Occluders retrieval

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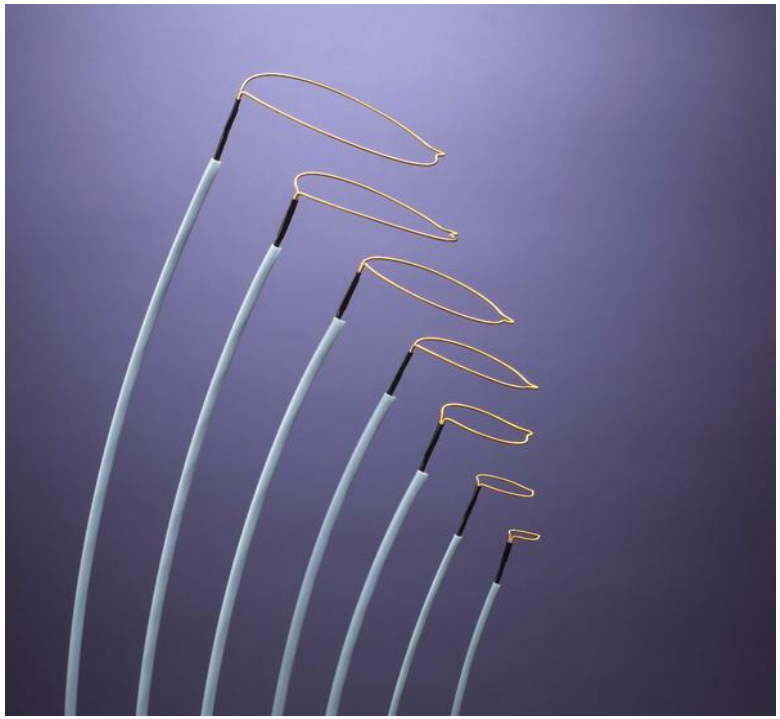
Occluders used for closure of defects or vessels

- Coils
- Vascular plugs
- Duct occluder
- Septal occulders
- Others, stents,

Snare & bioptome



Retrieval of coils

- Migration of coils was rather common in catheter closure of PDA > 3 mm or BT shunts
- Migration to distal PA
- Advancing a sheath to PA than pass a 5-10 mm snare
- Snare the metallic end of a coil
- Retrieve to the sheath

Retrieval of pfm coil

- Technically similar to retrieval of Gianturco coil
- Beware of valve damages

Vascular plug retrieval

- Plug I retrieval is relatively easy because it is very soft
- A long sheath or guiding catheter is required
- Plug II, III, IV

ADO retrieval

- ADO >> PDA, fistula, perimemebranous type VSD, rupture sinus valsalva aneurysm closure.
- Migration of ADO is uncommon
- Retrieval by snaring the screw through a long sheath

ASD septal occluder embolization

- most common serious complication of catheter closure incidence 0.5 5~ 2 %, occurs most common within 24 hr after procedure, may occur several days or months later.

- Management
  * transcutaneous retrieval with a snare or bioptome
  * surgery if percutaneous retieval is not successful

ASD occluder embolization

- the most common complication of ASD closure
- possible reasons for embolization
  * inappropriate device size selection
  * inappropriate device position
  * deficient “important” rims or presence of floppy rim
  * malfunction of screwing mechanism
  * operator related technical issues

Facts about ASD septal occluder retrieval

- transcatheter retrieval of embolized device 16.7%
- surgical retrieval of embolized device 77.2 %
- mortality 2 death

Moore et al. JACC Intervention 2013;433-442

Factors associated with embolization of device

- large defect
- floppy rims
- undersized device
- deficient aortic rim
- overzealous minnesota wiggle
- mobility of device post implant
- physical strain
- Technical issues (improper deployment)

CCI 2005;65:588-92

JACC 2002;39:1061-5

Am H J 2006;151:228-34

Time to embolization

- most common within 24 hrs
- uncommon after 24 hrs
- A report of 4 years after deployment (no endothelialization)

