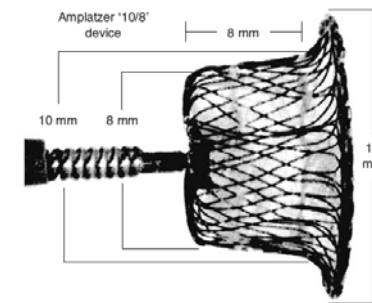


Using PDA device in Congenital and Structure Heart Disease Intervention

**Nguyen Lan Hieu, MD, PhD
Hanoi Medical University
Vietnam Heart Institute**

The Duct Occluder Device

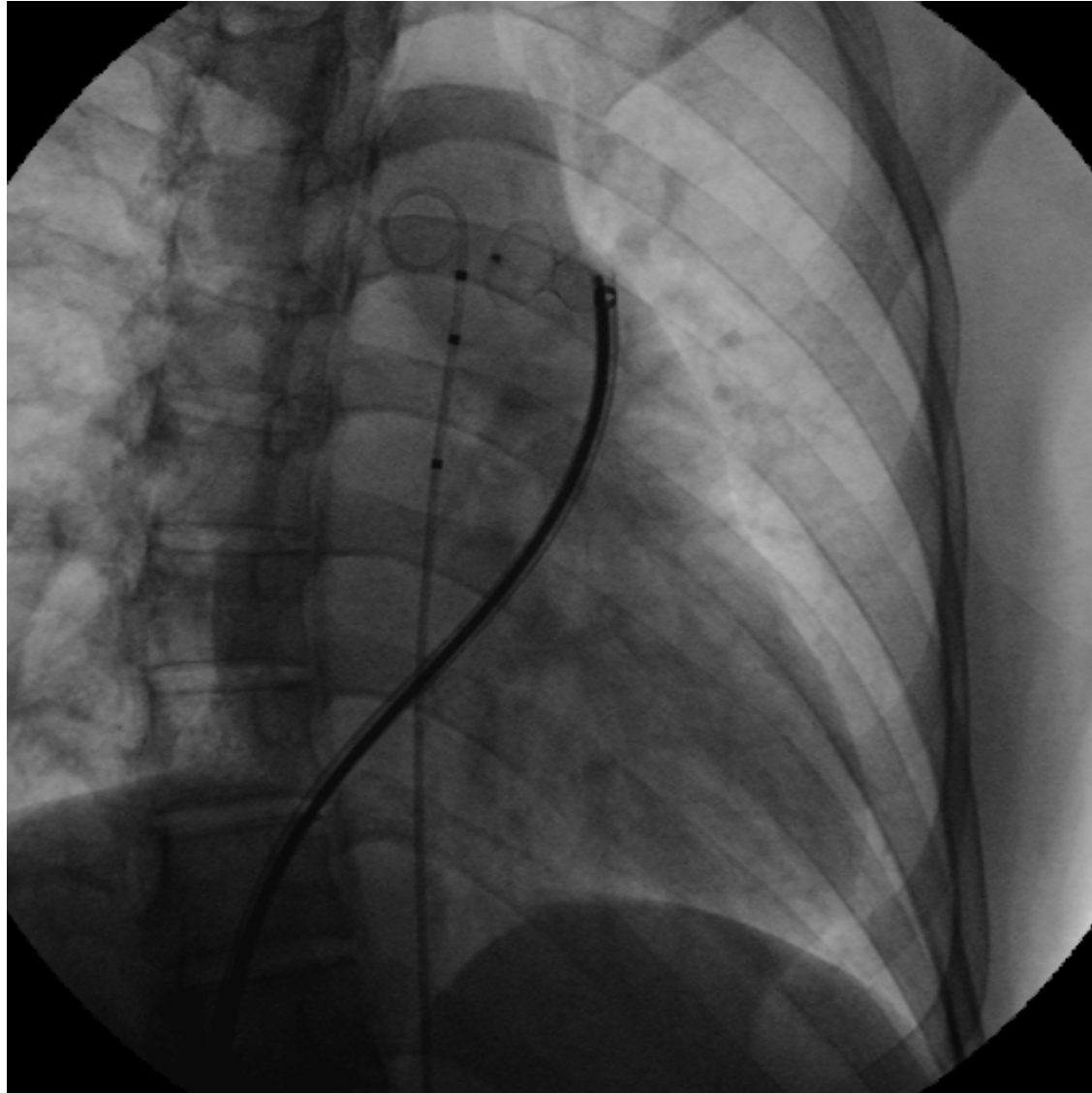
- The occluder is a cone-shaped device 7 mm in length made of a 0.004-inch Nitinol wire mesh.
- Prostheses are currently available in sizes ranging from 5-4 to 16-14 mm at increments of 2 mm.
- Delivery sheath from 6F to 8F.
- The price is reasonable.



Introductions

- PDA device is very common device for occlusion intra or extra cardiac shunt.
- The PDA device is stable and adapter with 6 to 8F sheath (smaller than another double disk device with same left disk diameter)

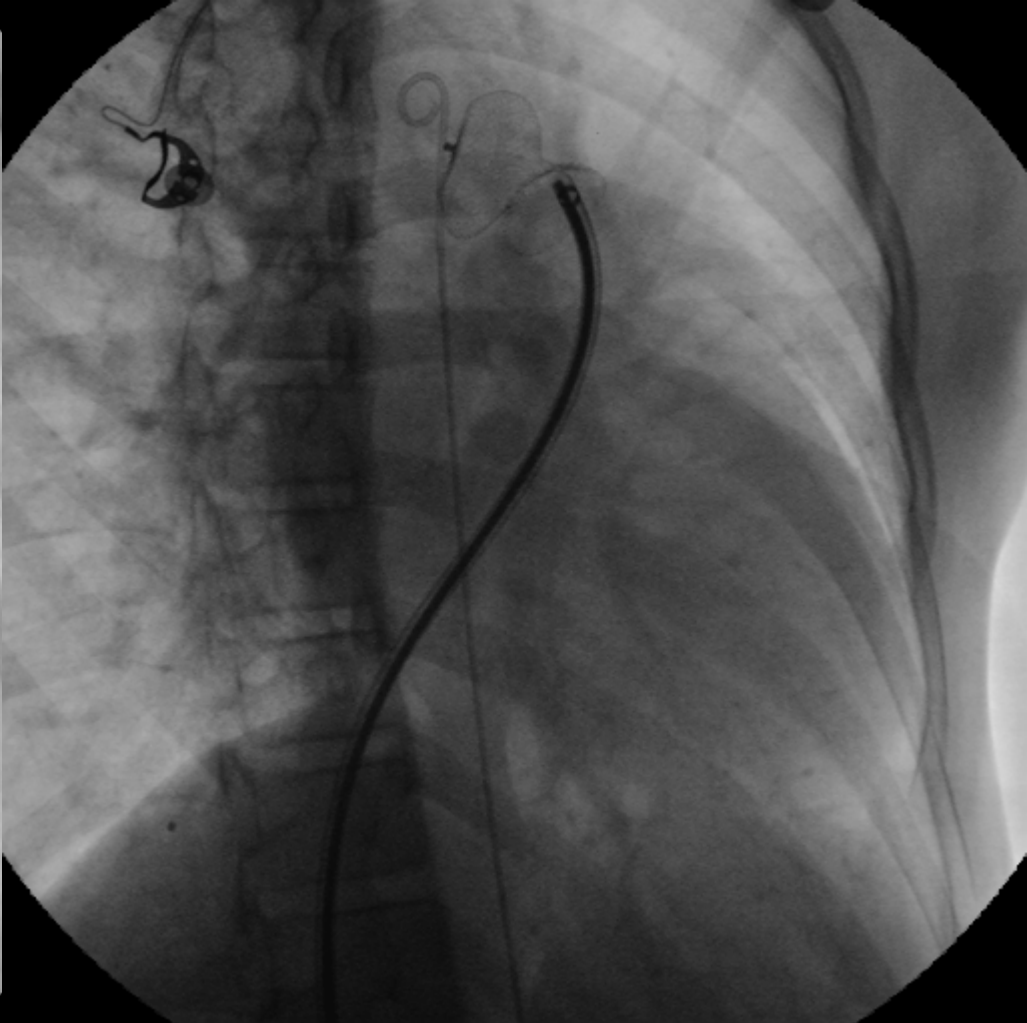
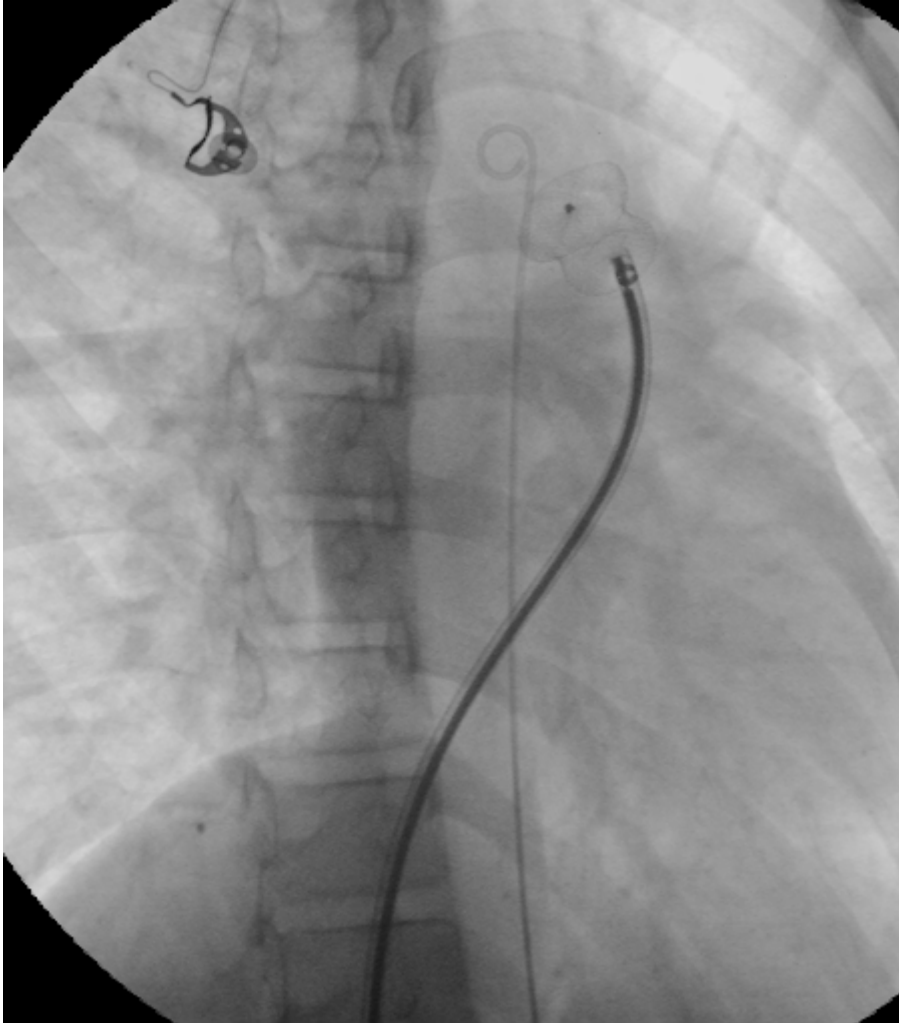
PDA closure by PDA device

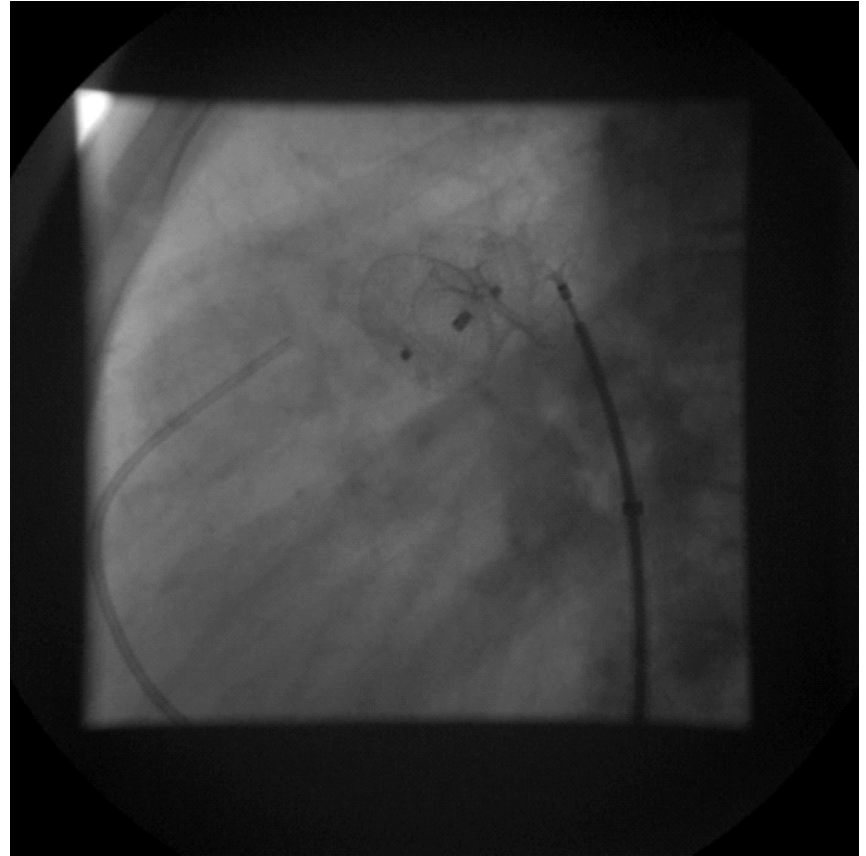
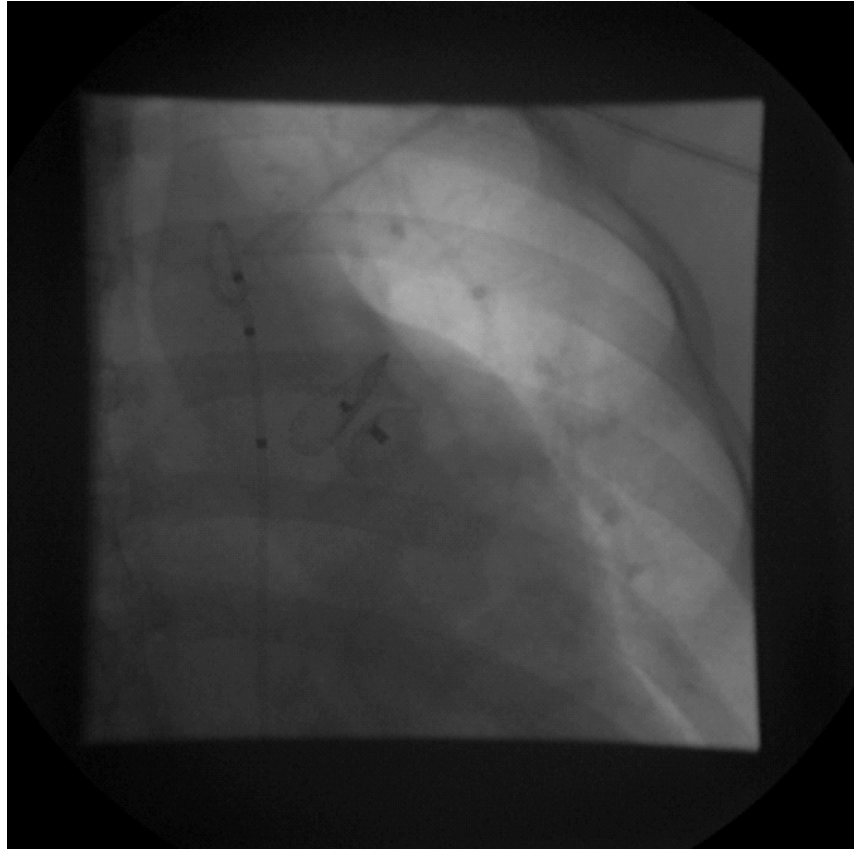


