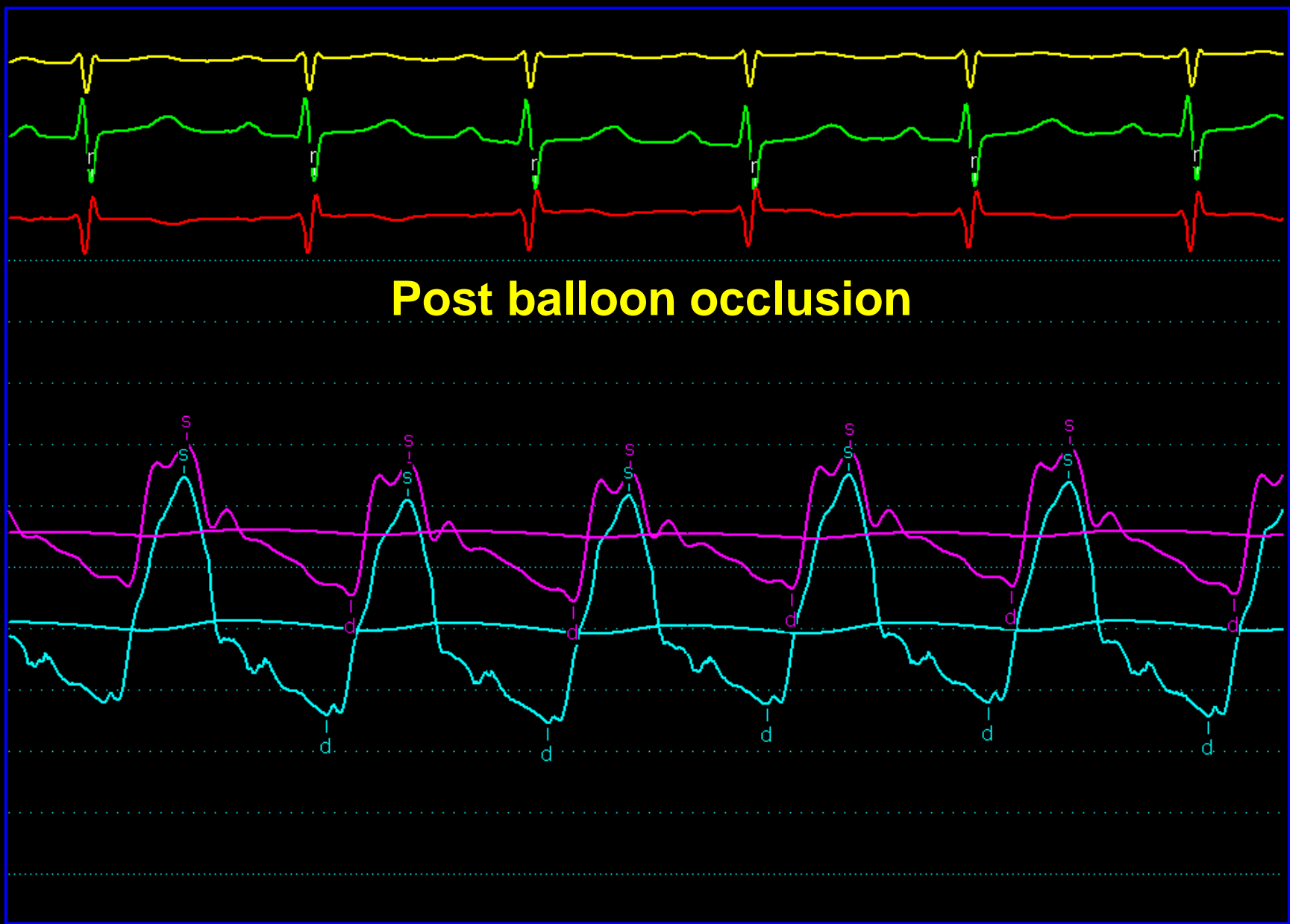
91
MONITOR

♥
BPM

AO

136/91 (111)

Ⓜ
M



I
(SD)

II
(SD)

aL
(SD)

Post balloon occlusion

PDA device occluded

Jaijook, Numpueng, 8013291.,
R 2-Frame 1/35

15 ps

Civitabigkoi Hospital Jaijook, Numpueng, 8013291.,
138.27 mAs, 5mA, - 8 R 6-Frame 1/40
Zoom 83%

10 ps

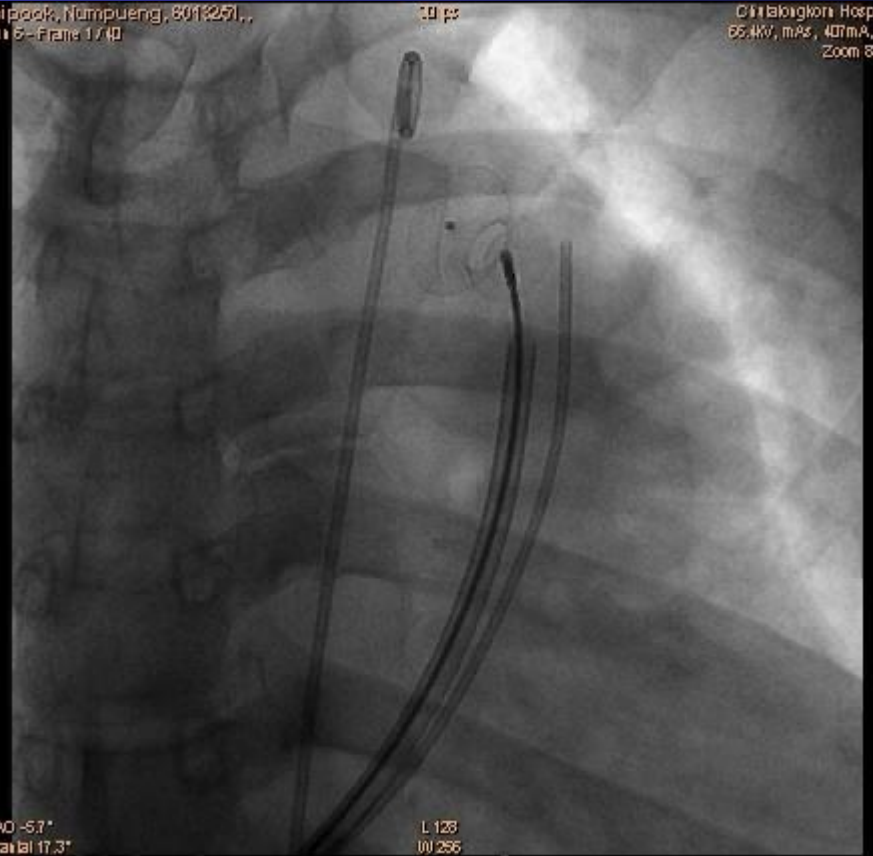
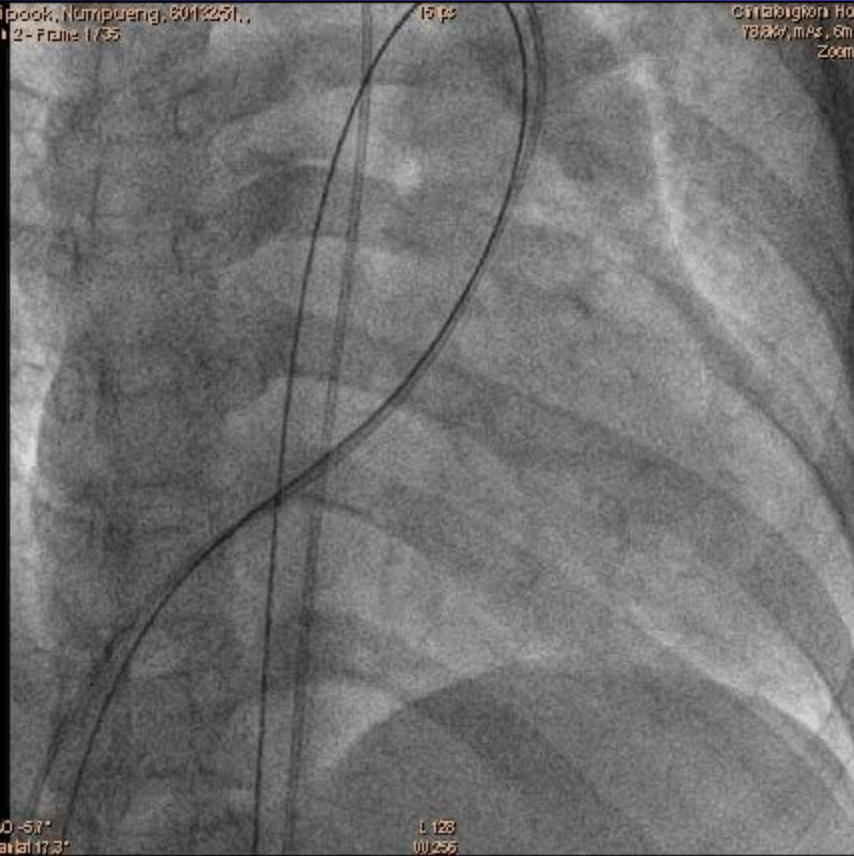
Civitabigkoi Hospital
65.4KV, mAs, 407mA, 5s
Zoom 83%