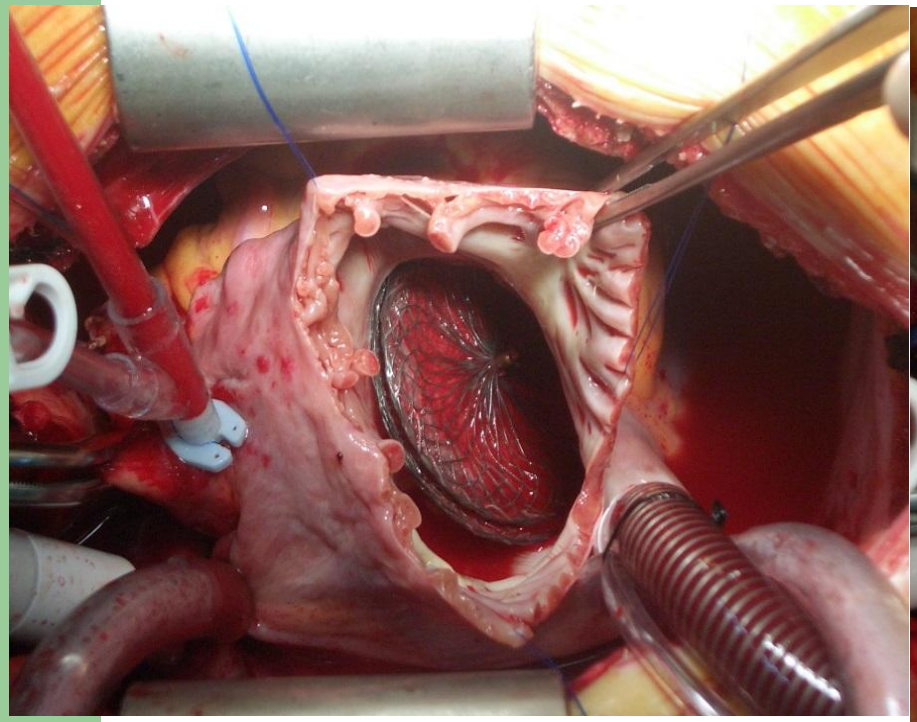
Migration 4 year after deployment

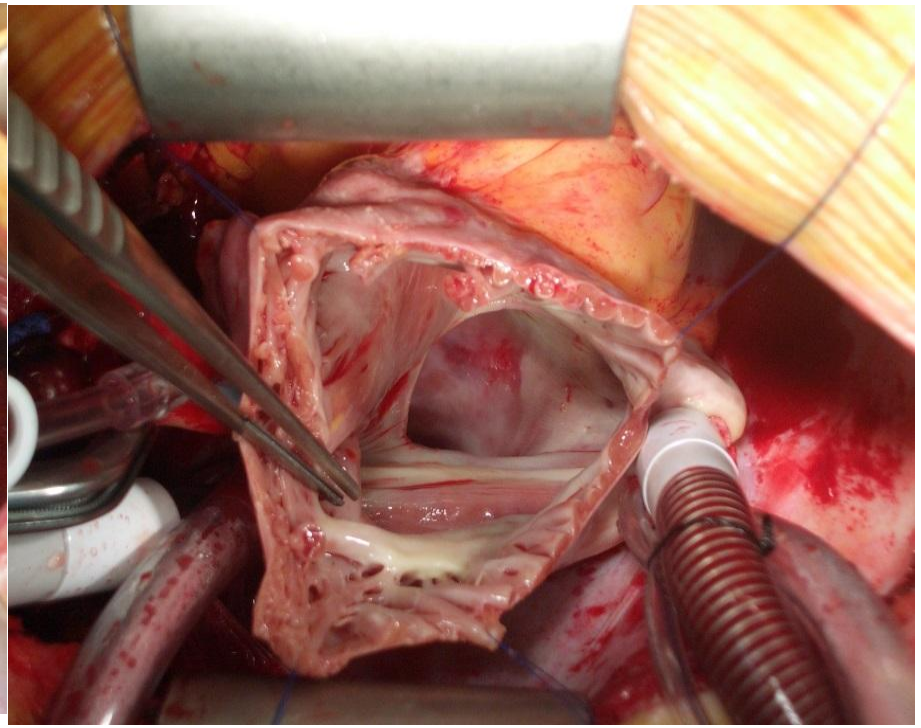
- **Incomplete Endothelialization and Late Dislocation After Implantation of an Amplatzer Septal Occluder Device**

Feng Chen, MD*; Xianxian Zhao, MD*; Xing Zheng, MD; Shaoping Chen, MD; Rongliang Xu, MD; Yongwen Qin, MD