Our Experience in Transcatheter PDA closure

2396 patients

- **Age: 0 years (1 m) to 66 y.o (median 16 years)**
- **Adults: 37 %**
- **Weight 1.8 kg to 56kg (median 21kg)**
- **PDA diameter (TTE): 3mm to 22 mm**
- **PA systolic 15 to 125mmHg (median 31)**
- **Successful in 98% cases.**



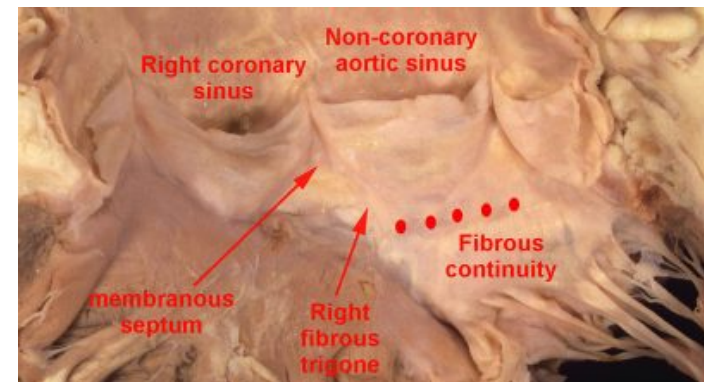
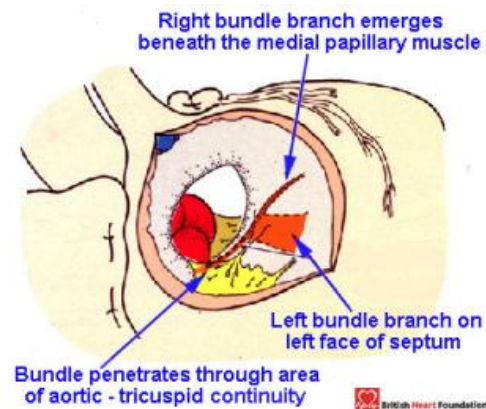
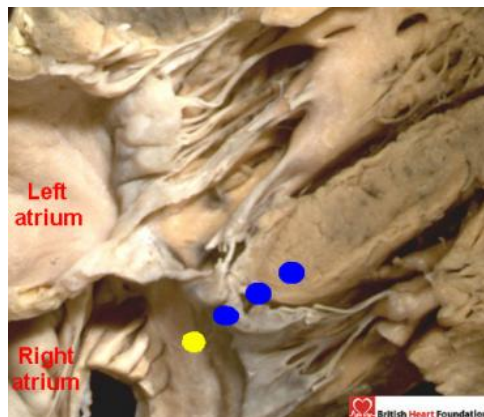


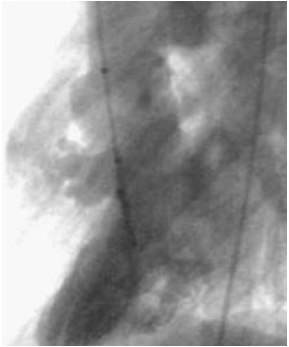
Transcatheter PDA closure (Specials cases)

- **8 cases PDA closure with Muscular VSD Amplatzer device (16, 18 mm device size)**
- **7 cases with ASD Amplatzer device (from 12mm to 21mm)**
- **35 cases using PDA device size bigger than 16/14 (max size 24/22mm)**

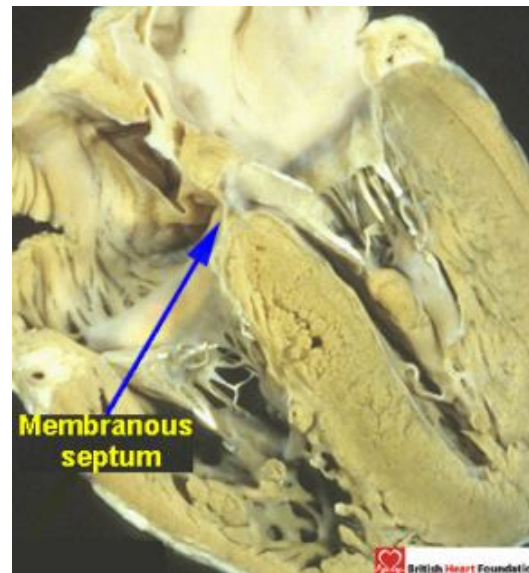
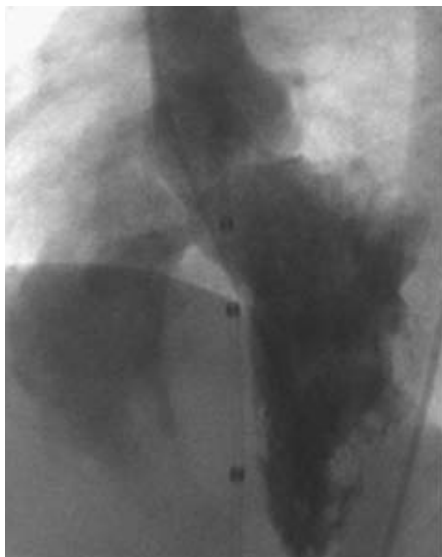
- **Transcatheter
VSD closure**

- **The transcatheter occlusion of VSD is considered to be one of the most sophisticated and complex interventional procedures. Percutaneous closure of a perimembranous VSD is valuable alternative to surgical closure.**
- **Complications are embolization of the device and arrhythmic (double disk device)**



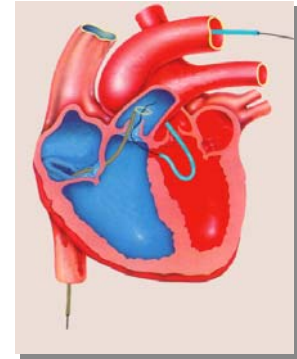


- **The PM or muscular VSD have edge, ampulla's (triangle) form in 90%, look like type A of PDA. Using PDA device for VSD closure is reasonable.**
- **Carefully patient's selection and long term follow up is very important.**

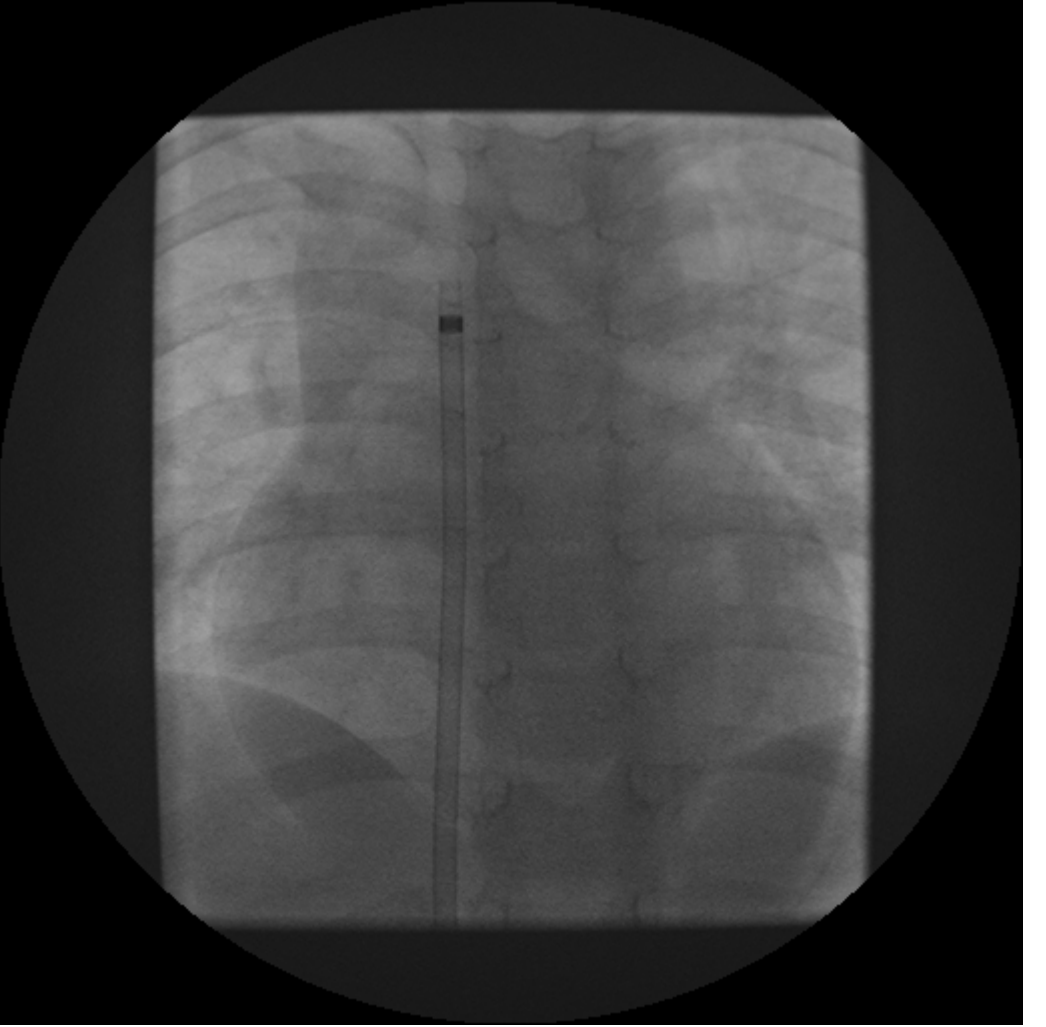
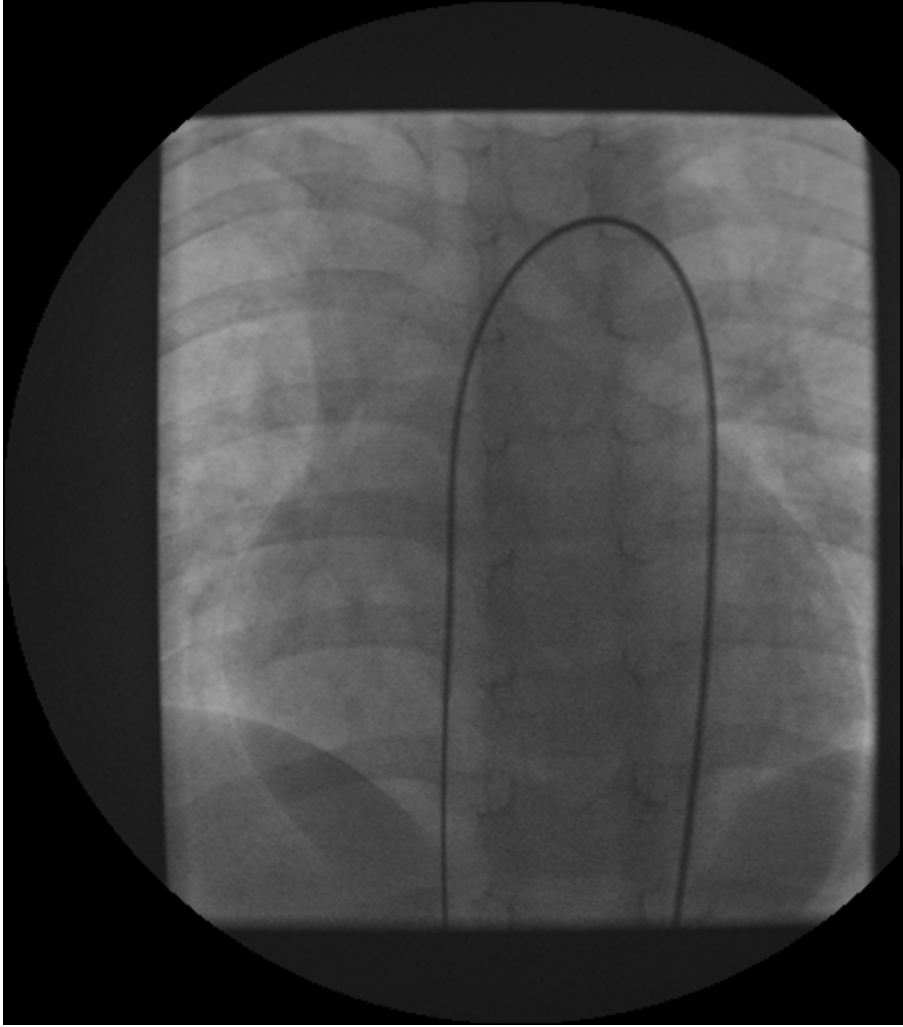


- **The first VSD close by PDA device in Vietnam Heart Institute in
December, 2002**

Protocol



- **VSD was crossed from the LV with a coronary catheter (JR4) or AM catheter.**
- **Guide wire Terumo was advanced into the pulmonary artery or the vena cava.**
- **The tip of the Terumo wire was captured with a snare to create an arterio-venous loop.**
- **6 to 8F long sheath was introduced over the loop wire to the ascending aorta.**

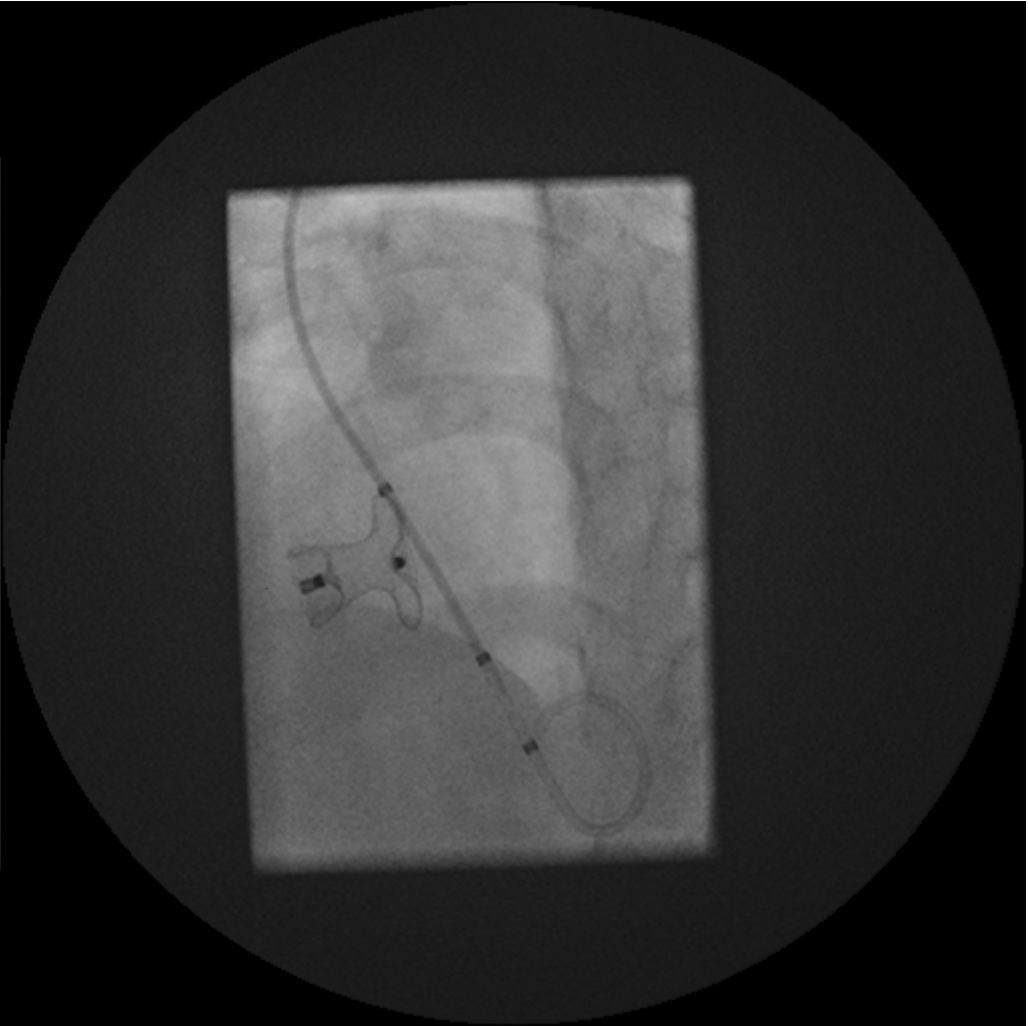
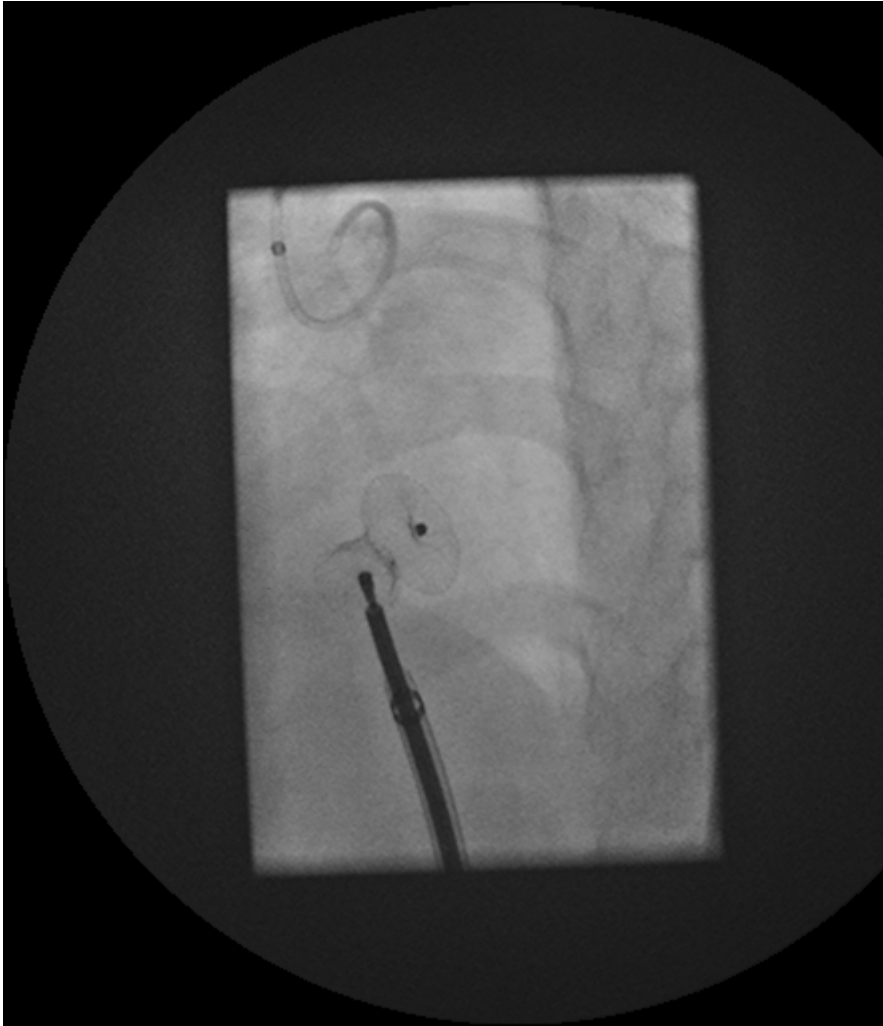