RAO -57°
Craniol 17.3°

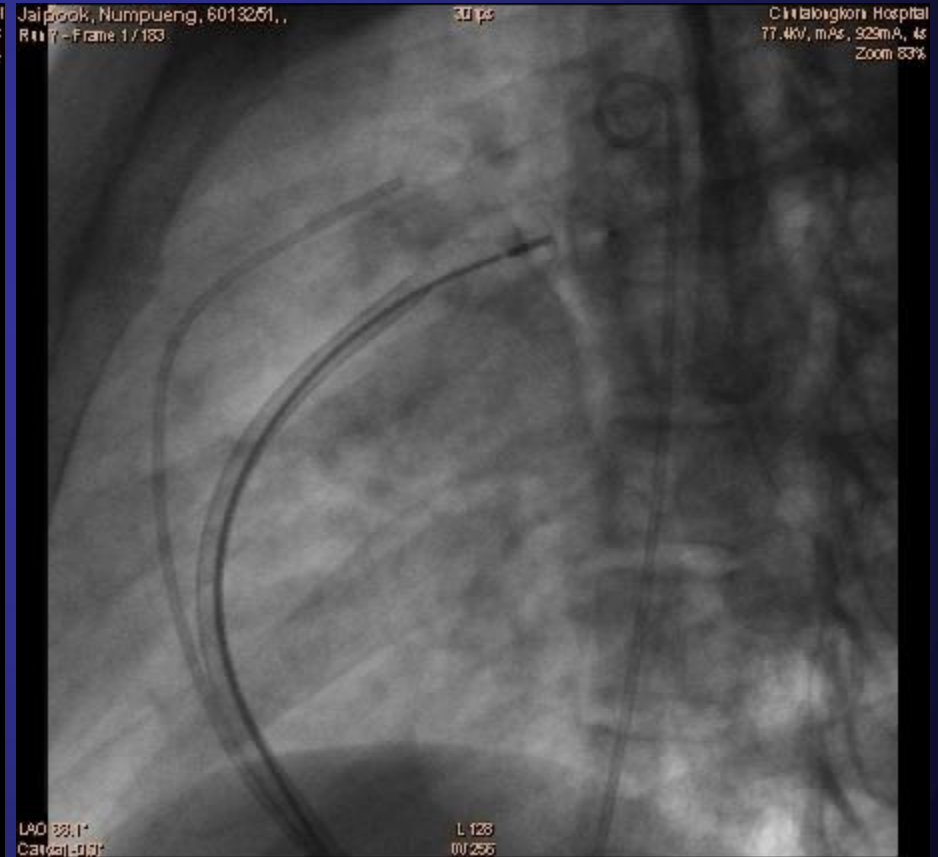
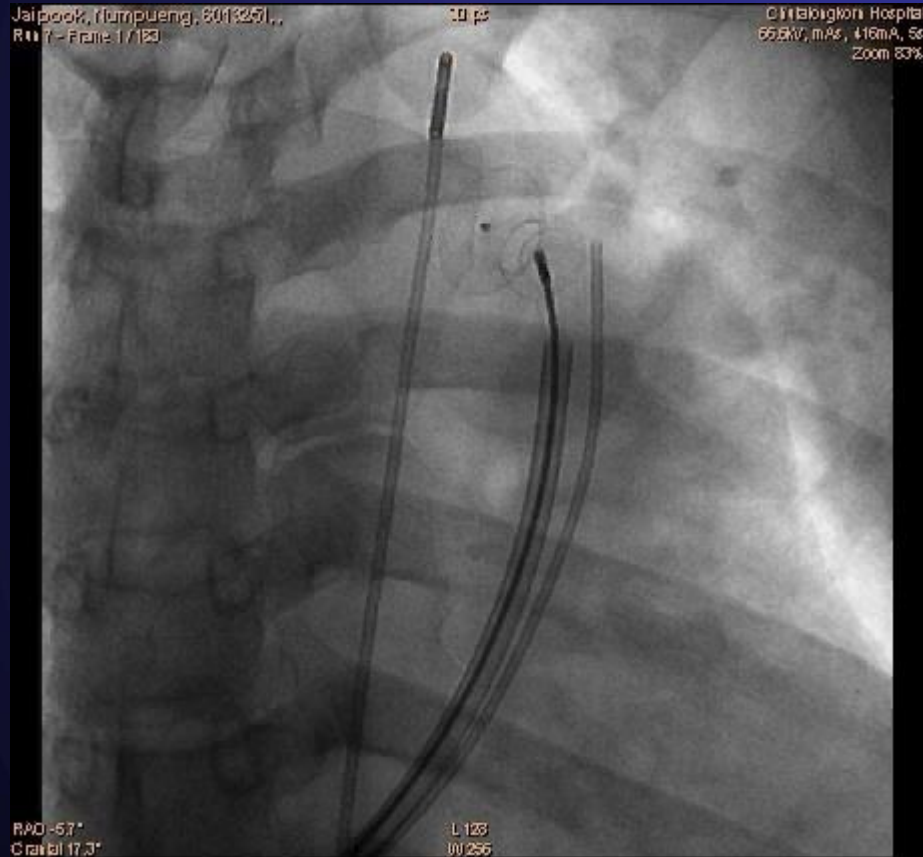
L 128
00255

RAO -57°
Craniol 17.3°

L 128
00255



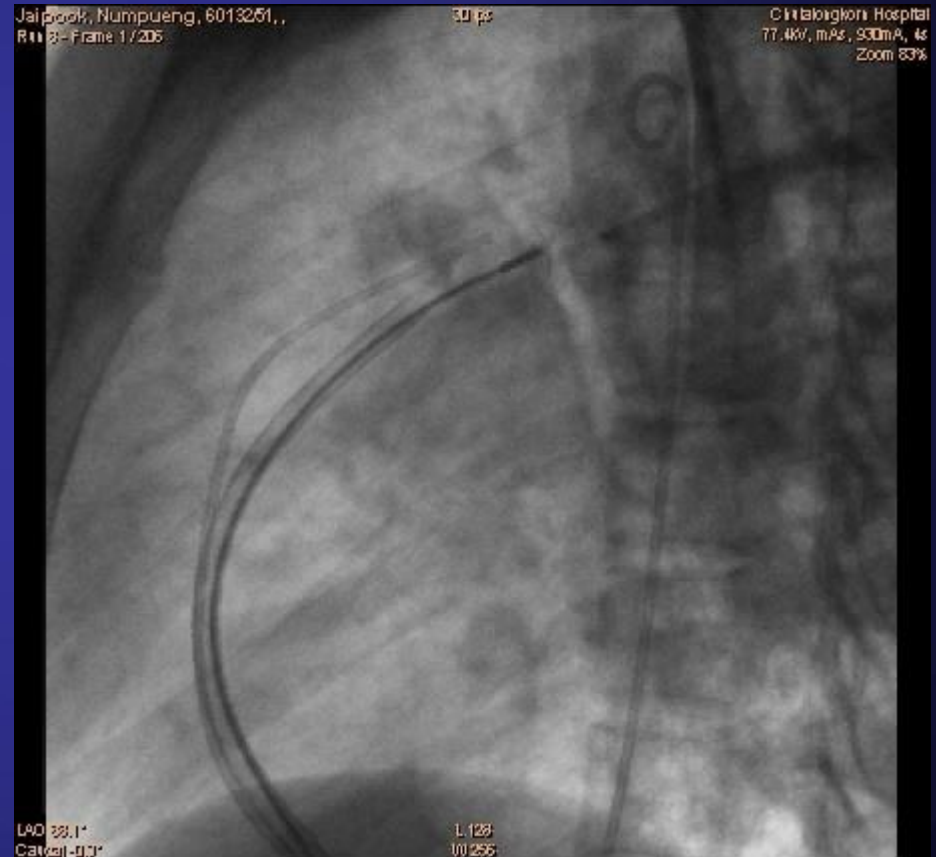
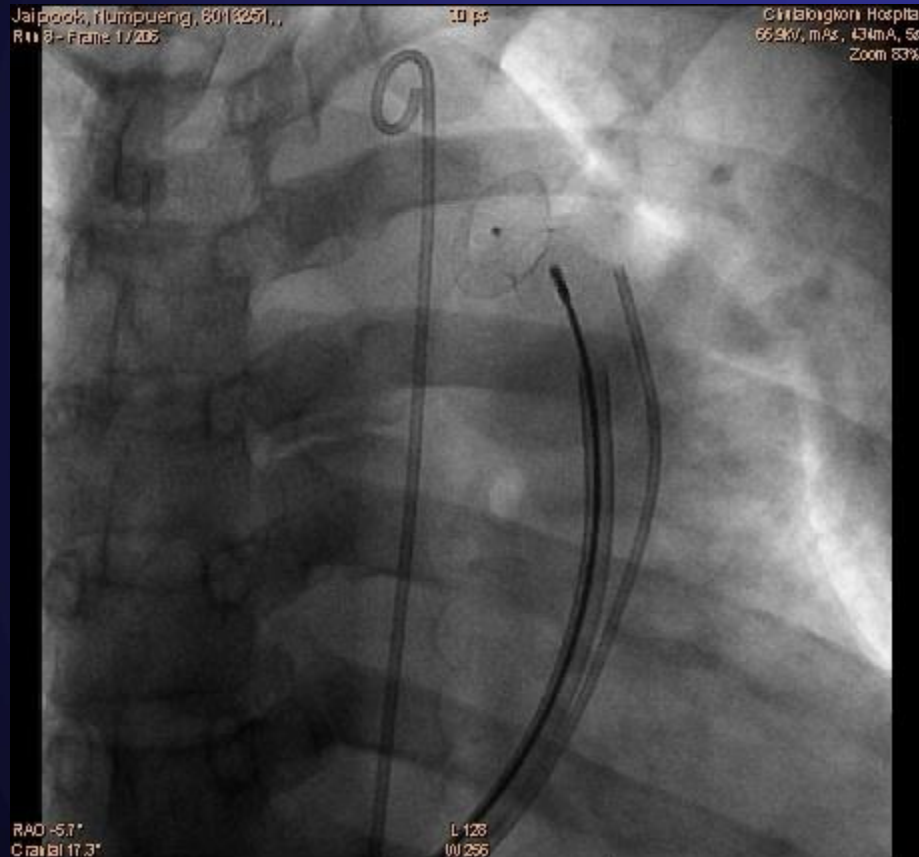
Immediate device occluded



