ASD Closure with Fenestrated Device

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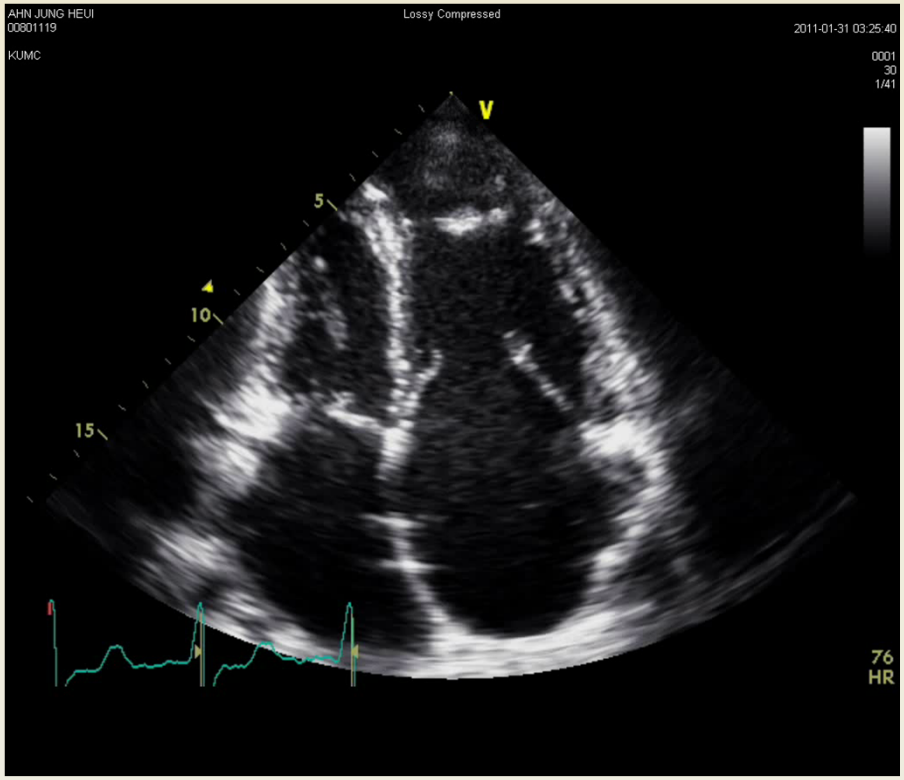
Case 1, M/50

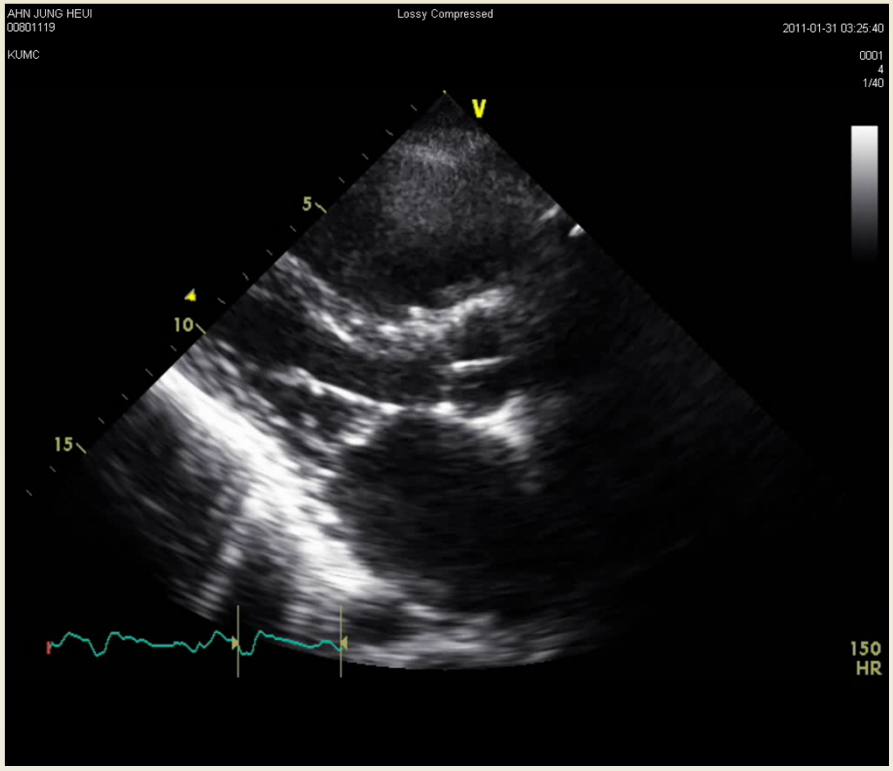
- Large ASD, 31mm
- PA ; 97 // 57 mmHg
- Ao : 140 / 80 mmHg
- Rp : 13.2 WU/m2