Protocol

- **The 6F to 8F sheath (adapted to Device size selection) was introduced over the loop wire to the ascending aorta.**
- **The left disk open just beneath aortic valve and pull back to the VDS.**
- **After check by angiography, the body of device was open in the defect.**

Protocol

- **Angiograms of the LV and the aorta were performed after device detachment to assess device position and the efficacy of closure.**
- **Echocardiographic assessment included device arm position and integrity, contact with valve structures, residual flow through the defect.**
- **Follow-up studies with clinical examination and angiogram were carried out at various times after coil or device implantation.**



PDA device for VSD closure in VHI

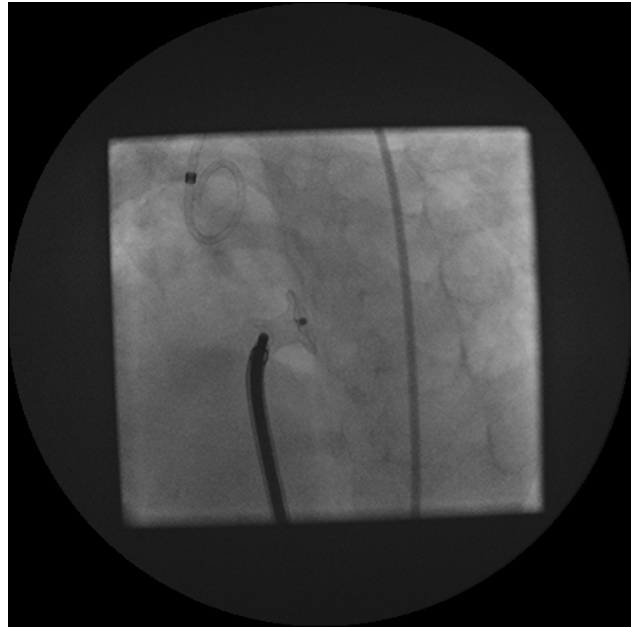
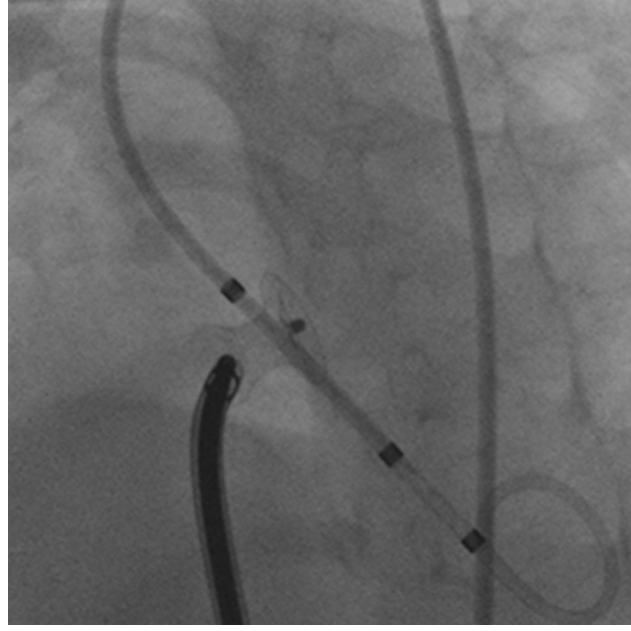
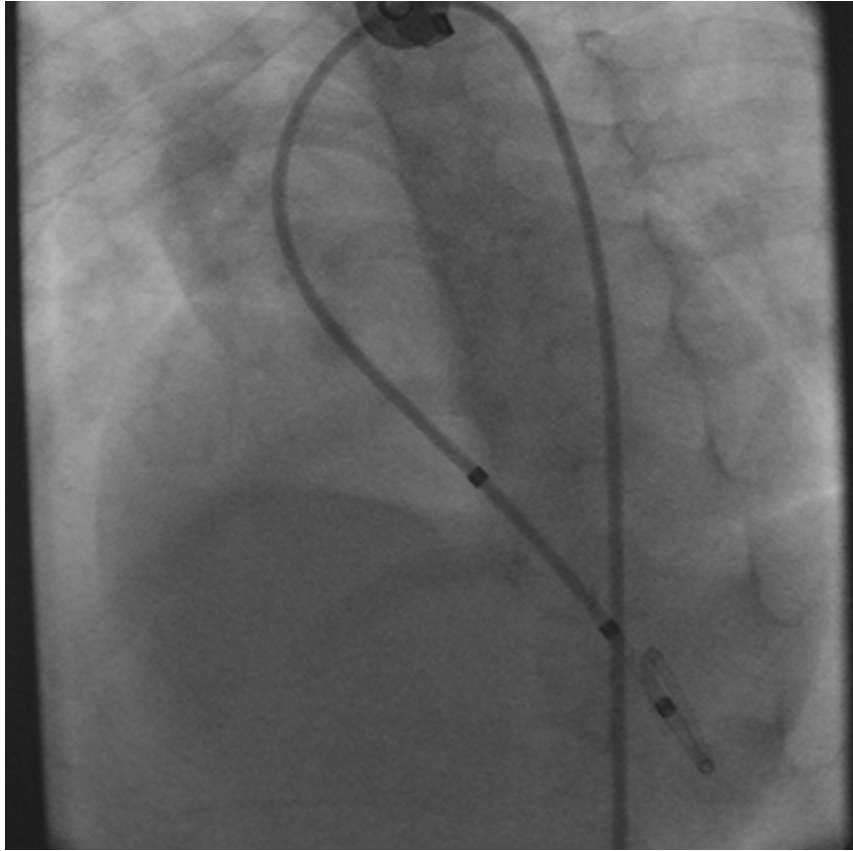
- **385 patients with clinical evidence of a VSD.**
- **The body weight ranged from 5 to 58 kg.**
- **The sizes of the defect ranged from 5 to 10mm (RV size), measured by means of TTE and or angiography.**
- **Qp/Qs varied from 1.5 to 3.8 mean 1.8**

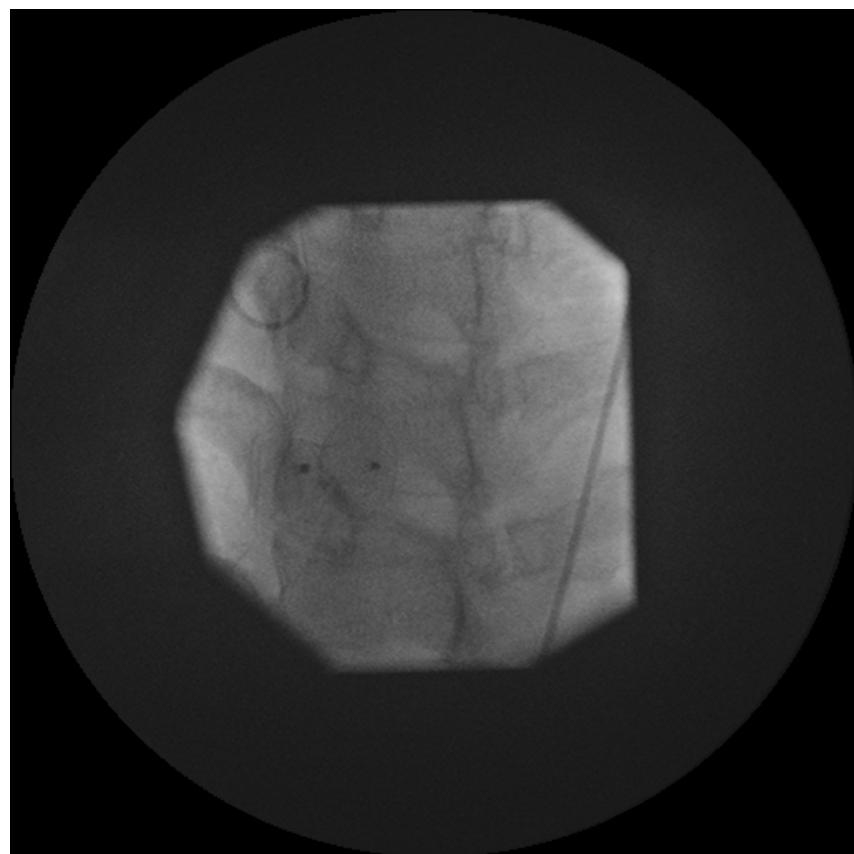
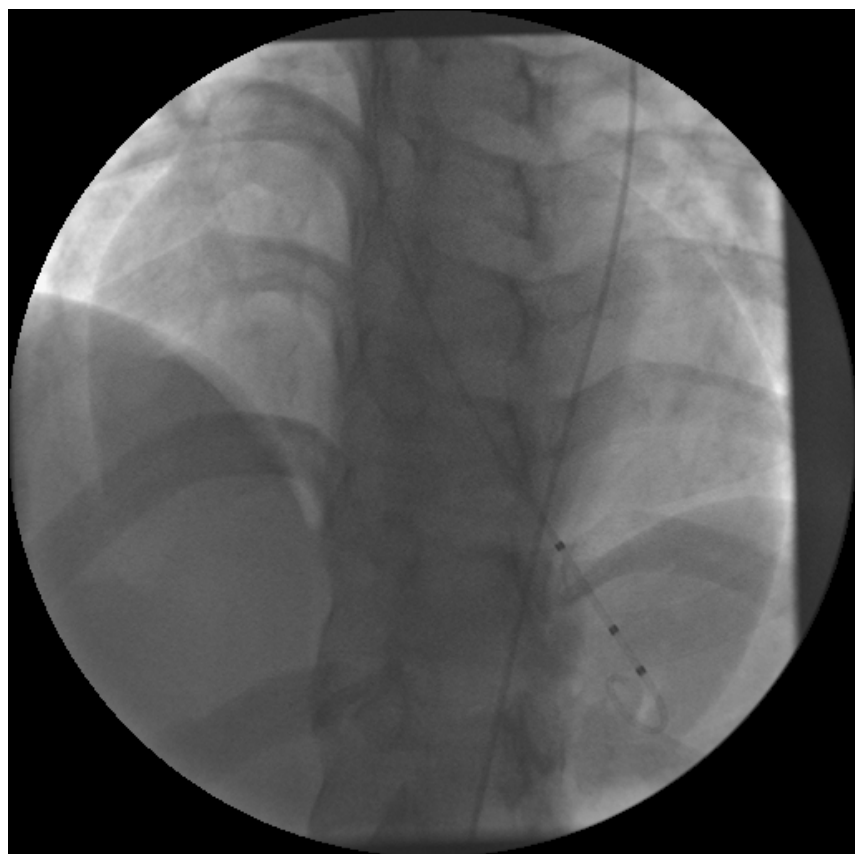
PDA device for VSD closure in VHI