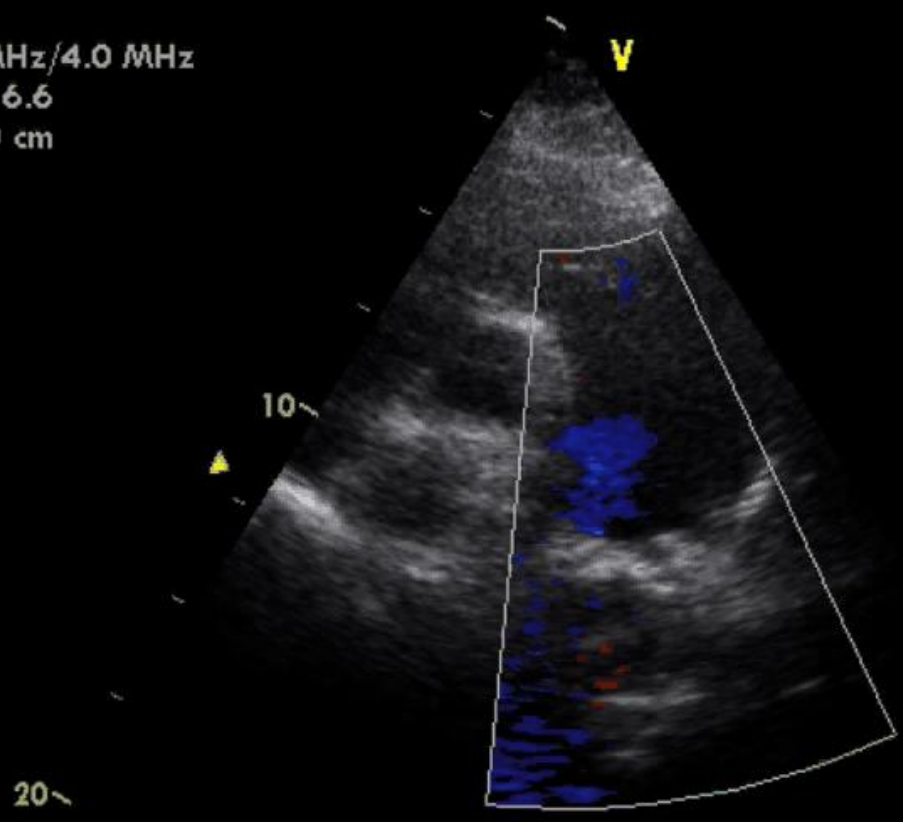
Case presentation

- **How to manage this patient?**
 - : **Wait for a few minutes**
 - : **Change to bigger device**

10-minutes device occluded

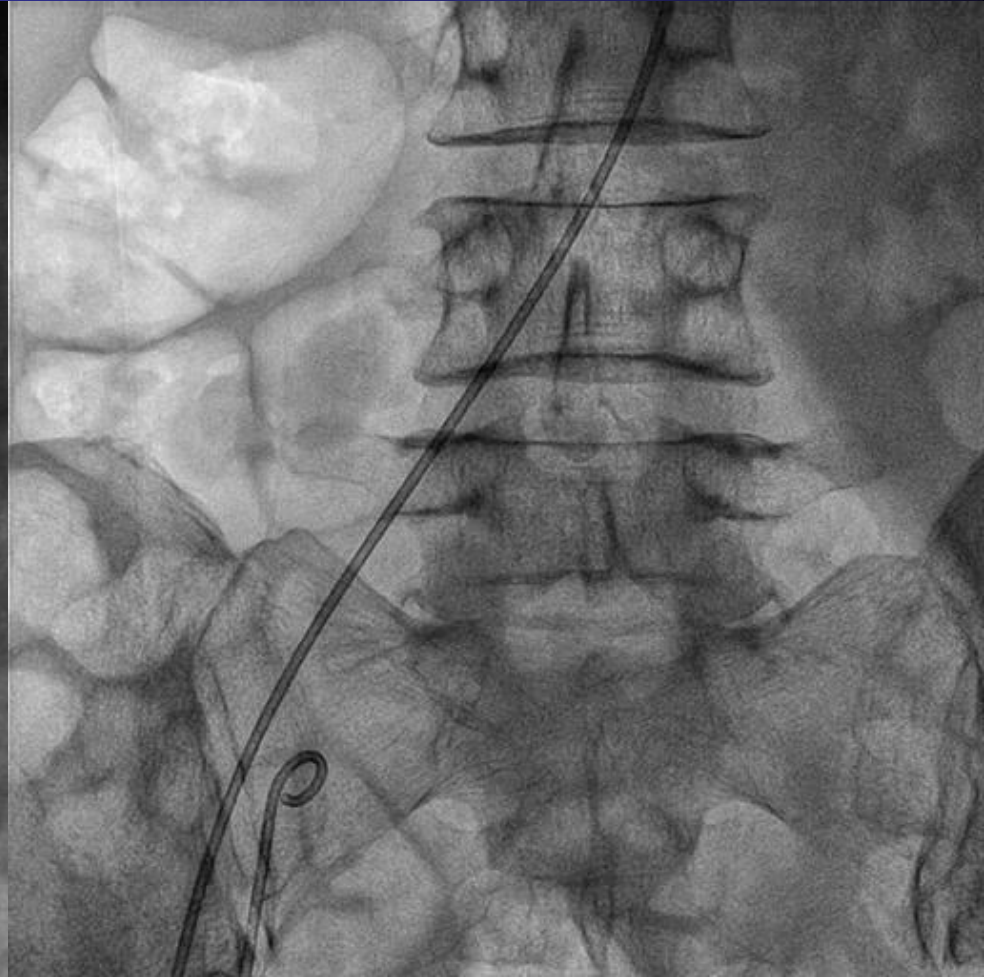
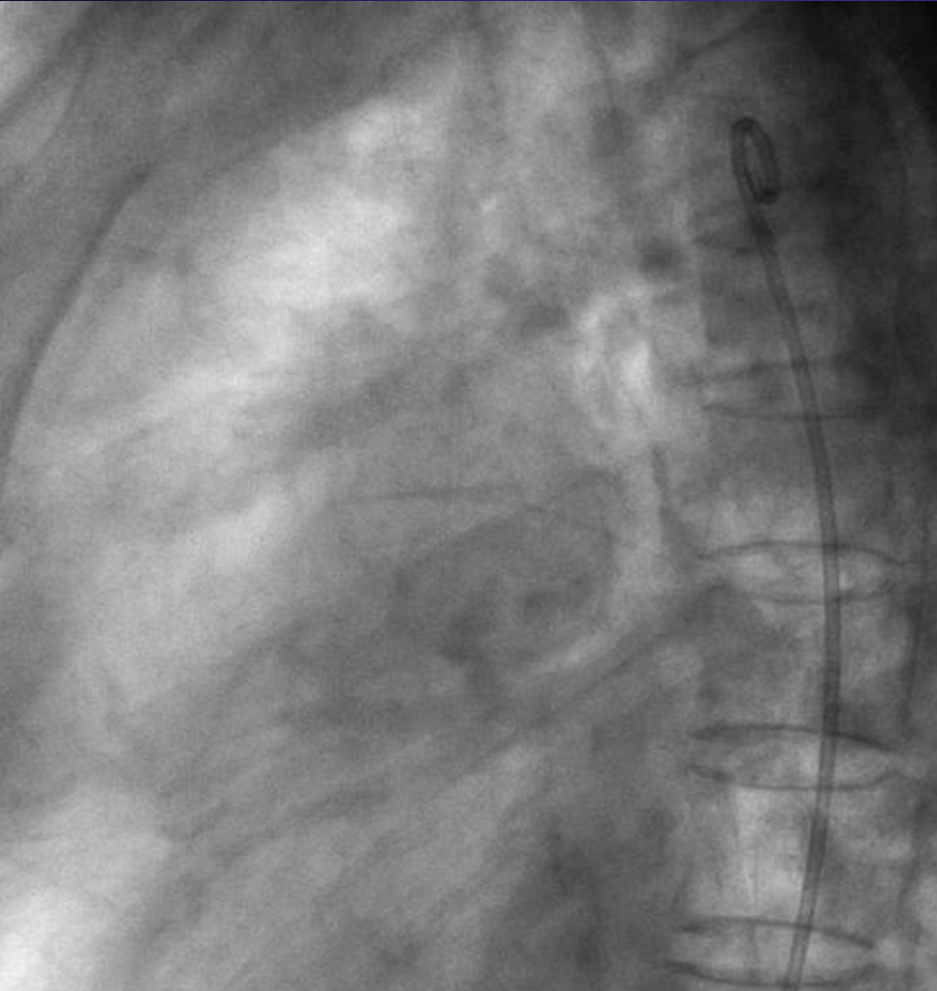