Circulation 2011;124:118

Device dislodged in a child with a large ASD with > 2 rims deficiency





Retrieve the device

- **transcatheter retrieval for smaller devices using goose neck snare or bioptome**
- **Use 1-2 size larger sheath**
- Surgeons stand by

Retrieval of embolized device

- LA, RA, most common, PA or RV
- use a sheath 2 size bigger or beveled sheath
- snare the screw
- Bioptome
- Successful in 70 % cases (AGA proctors)
  (Levi CCI 2004;61:543-7)
- > 26 mm difficult to retrieve emergent OP

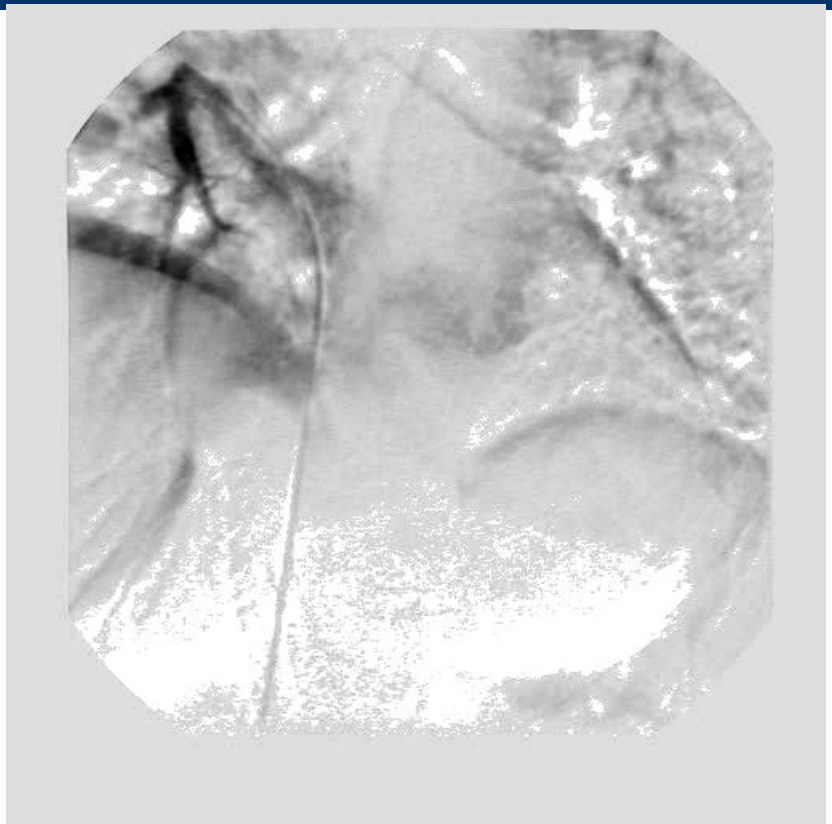
Management of embolization

- Heparinization
- General anesthesia preferred
- Stabilize the device using a bioptome to prevent further migration to AV valves or ventricles.
- call surgeon for arrangement of an emergent operation

Methods of retrieving migrated device (I)

- Use of a larger sheath or beveled sheath
- Advance an end hole catheter to the migrated device
- Snare the device with a snare or bioptome
- Pull the device into the sheath
- A beveled sheath facilitate resheath the disc
- Sometimes IVC or iliac vein can be used as a large sheath