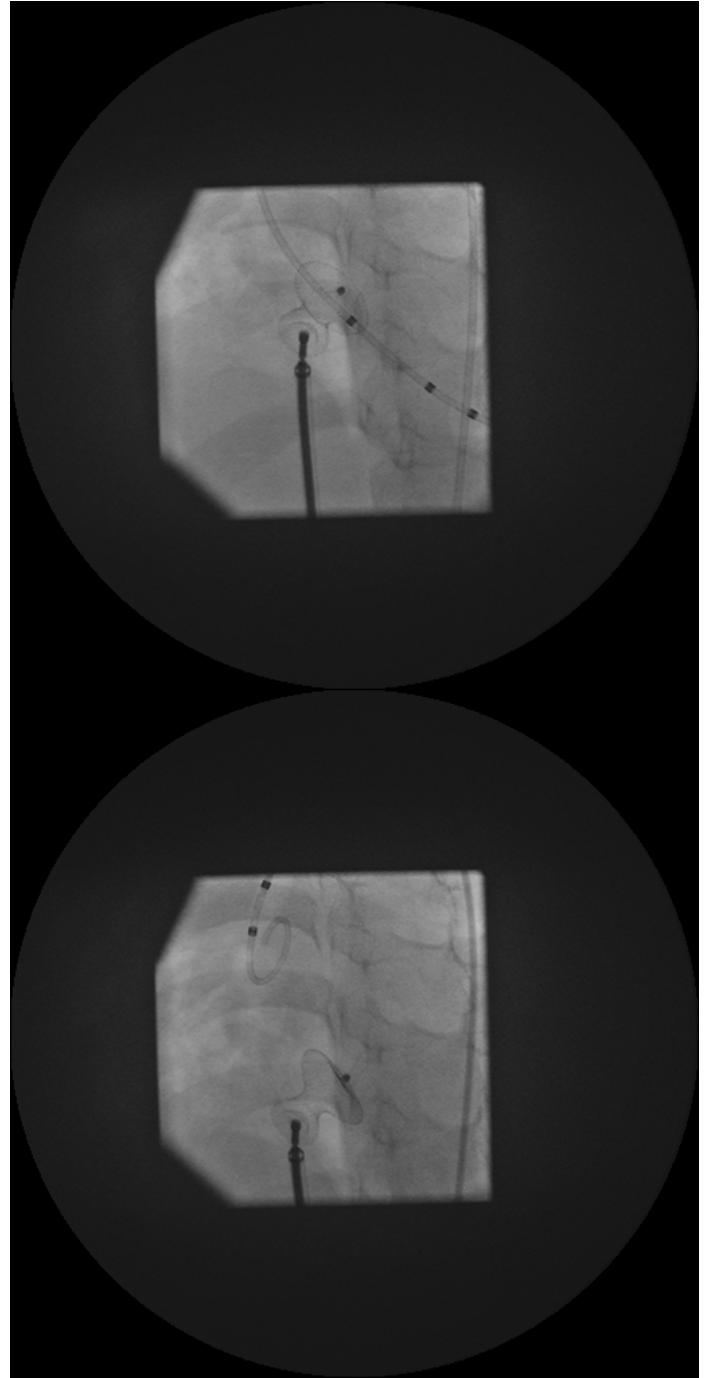
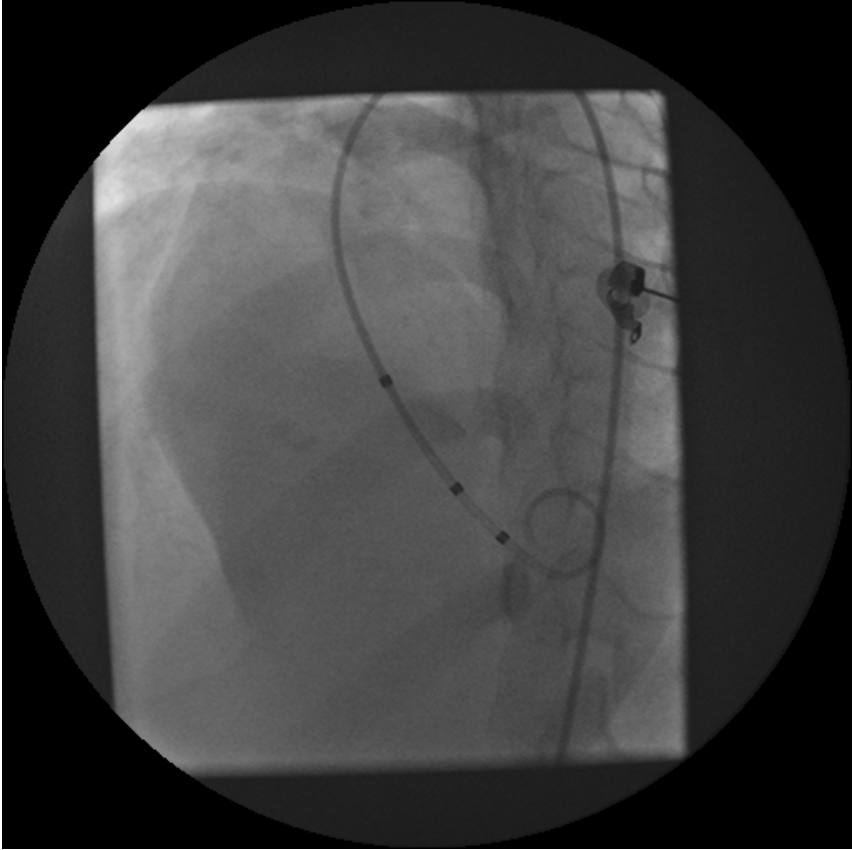
- **Amplatzer was successfully implanted in 379 patients (98%).**
- **Device embolization (1 case), not proper position (1), hemolysis (1)**
- **There were no procedure' complications: No impairment of the tricuspid and aortic valve, and no important arrhythmias.**

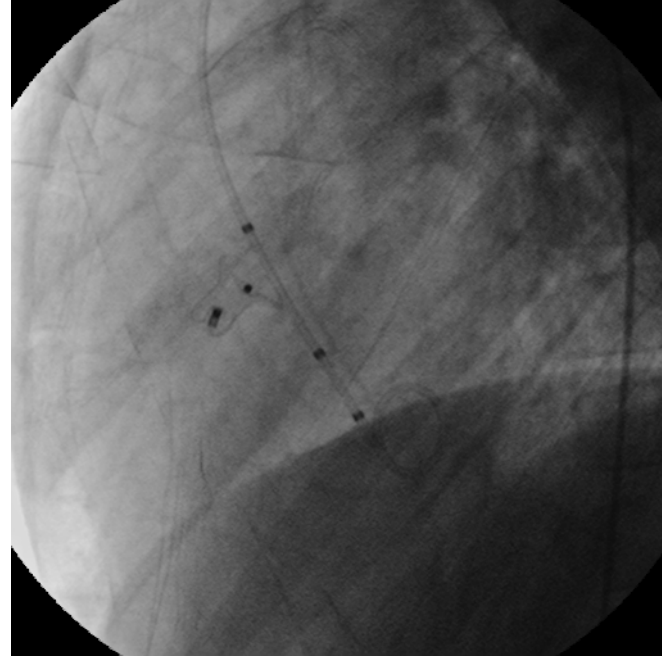
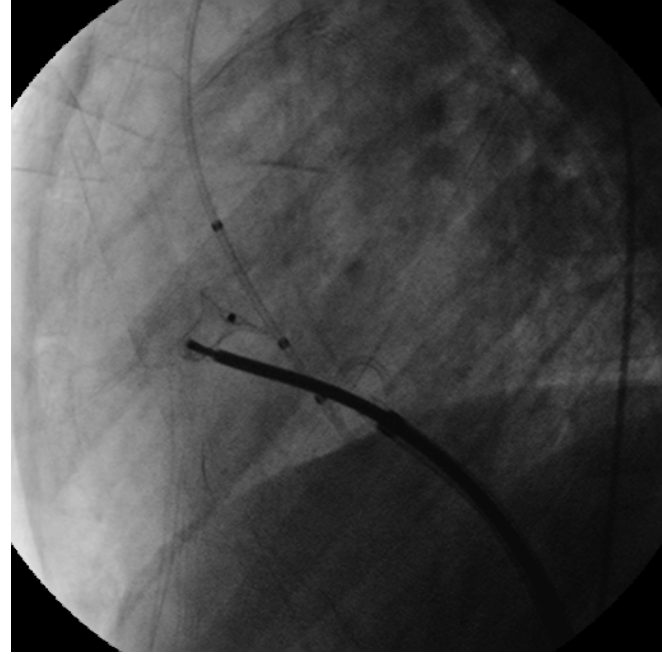
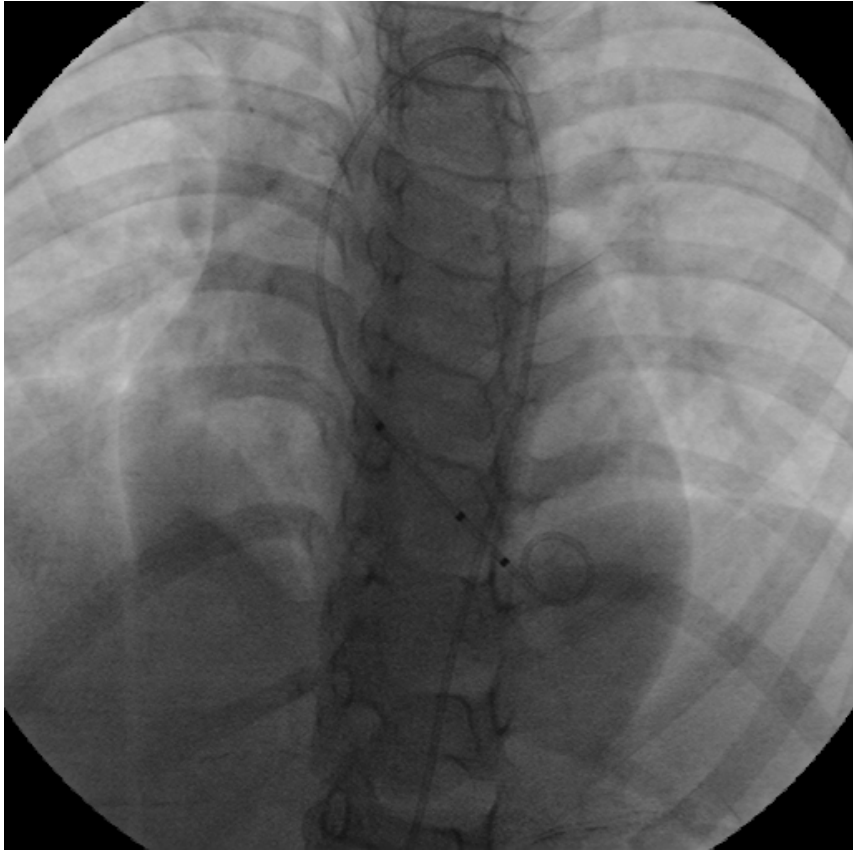
PDA device for VSD closure in VHI

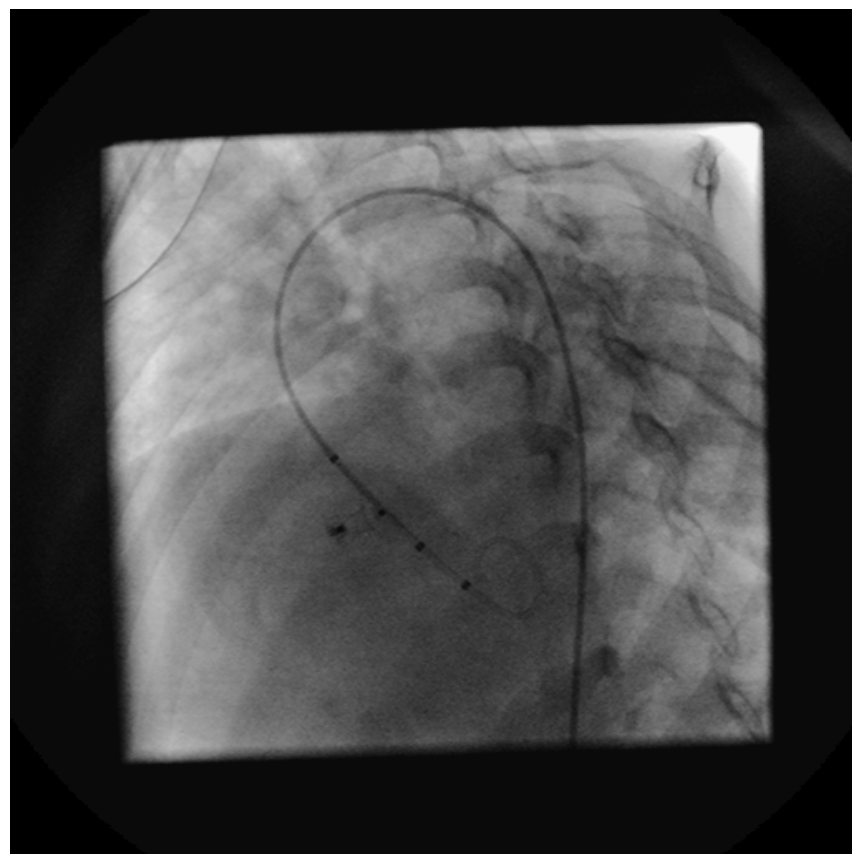
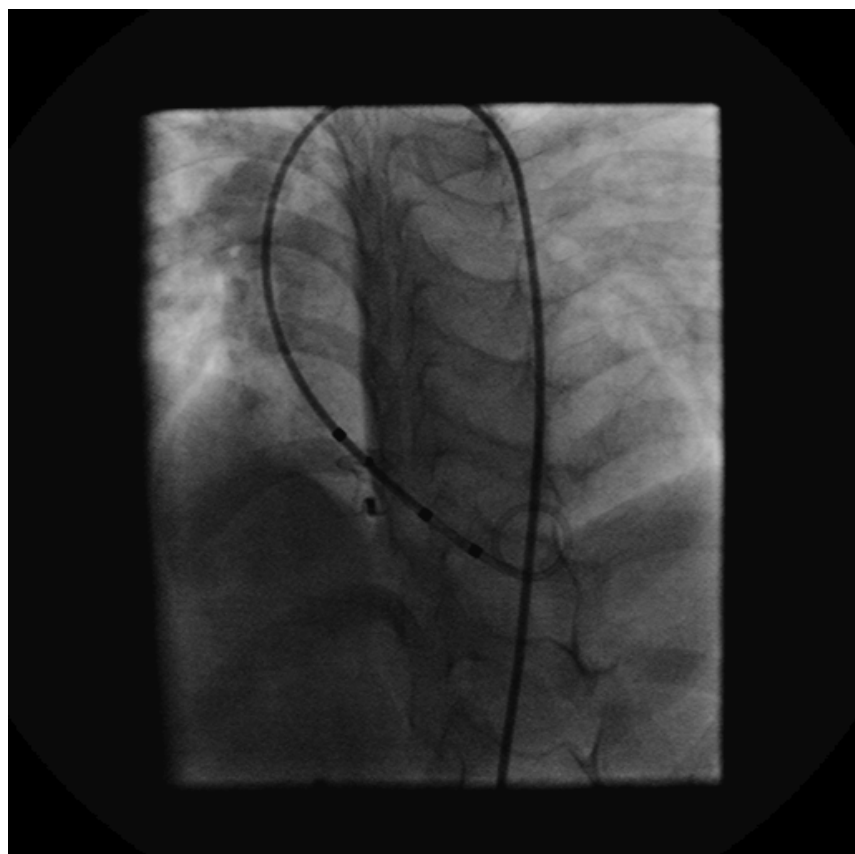
- **Angiogram complete occlusion was observed in 145 cases after 10 minutes.**
- **Residual shunt was demonstrated after 24h is 22% and after 1 month is 5%.**
- **No AV bloc in all patient follow up**

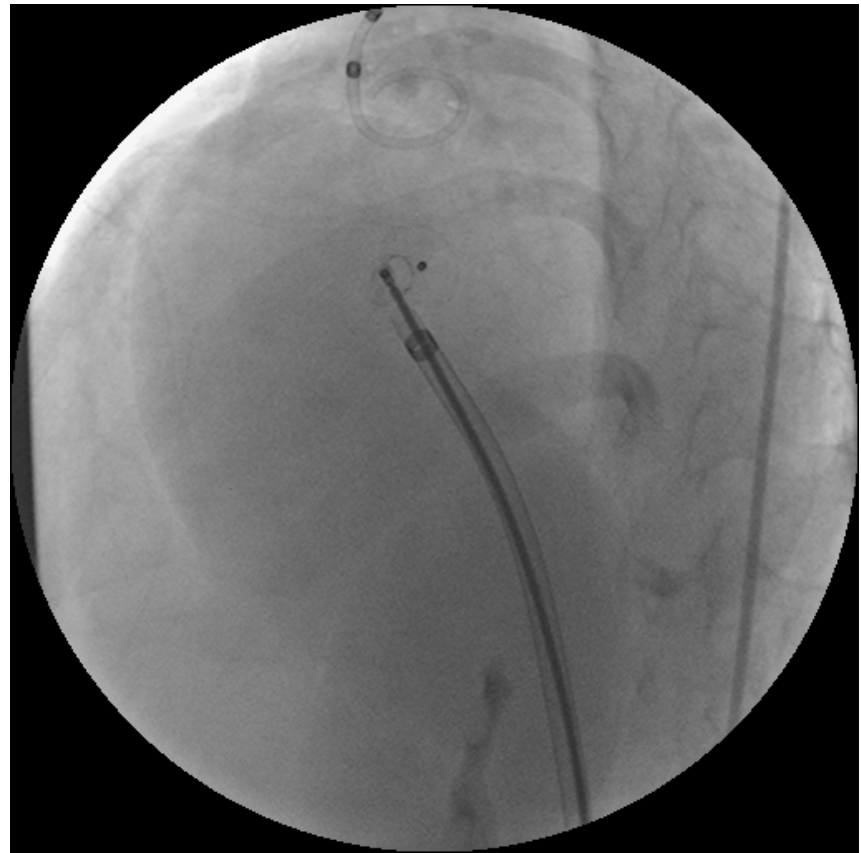
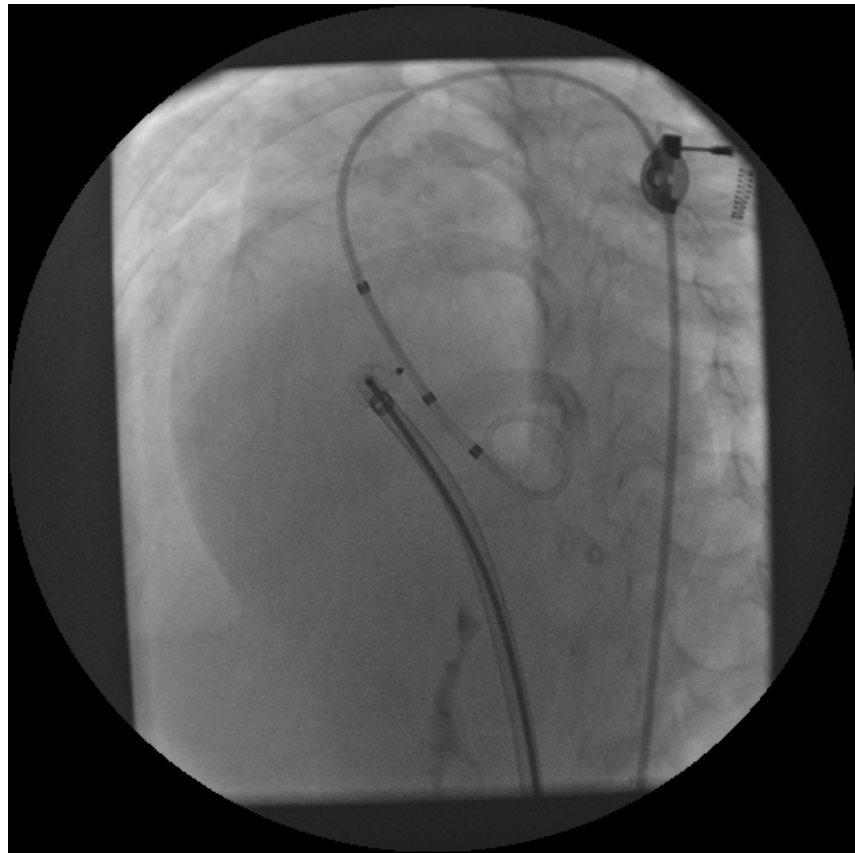