Freq.: 1.9 MHz/4.0 MHz
FPS: 16.6/16.6
Depth: 20.0 cm

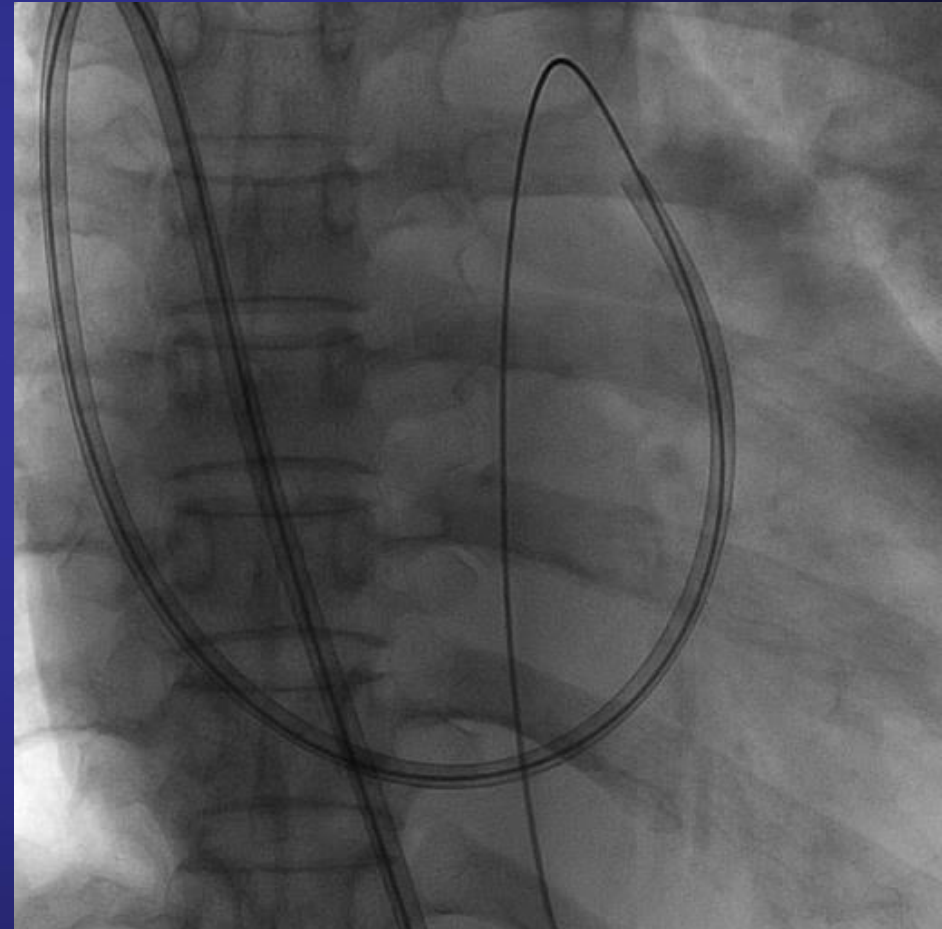
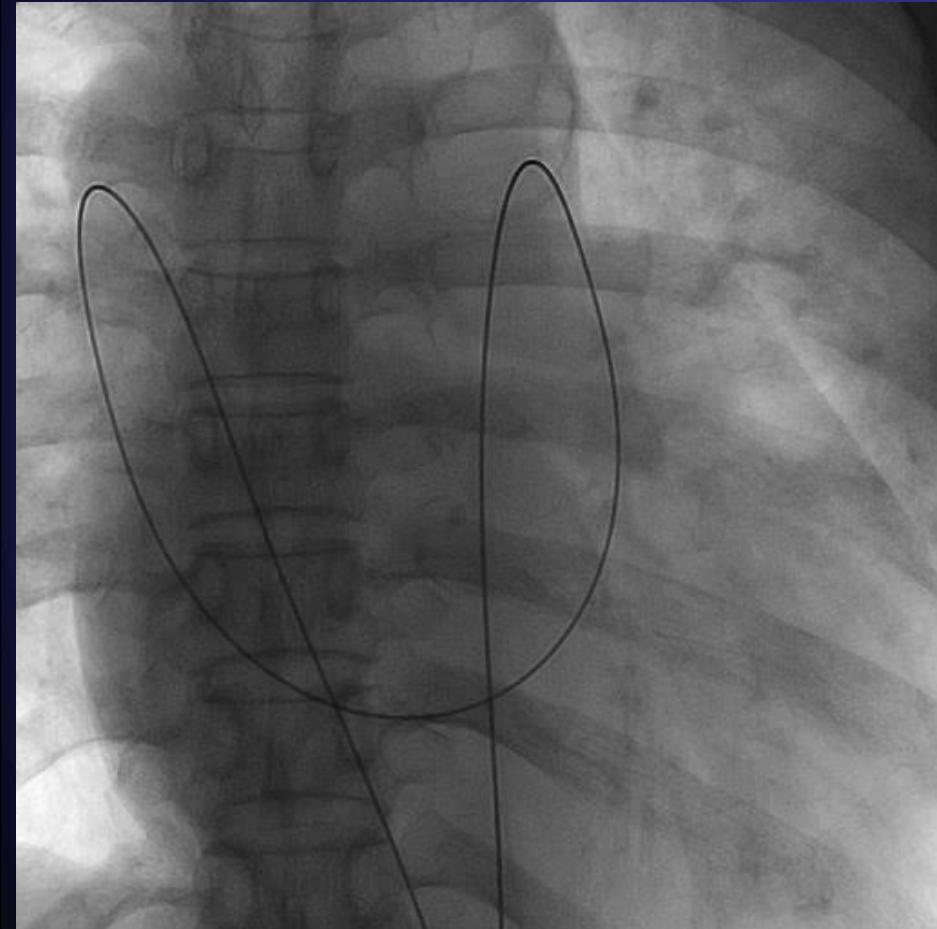


89
HR

Case presentation



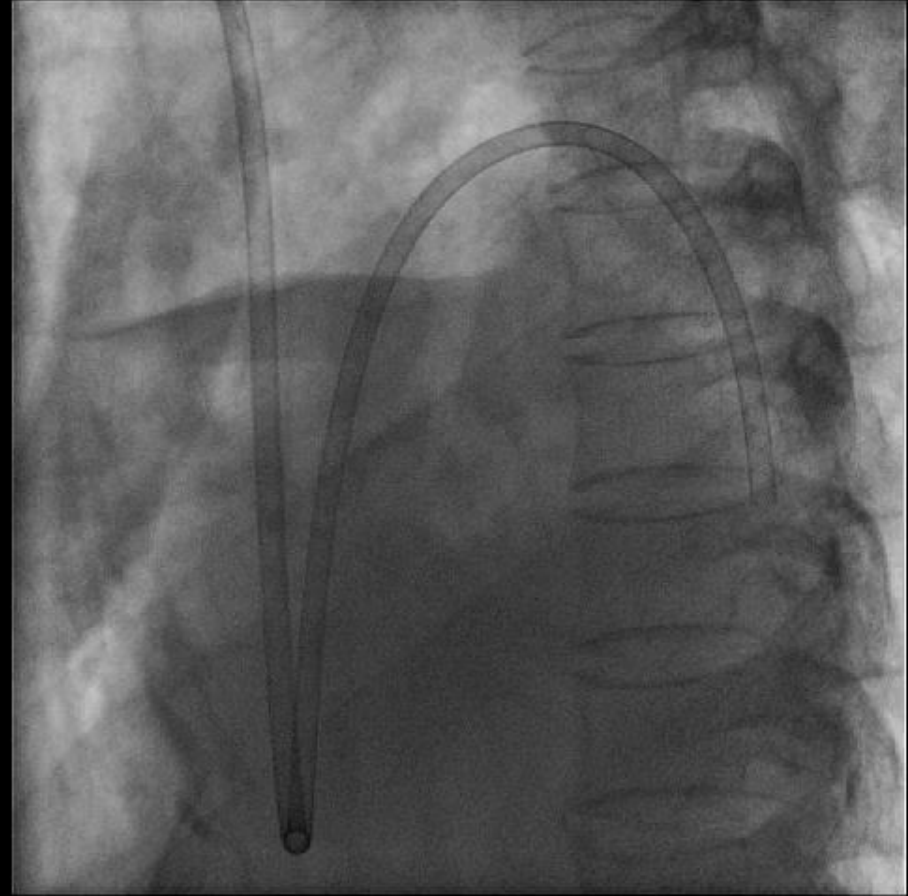
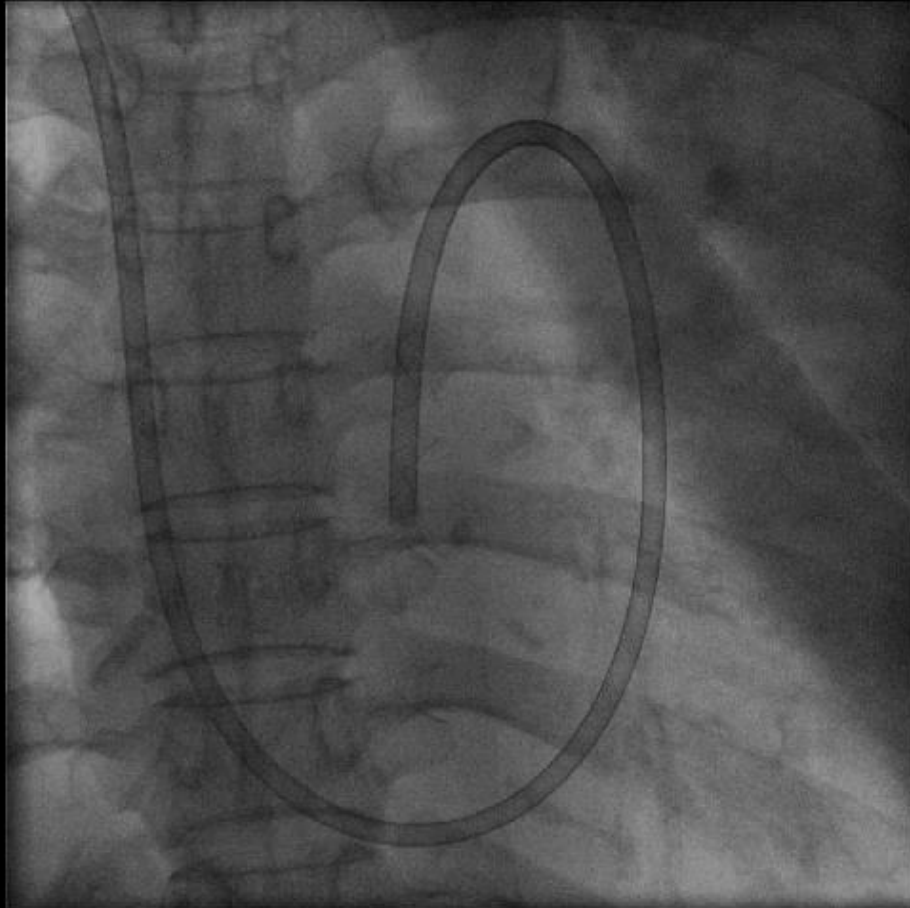
Case presentation