=➔ ASD closure by surgery

4 –yrs later

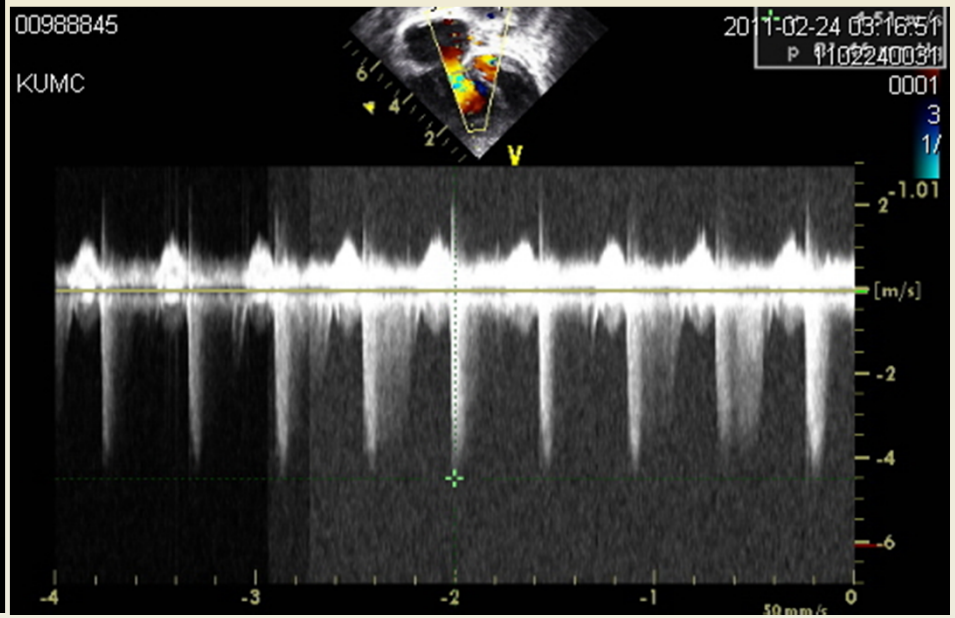
➔Dyspnea, generalized edema





=➔ expired

Case 2, F/12 mon



- Large ASD, 13mm . TR, PG = 80 mmHg

High risk patients

1. ASD with pulmonary hypertension
   (esp. severe PHT)

2. ASD in elderly patients
   (c/s Pul. Hypertension)

Risk of Complete Closure

1 . ASD with PHT

→ pulmonary hypertensive crisis

→ low C.O.

→ significant morbidity or mortality

Risk of Complete Closure

2. ASD in elderly patient

;decreased LV compliance

(LV diastolic dysfunction)

→ High LA pr.

→ pulmonary edema

→ pul Hypertension

→ RV failure…

(Unpredictable Course !!!)

High risk pts
==➔ If, not treated

-→ progression of pul. Hypertension,
Rt heart failure
Arrhythmia…

-→ Life expectancy ; may shortened.