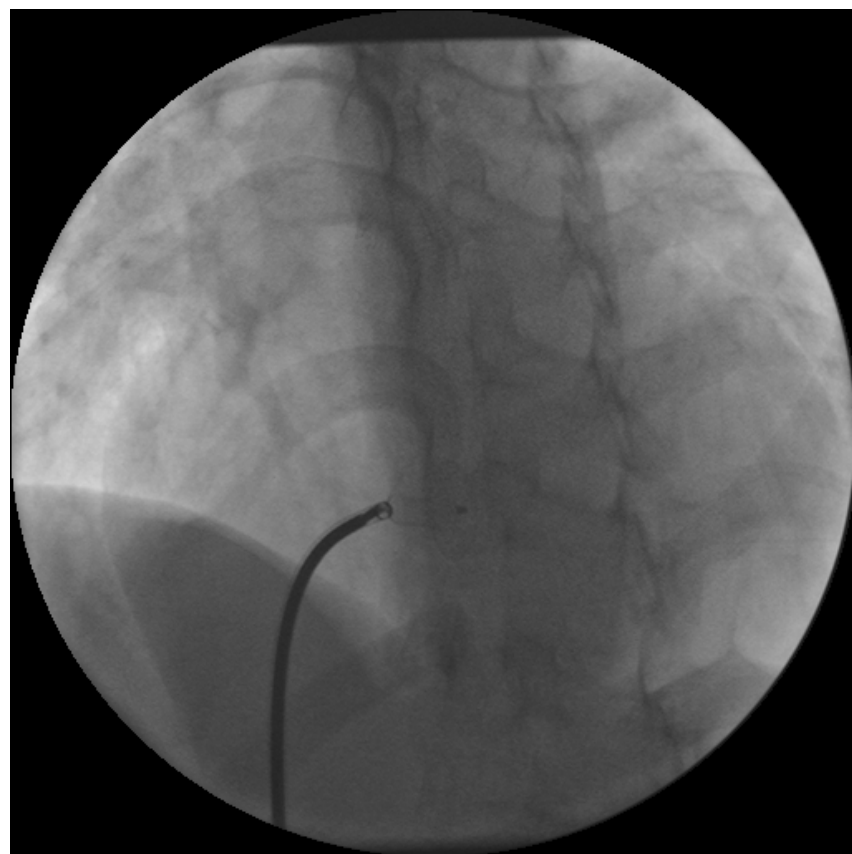
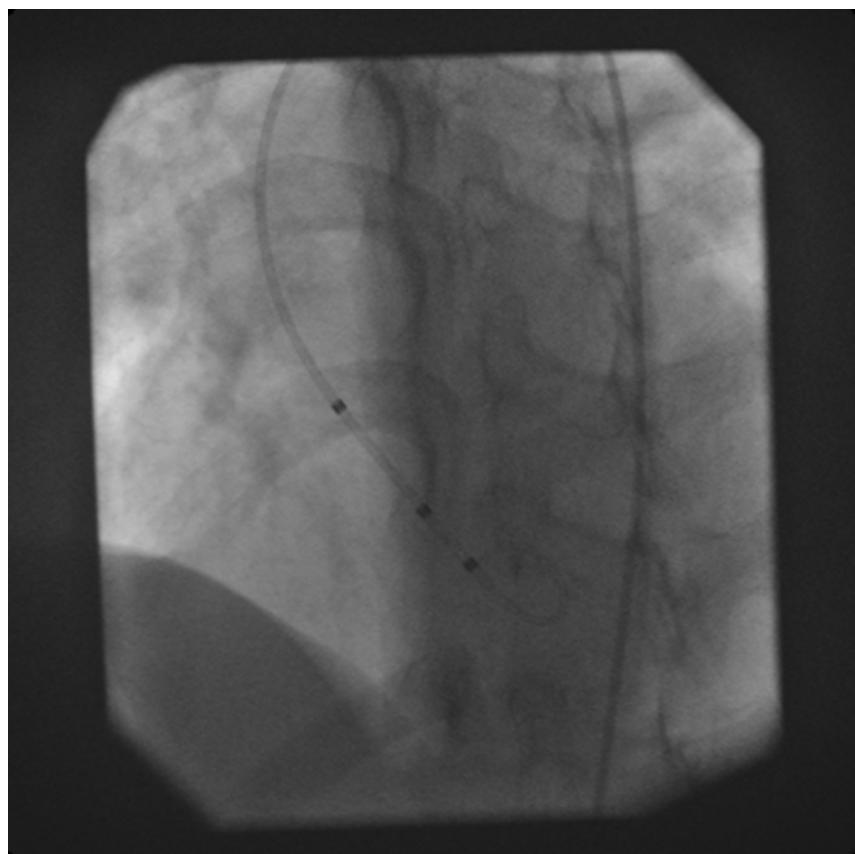


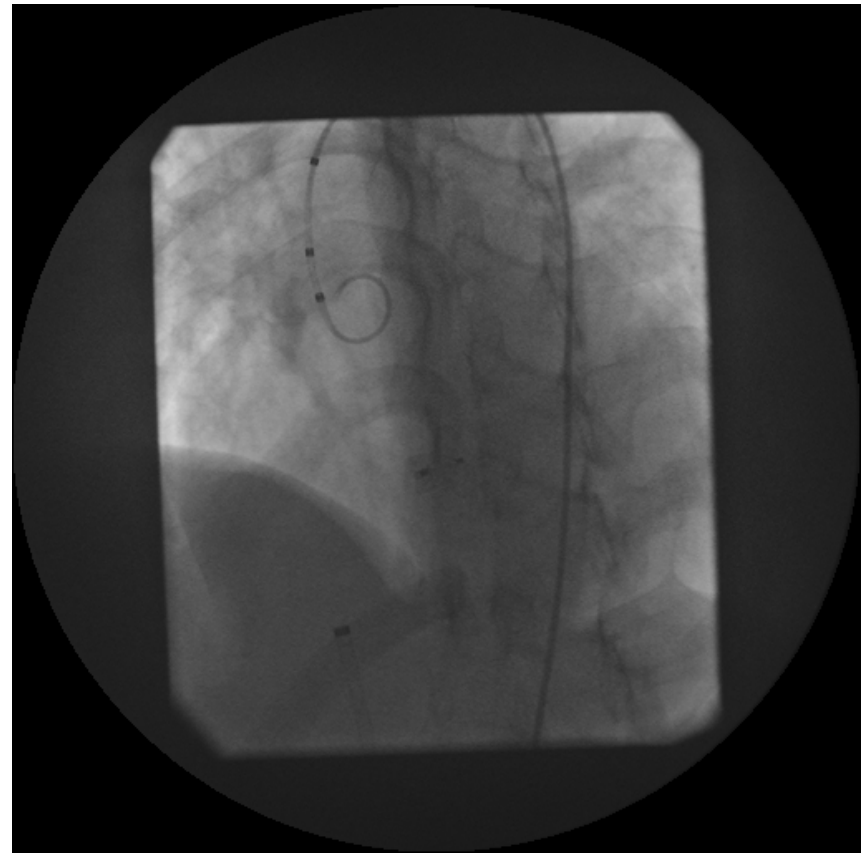
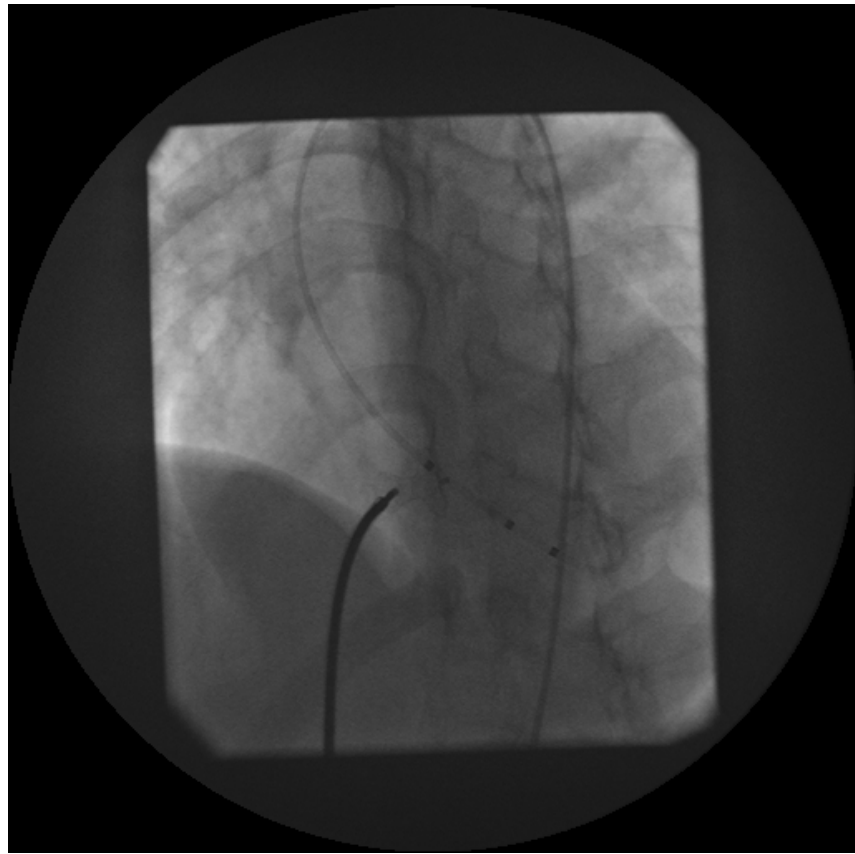


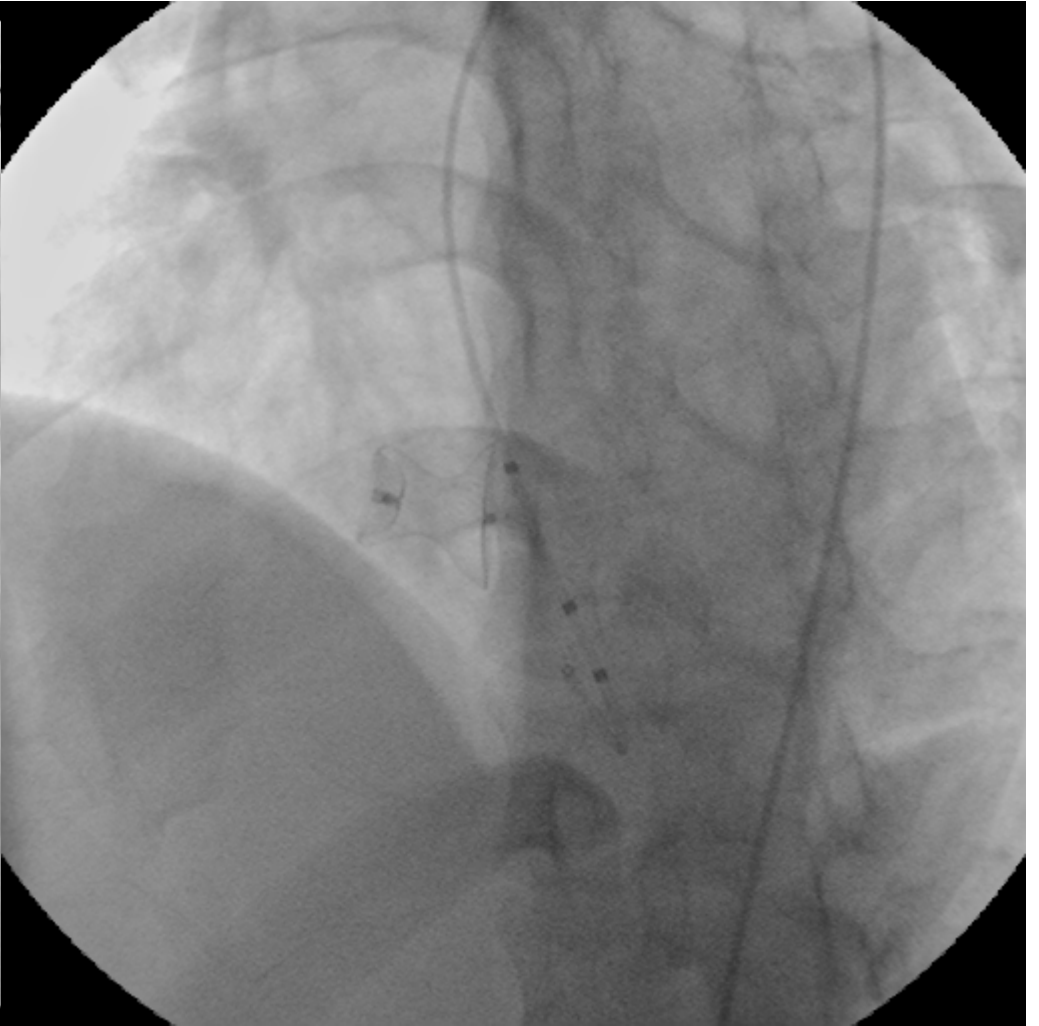
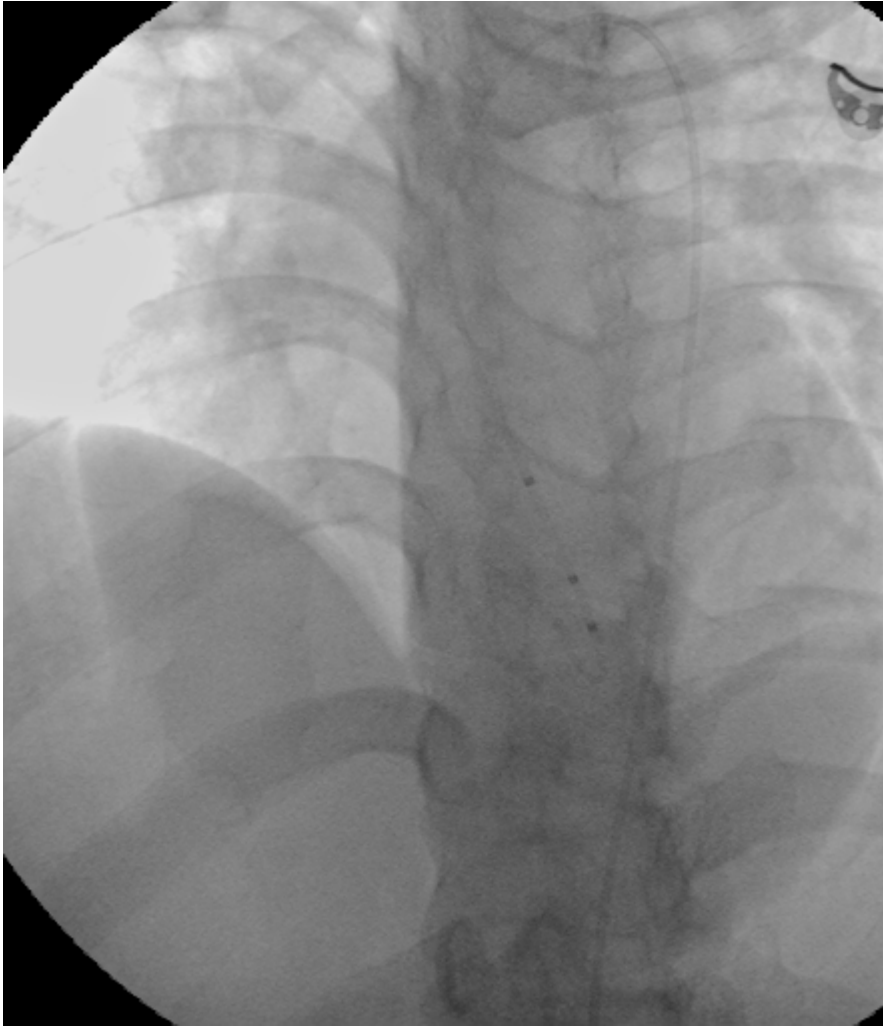