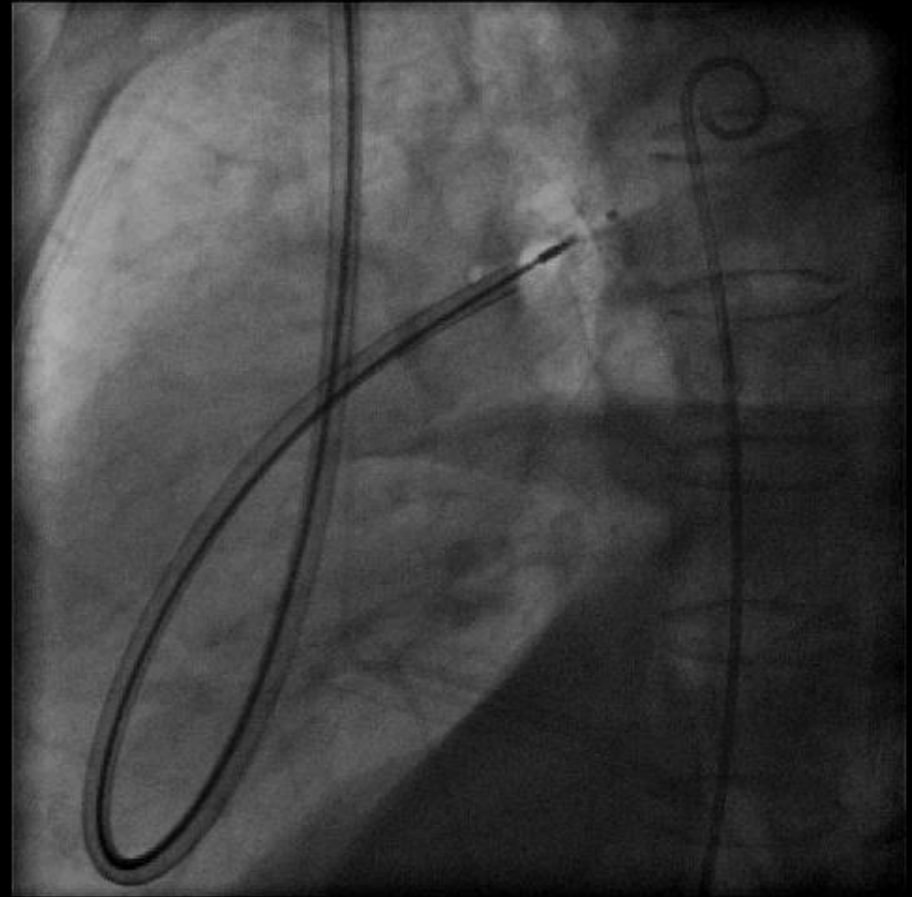
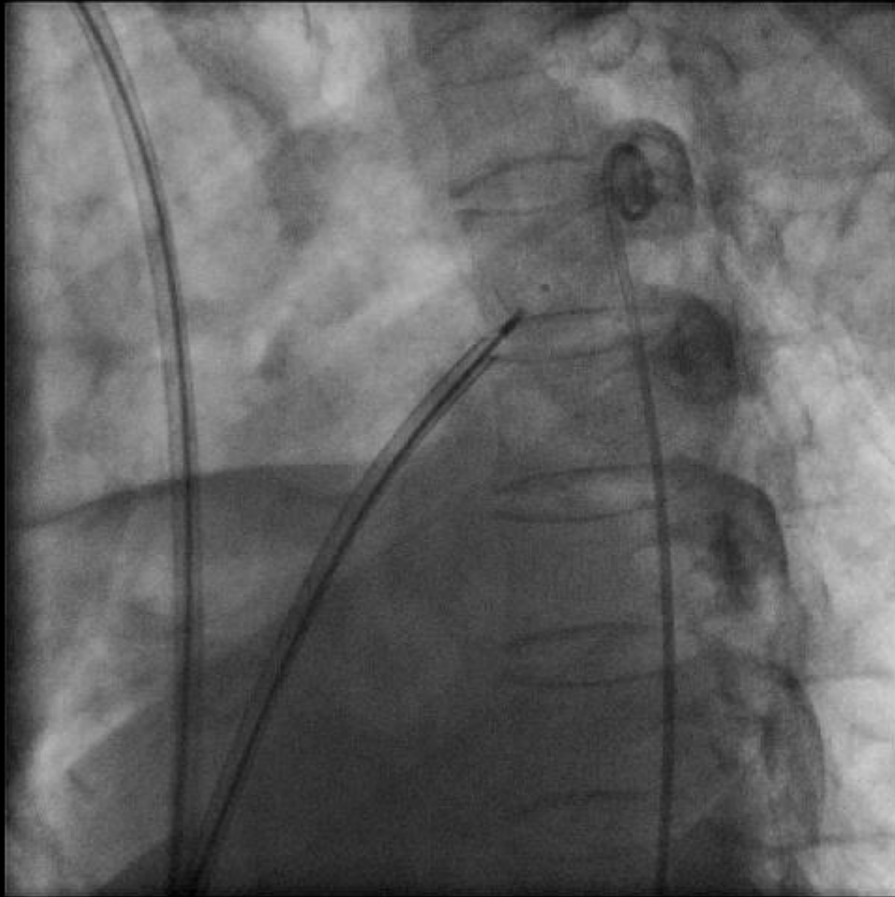
Case presentation

- **How to manage this patient?**
 - : **Send pt to open surgery**
 - : **Change to longer sheath?**
 - : **Other option.....**