An example of an ASD device retrieval

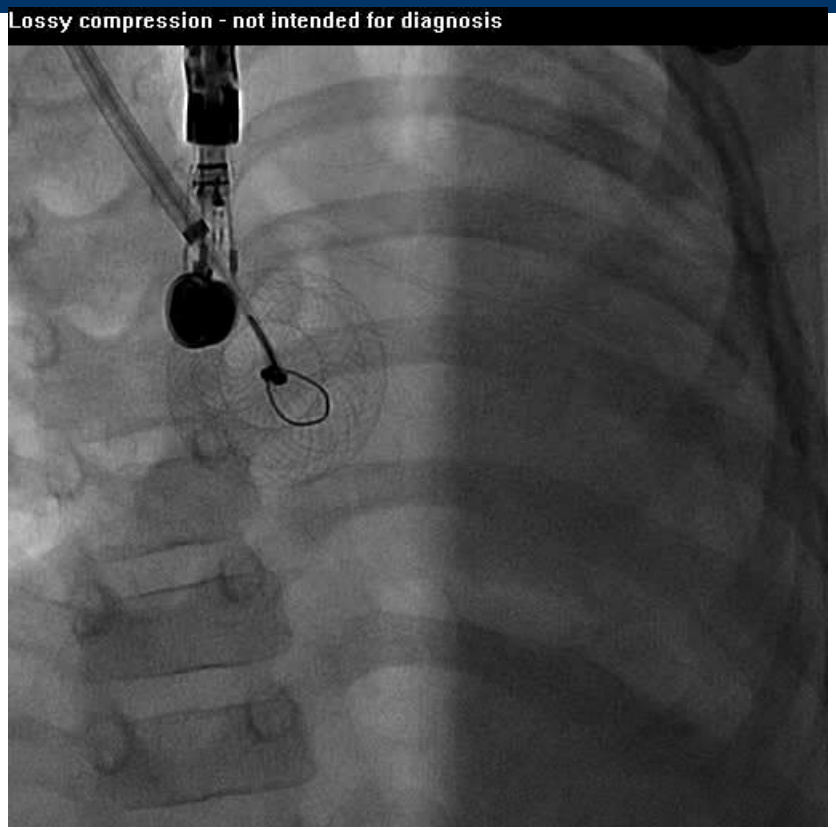


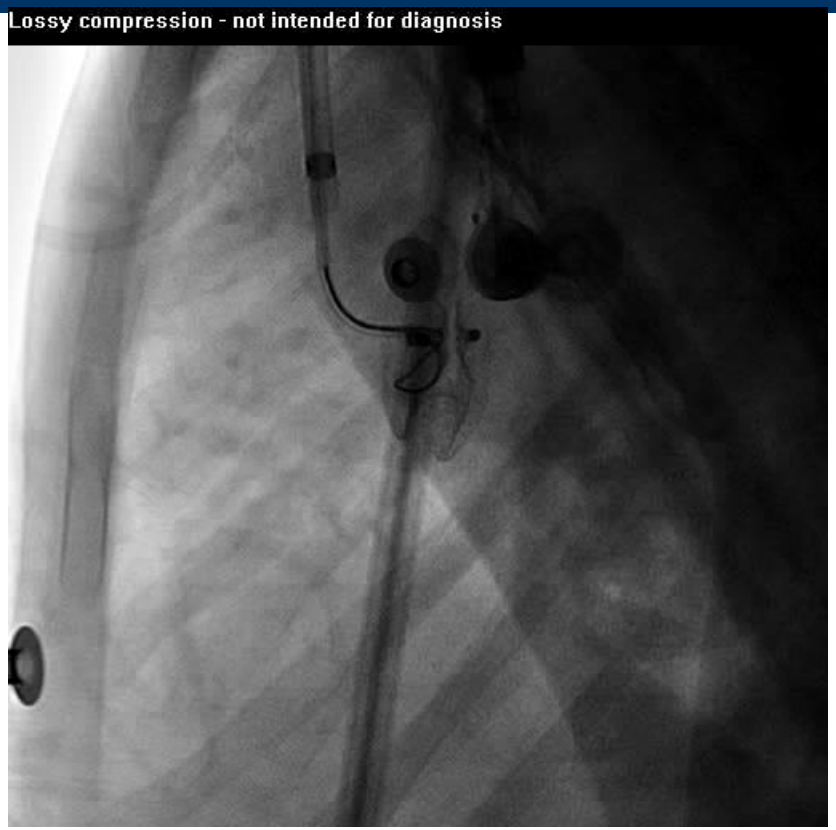
Device embolized to PA

Snare the screw of the device

Snare the device to IVC then using a bioptom

Snare the screw of the device




Lossy compression - not intended for diagnosis


Lossy compression - not intended for diagnosis

Operation after ASD occluder embolization

- The mortality rate of operation for device embolization was several times higher than those of elective surgical repair for ASD
- Retrieve the device to prevent complications

Complications related to retrieval of devices

- Vascular injury
- Valve damages, leaflets, chordae etc
- Tear of cardiac wall
- arrhythmias

conclusions

- Prevention is better than treatment.
- Good stocking of various snares & bioptomes
- Have surgeons stand by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TAIPEI
April 1-4, 2015