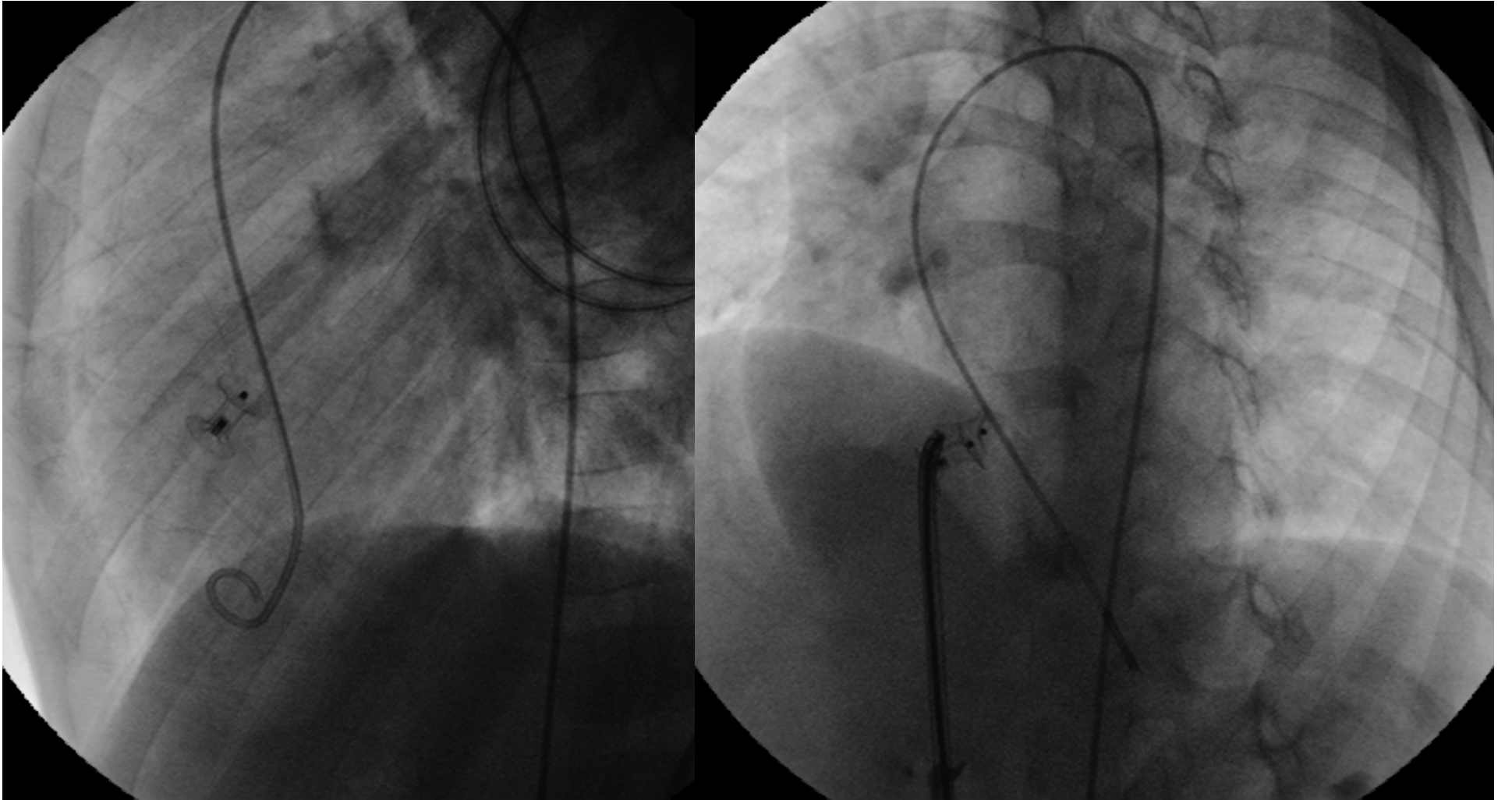




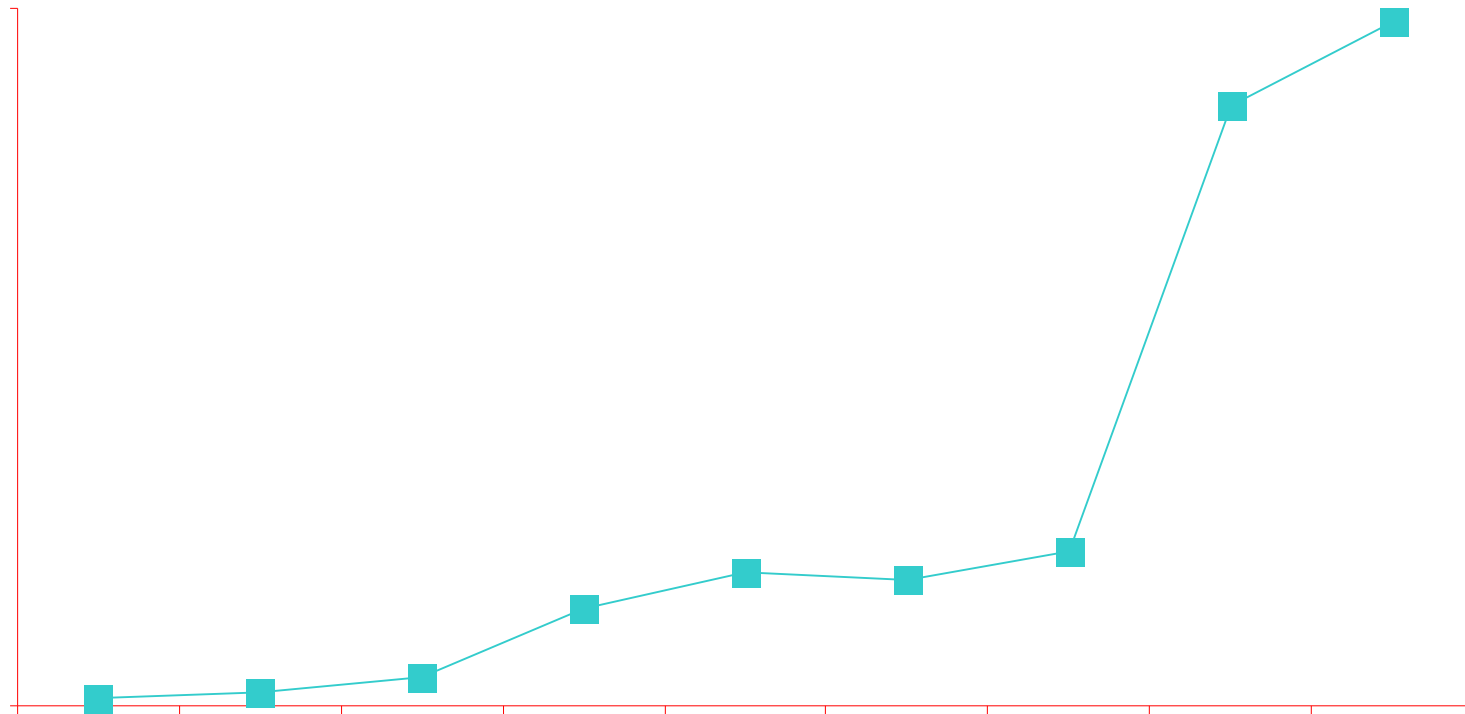


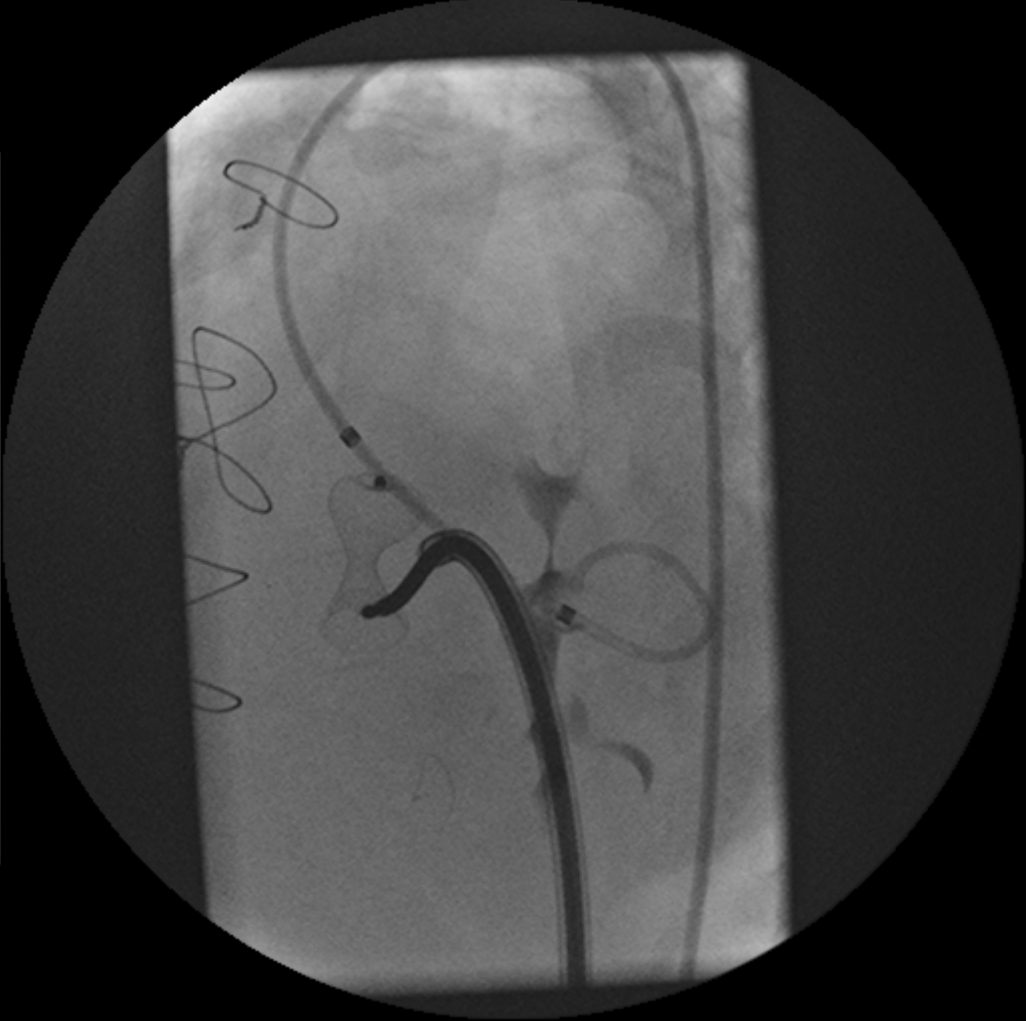
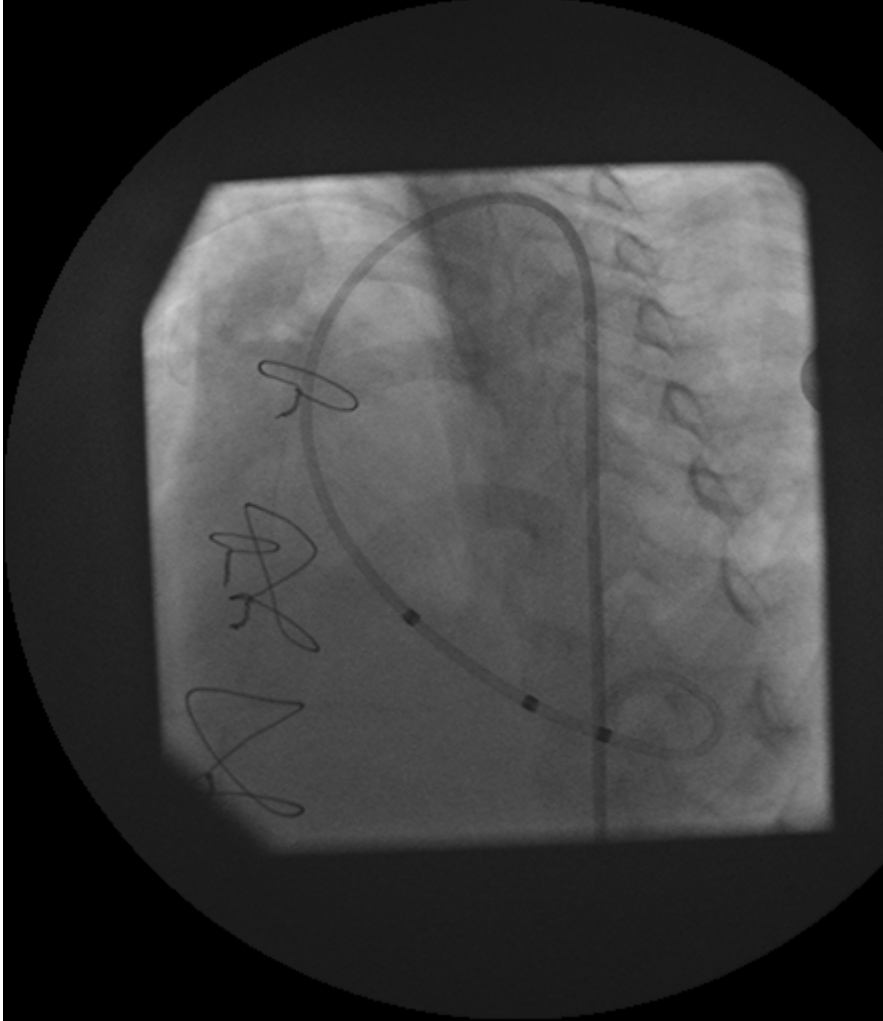