Case presentation



Case presentation





KING CHUL



PDA with dextrocardia

Kulsantia, Wasana, 76708/54, 09/28/1970, F
R11 2 - Frame 1 / 154

30x30 CHULALONGKORN MEMORIAL HOSPITAL, Cardiac Center
68kV, 79mA, 1.052s



RAO 89.7°
Caudal 0.1°

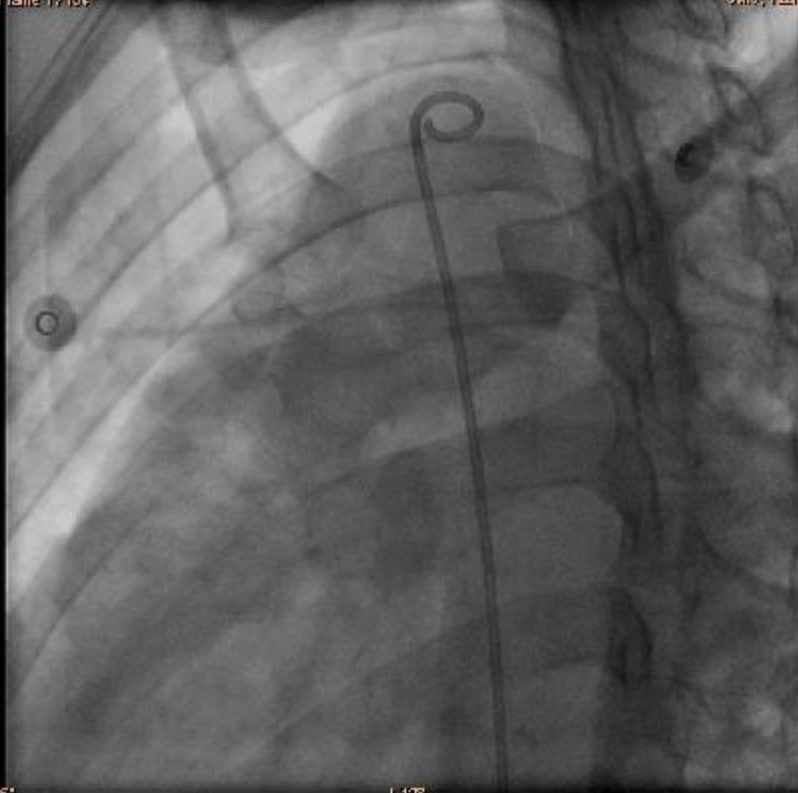
L 123
W 255

2:24 PM
04/21/2012

Case presentation

Kulsantia, Vasana, 76708/54, 09/28/1970, F
Rtt 1 - Frame 1/154

300kVp CHULALONGKORN MEMORIAL HOSPITAL, Cardiac Center
64kV, 722mA, 1.047s



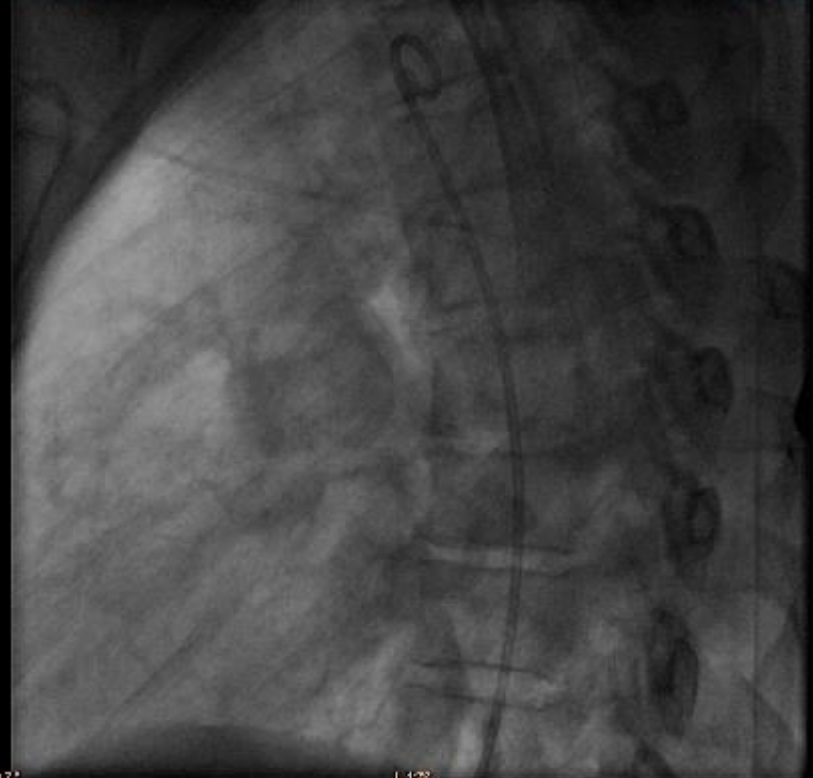
RAO 23.5°
Caudal 22.7°

L 128
00 255

2:24 PM
04/20/2012

Kulsantia, Vasana, 76708/54, 09/28/1970, F
Rtt 2 - Frame 1/154

300kVp CHULALONGKORN MEMORIAL HOSPITAL, Cardiac Center
68kV, 799mA, 1.062s



RAO 29.7°
Caudal 0.1°

L 128
00 255

2:24 PM
04/20/2012

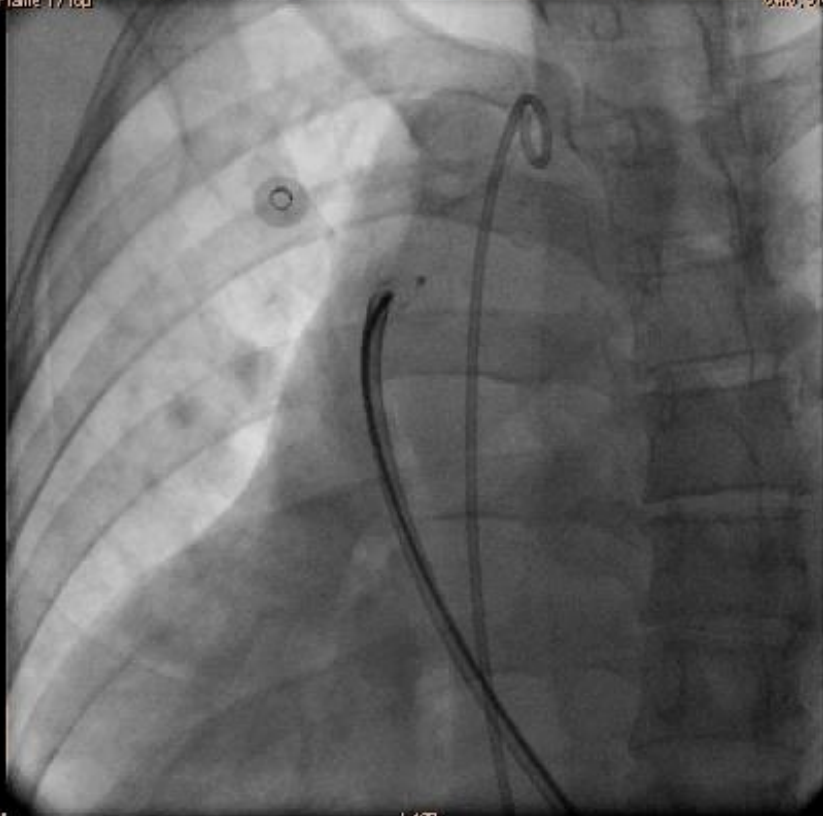
PDA with dextrocardia



PDA with dextrocardia

Kulsantia, Vasana, 76708/54, 09/28/1970, F
R 1 - Frame 1/160

30123 CHULALONGKORN MEMORIAL HOSPITAL, Cardio Center
64kV, 616mA, 97



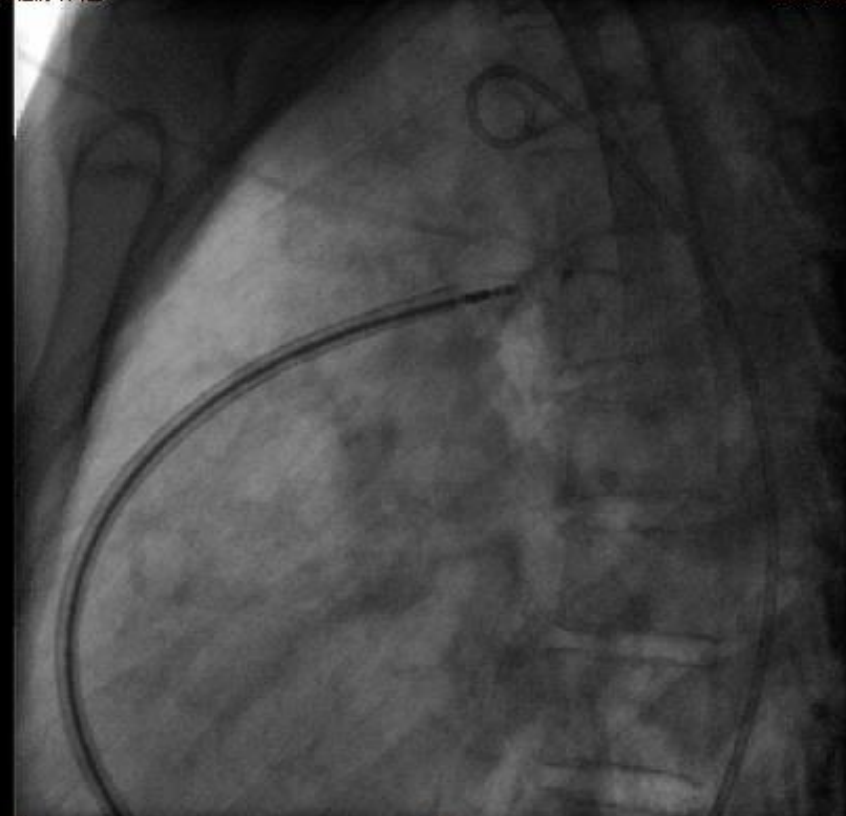
R40 00°
Caudal 00°

L 128
W 255

2:42 P
04/20/2012
R40 89.7°
Caudal 0.1°

Kulsantia, Vasana, 76708/54, 09/28/1970, F
R 2 - Frame 1/160

30126 CHULALONGKORN MEMORIAL HOSPITAL, Cardio Center
68kV, 799mA, 1,104s

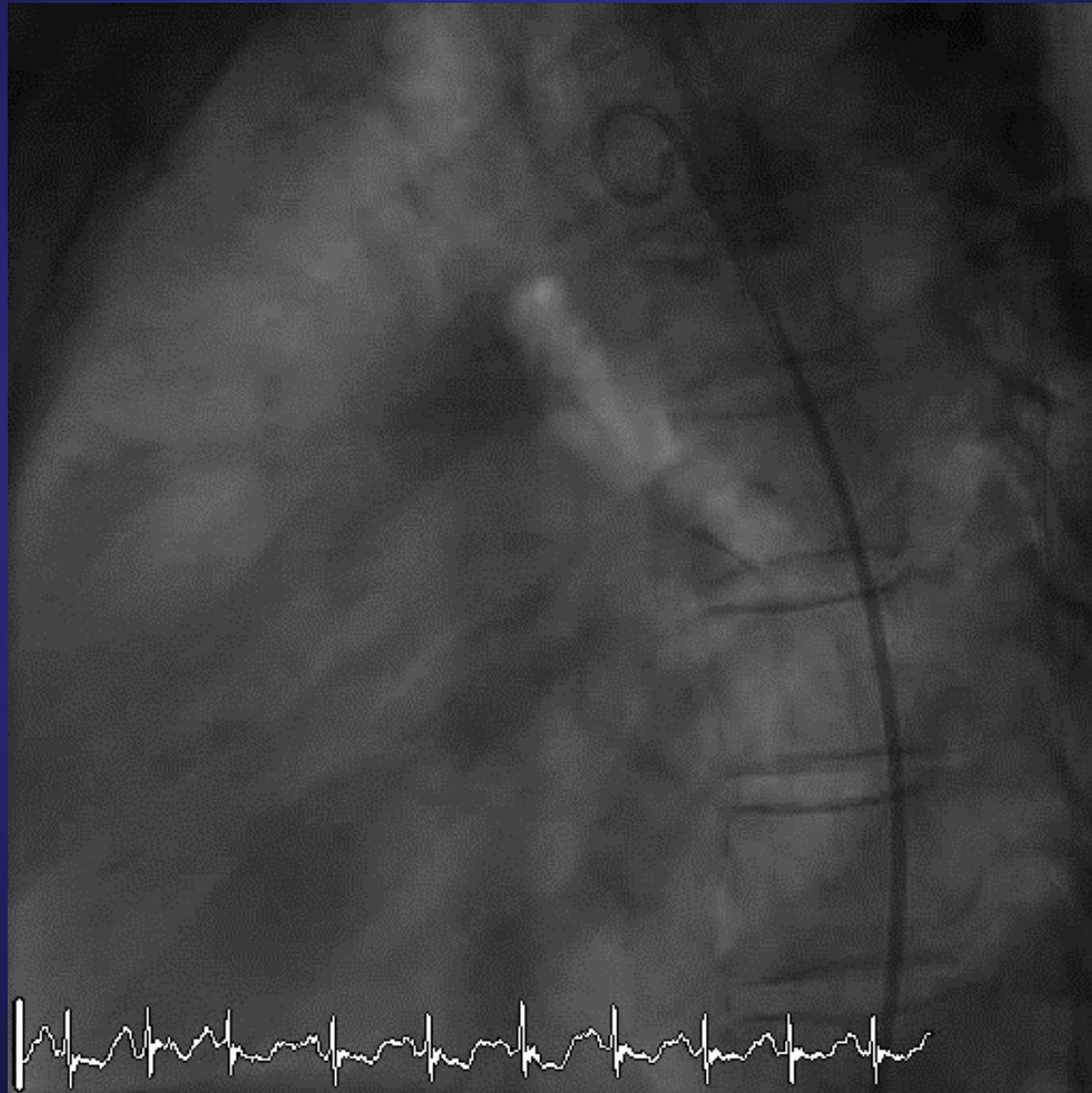


L 128
W 255

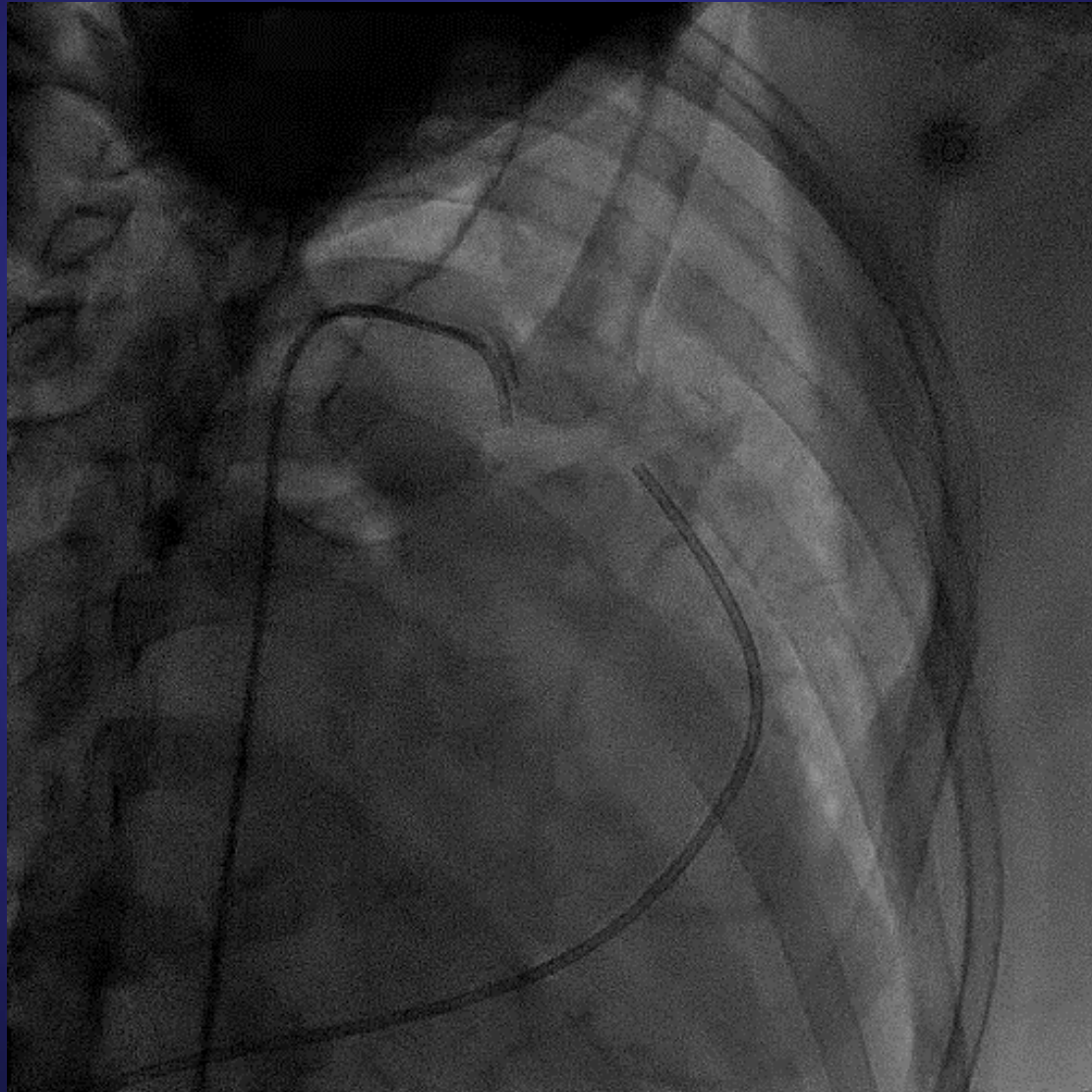
2:42 P M
04/20/2012



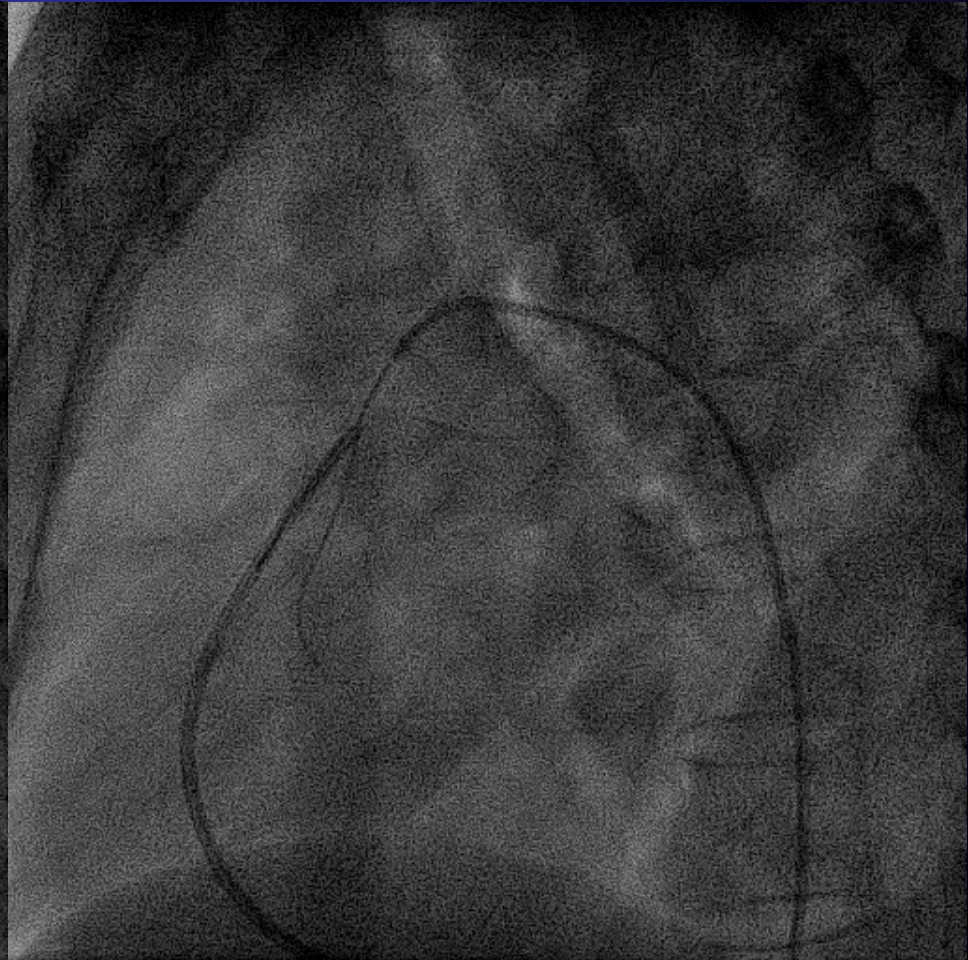
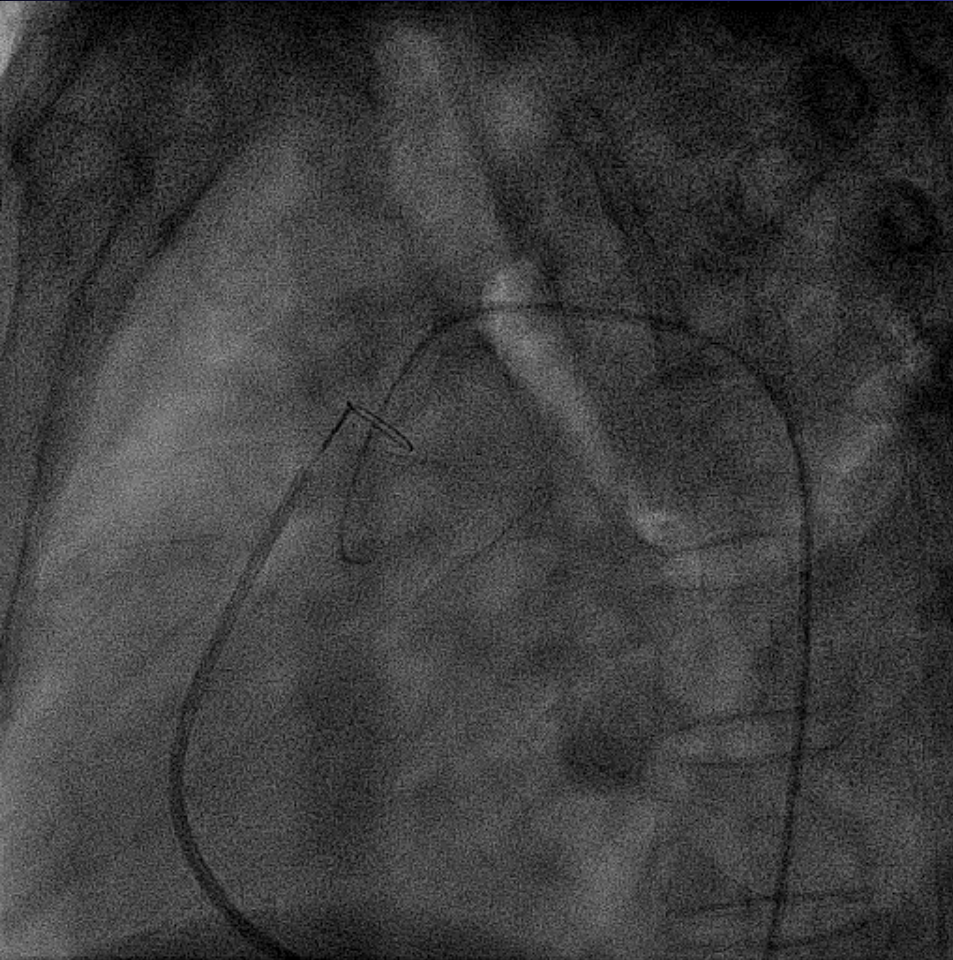
Small PDA