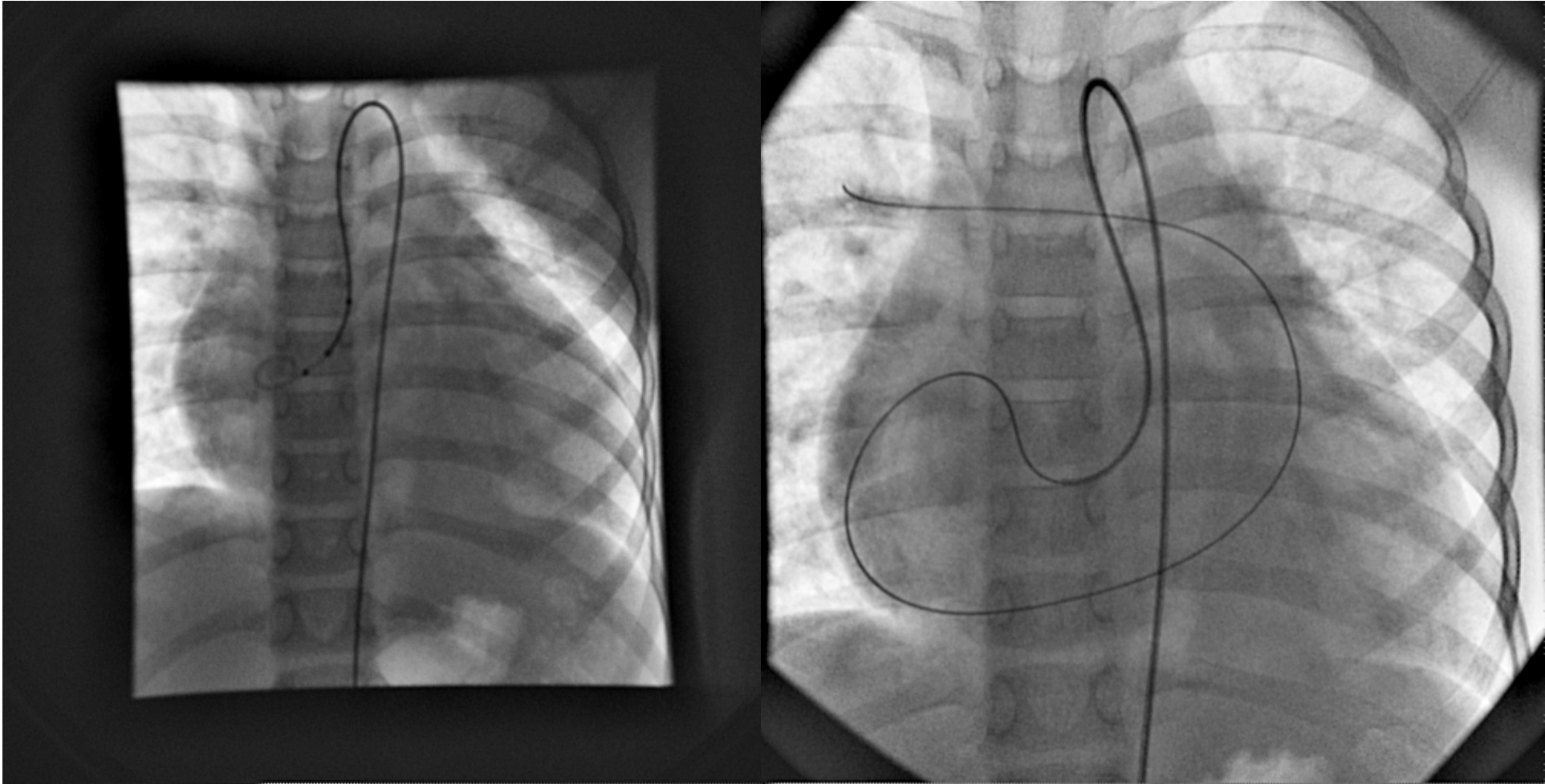
VSD closure in VHI



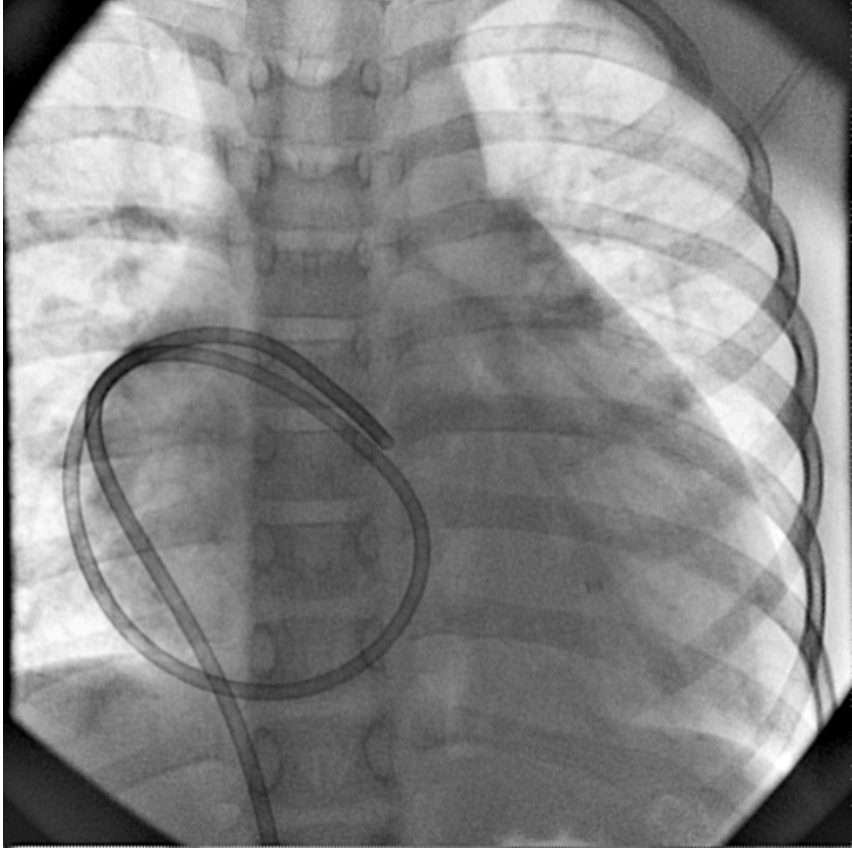
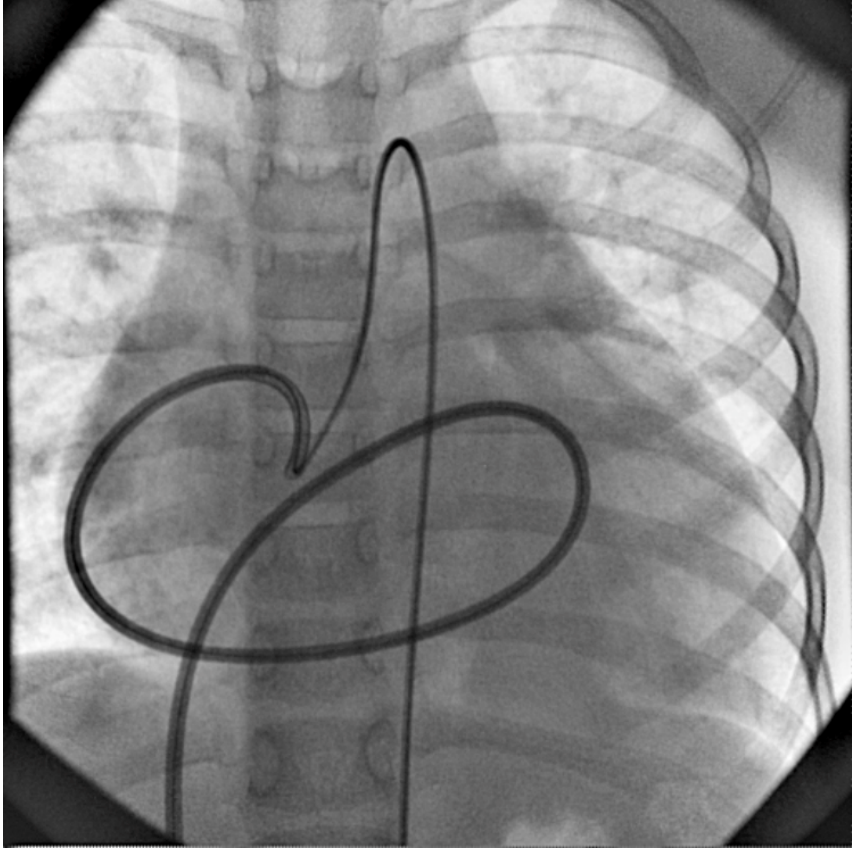


**Another intervention can
using PDA device**

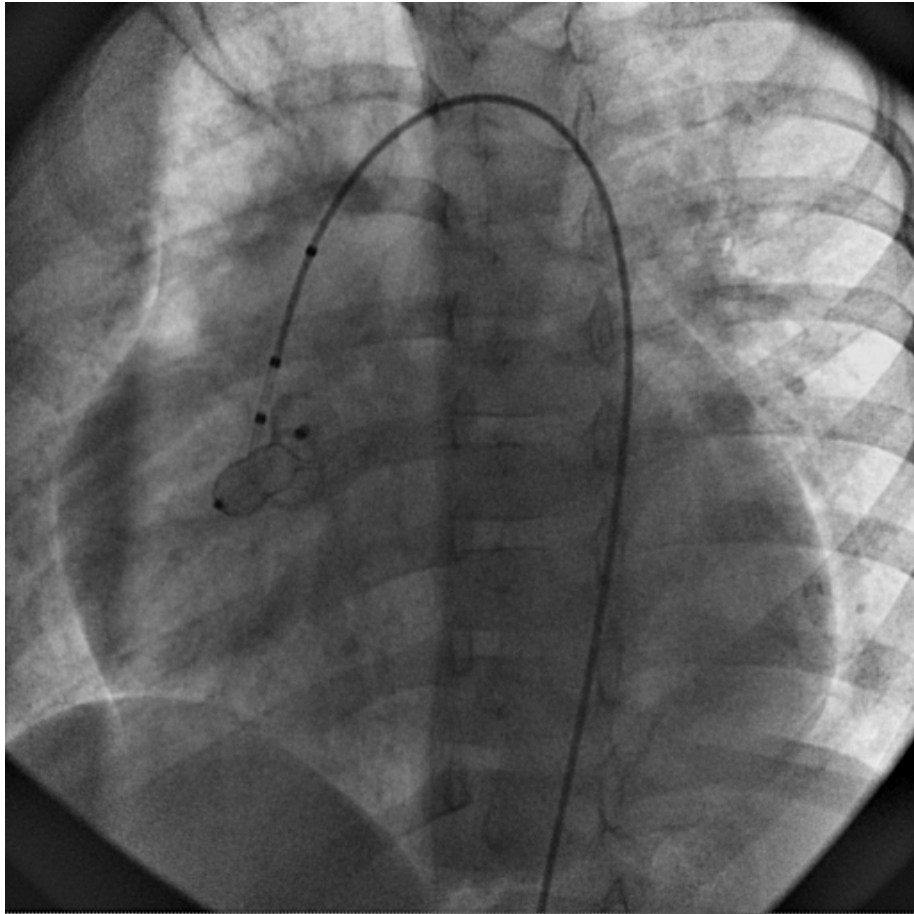
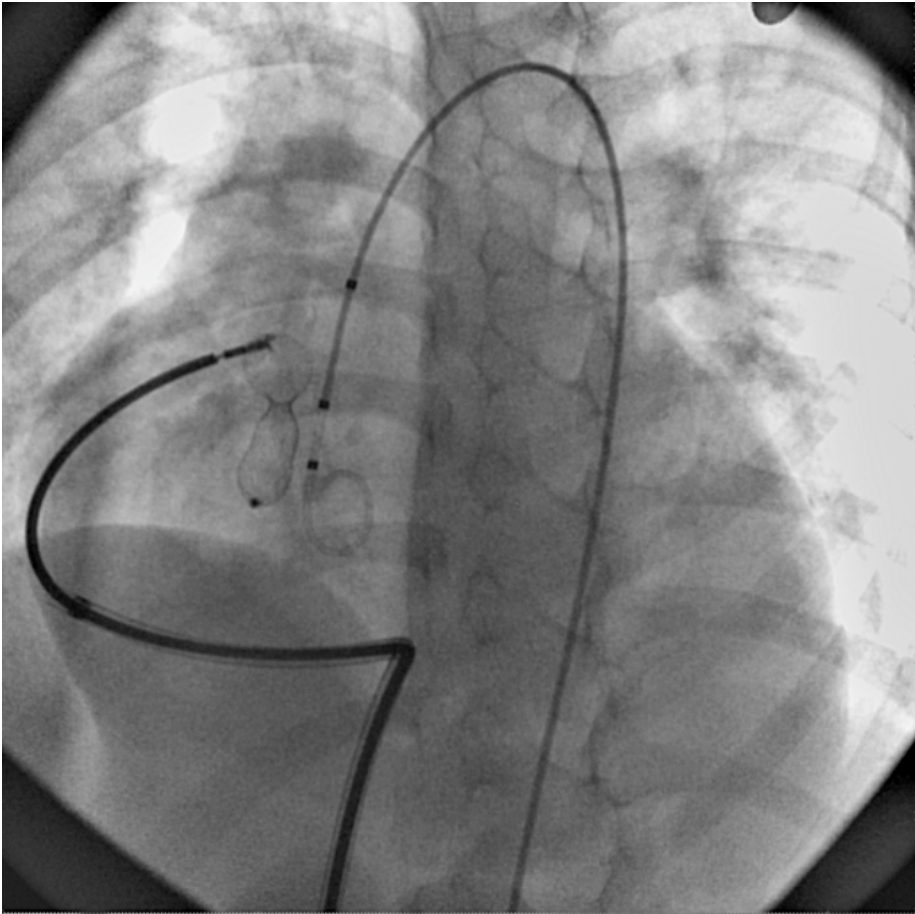
Coronary fistula closure by PDA device



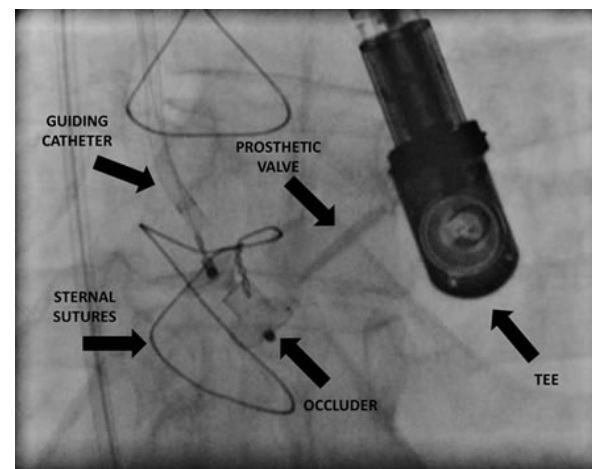
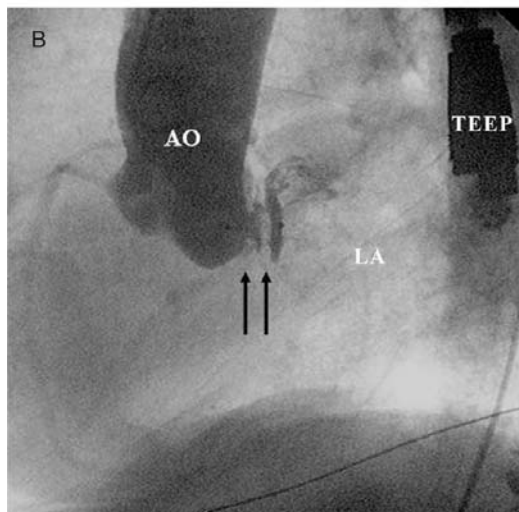
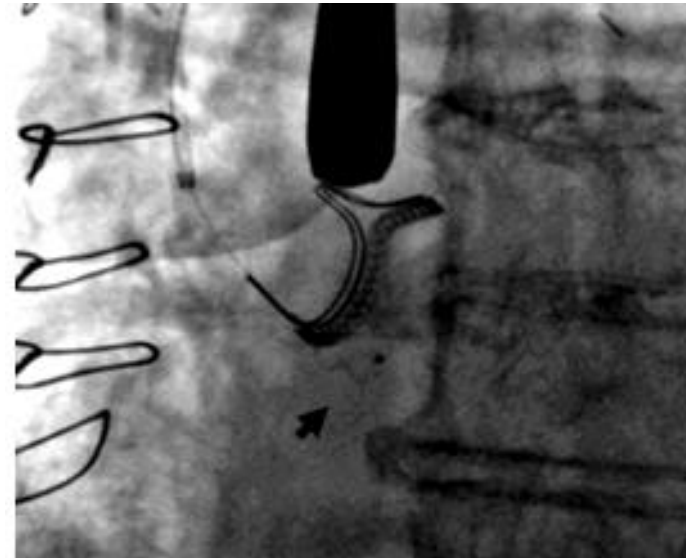
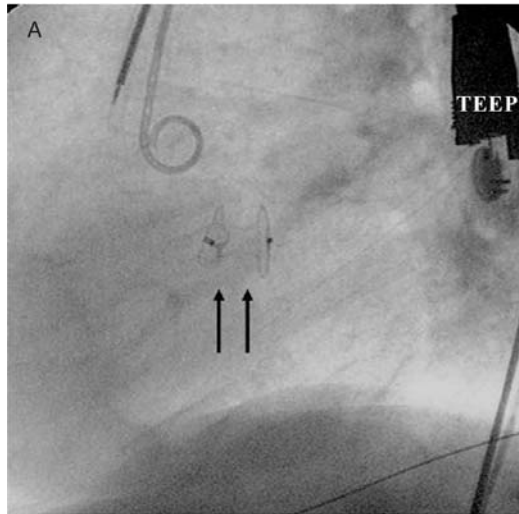
Coronary fistula closure by PDA device



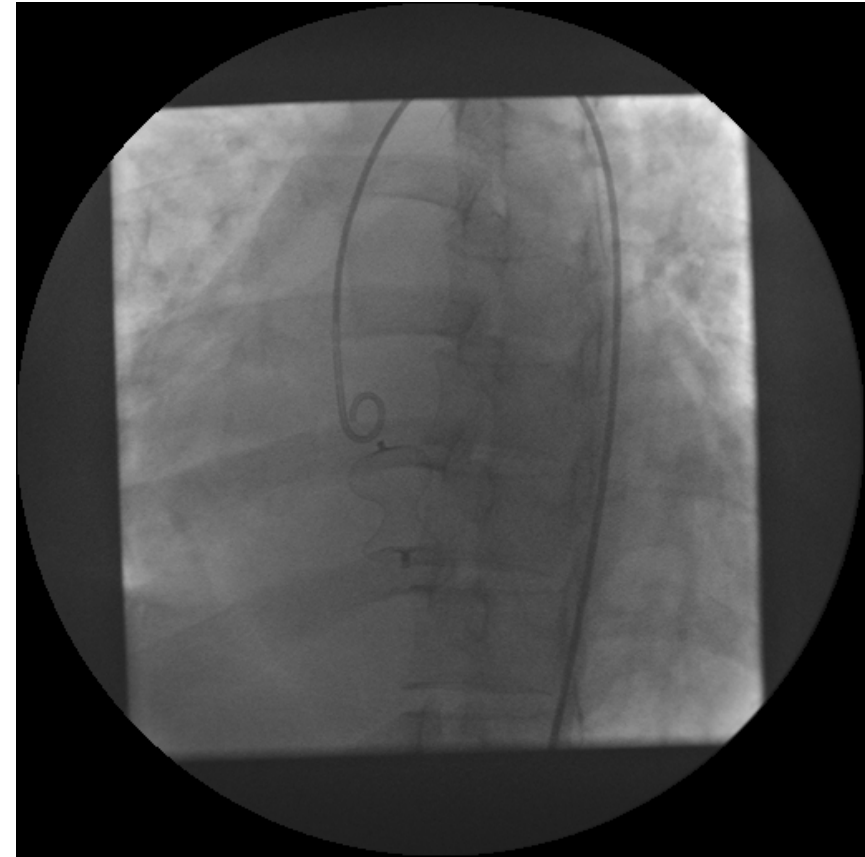
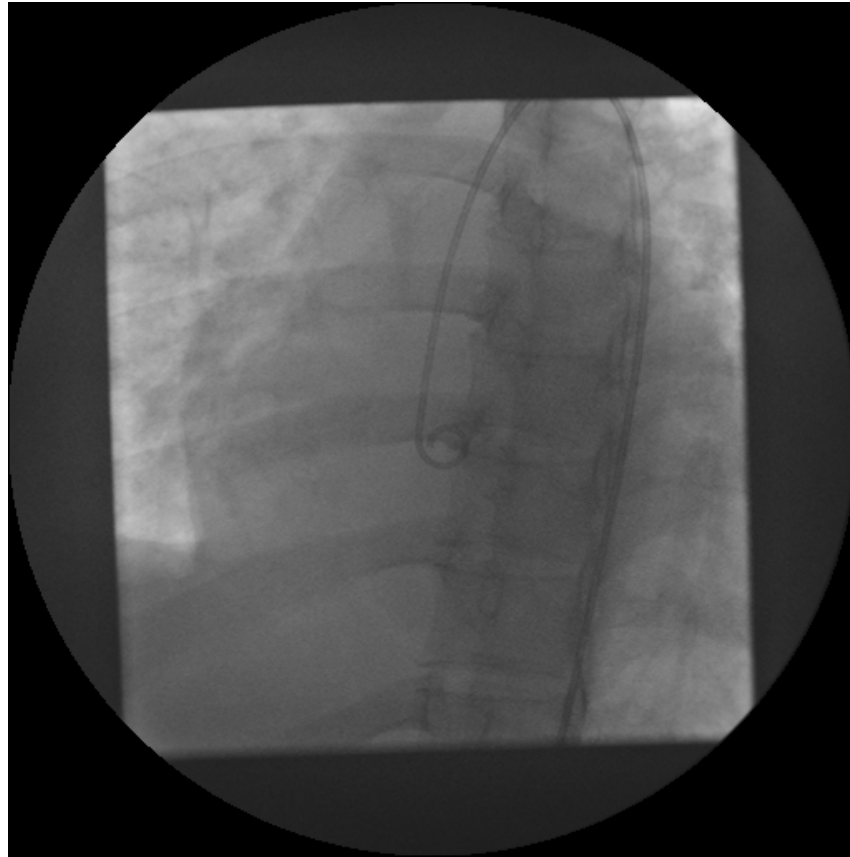
Coronary fistula closure by PDA device



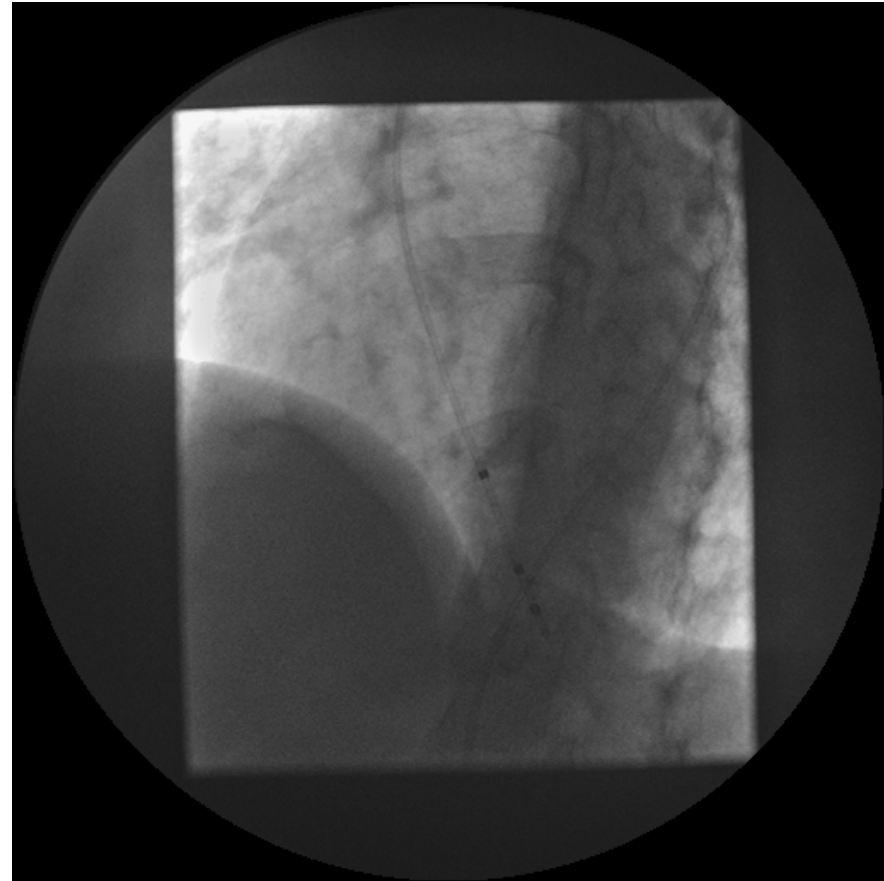
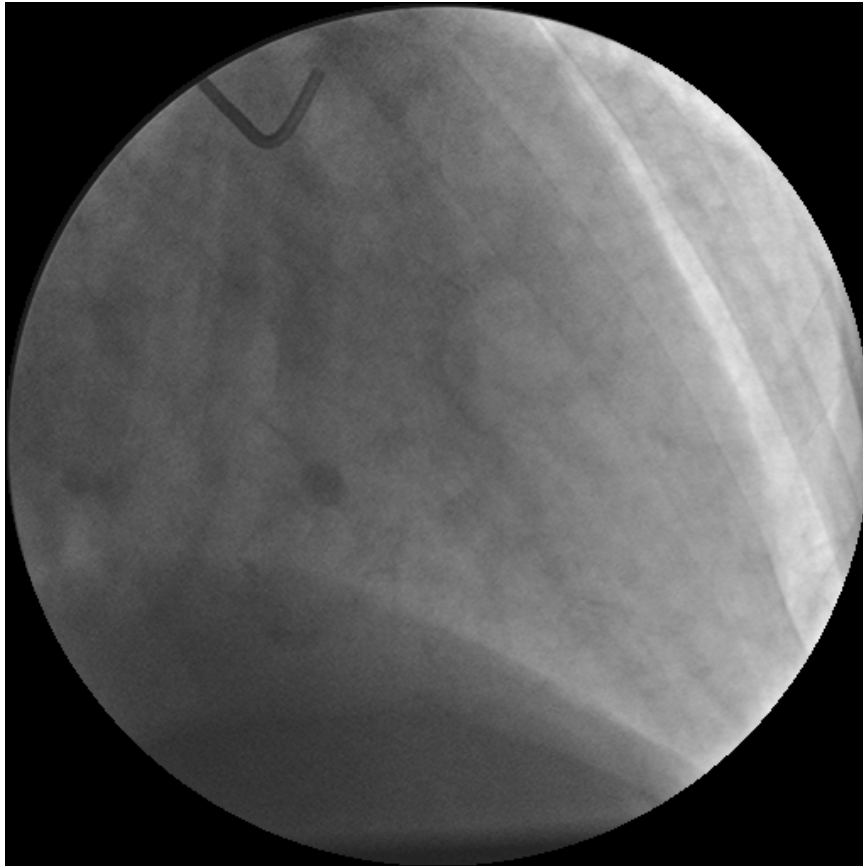
Closure of prosthetic paravalvular leaks

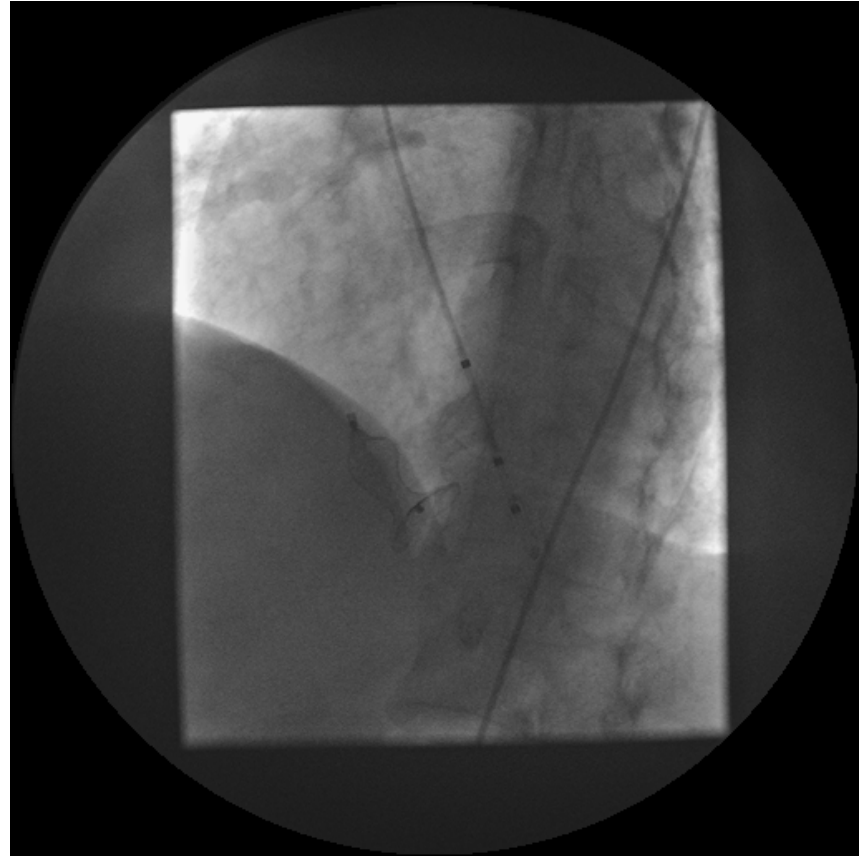
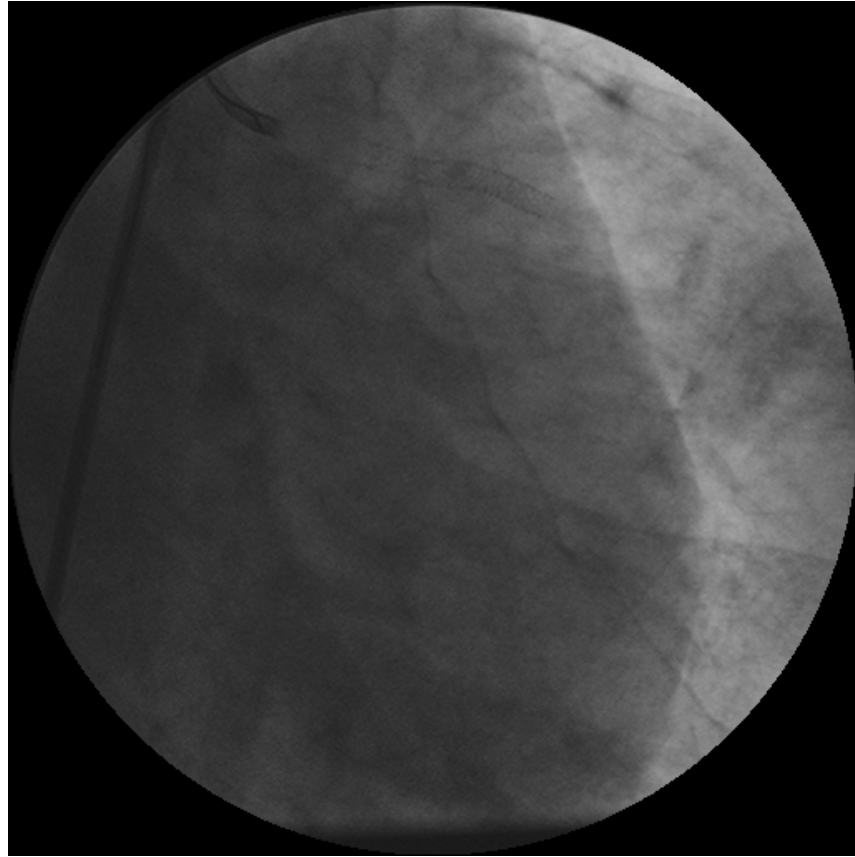


Closure Valsalva rupture by PDA device



Closure VSD post AMI by PDA device





Conclusion

- **Using PDA device for occlusion the intra or extra cardiac shunt is safe and efficacy.**
- **The procedure is more easy the double disk device and the cost should be cheaper than any device available in market**

Conclusion

- o **Careful indication**
- o **Long term follow up**
- o **Experience**
- o **Best possible imaging**
- o **Post interventional monitoring**
- o **Surgical Stand by**