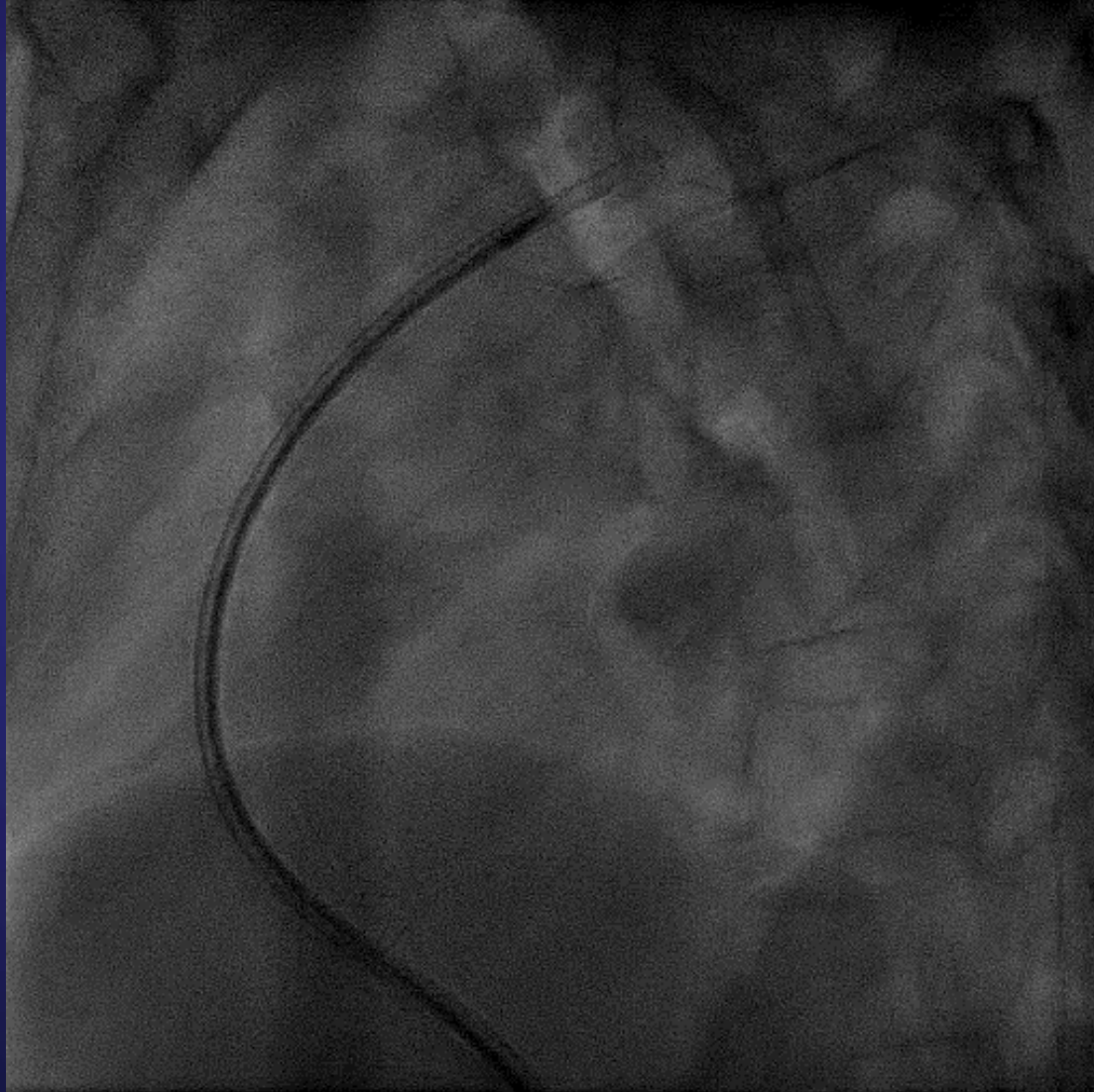
Small PDA



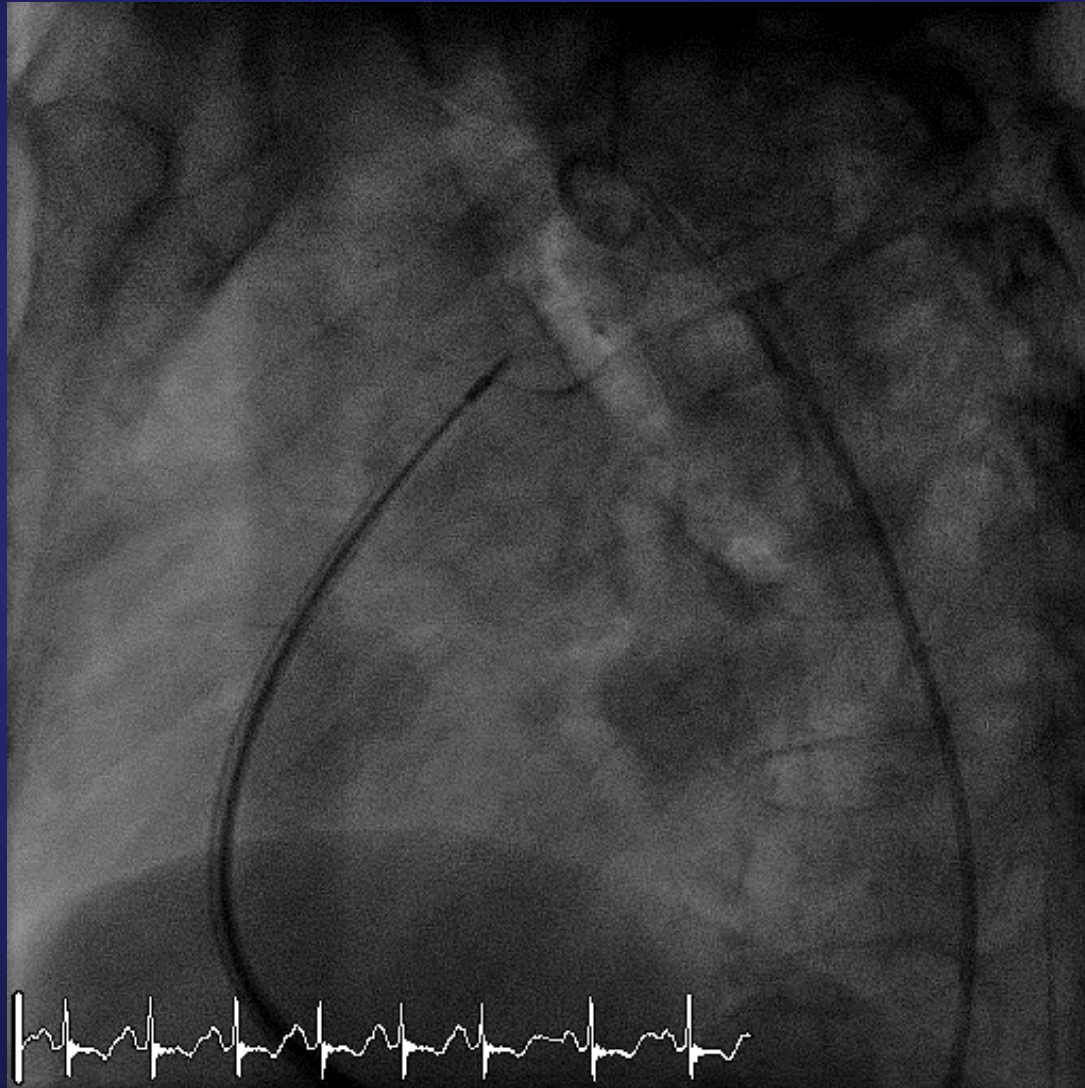
Small PDA



Small PDA



Small PDA



Take home messages

- **Device closure is treatment of choice and can apply to almost adult patients.**
- **Calcified is common and sometime be a problem for device selection.**
- **Pulmonary HT is a challenging situation and may be need pulmonary vasodilator plus balloon occlusion test.**
- **Sometime need to modify technique and apply in individual case.**

A photograph of a city skyline at sunset. The sky is a mix of orange, yellow, and purple. Several modern, multi-story buildings are visible, some with balconies. In the foreground, there is a body of water with ripples, and a small boat is visible. The overall scene is a serene urban landscape.

Thank you for your attention