- What do we do in these pts?

  =➔ Whether or not close ?

  =➔ When and How?

Concept of Partial closure

- Consider ASD partial closure
  in high risk patients.
  (borderline patients)
- Partial closure
  → reduction of L→ R shunt
  → decompression in PHT crisis
  in LV dysfunction

(=→ blunt Lt or Rt heart failure !)

Method of Partial closure

- 1. Surgical method
- 2. Intervention

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  → General Anesthesia,
  C-P bypass, transfusion,
  longer procedure time

  ➔ **increased risk of morbidity.**
  (esp. elderly pts)

- 2. Intervention

  =➔ possible to a poor candidate
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Interventional Partial Closure

→ Fenestrated Device

; modified Amplatzer septal occluder

#. Fenestration

→ reduction of L→ R shunt

→ decompression in PHT crisis

in LV dysfunction

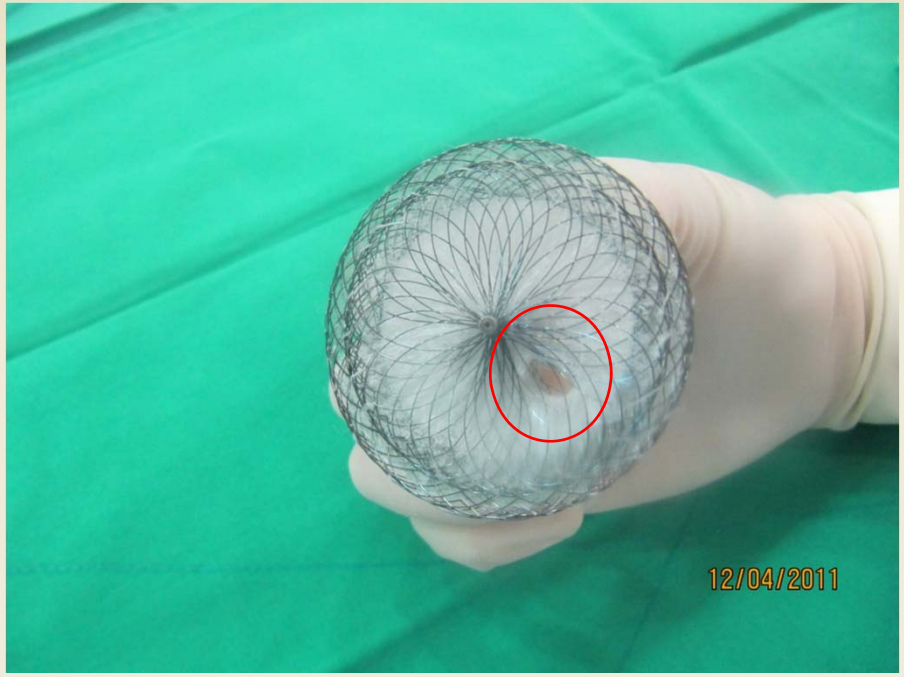
Fenestrated Device

- Self- fabricated device

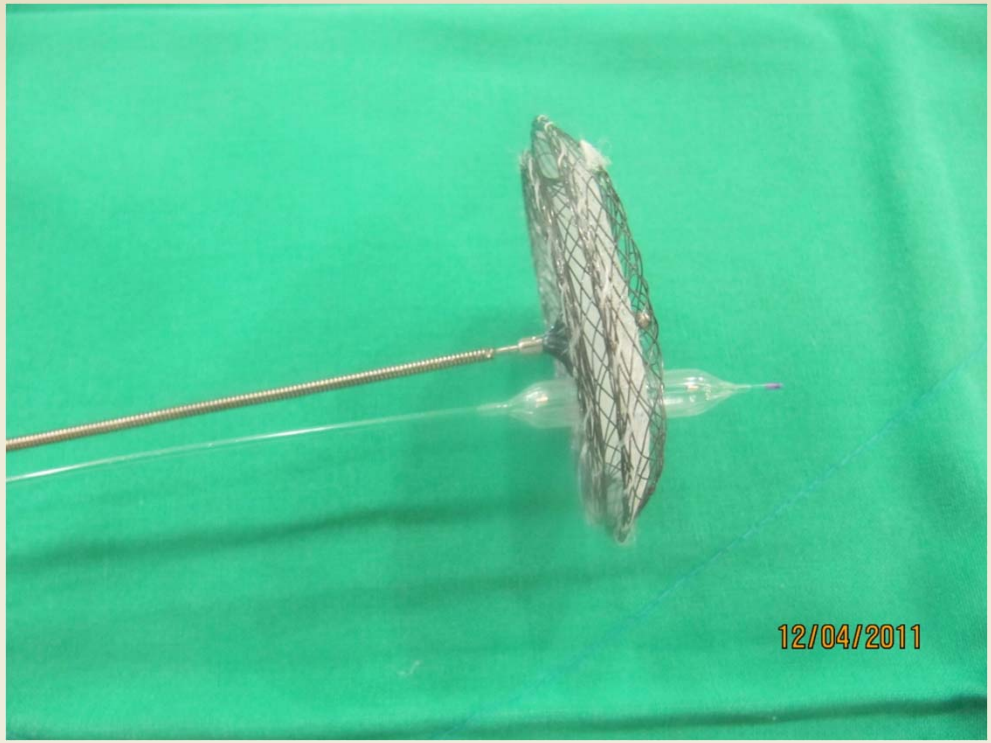
- Custom- made device

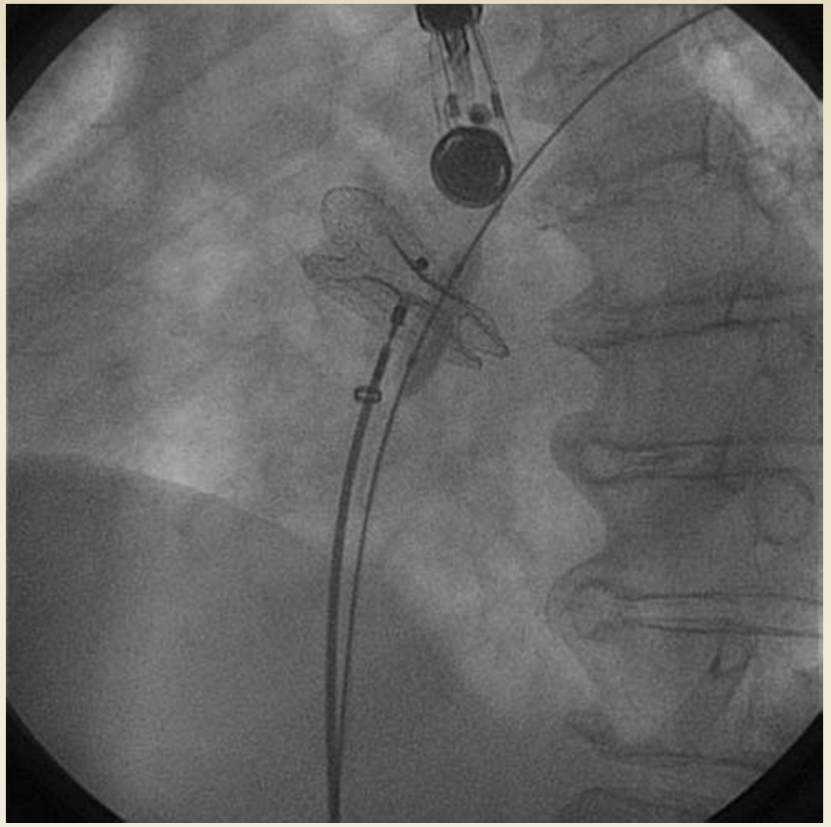
(not approved)

Self- made device

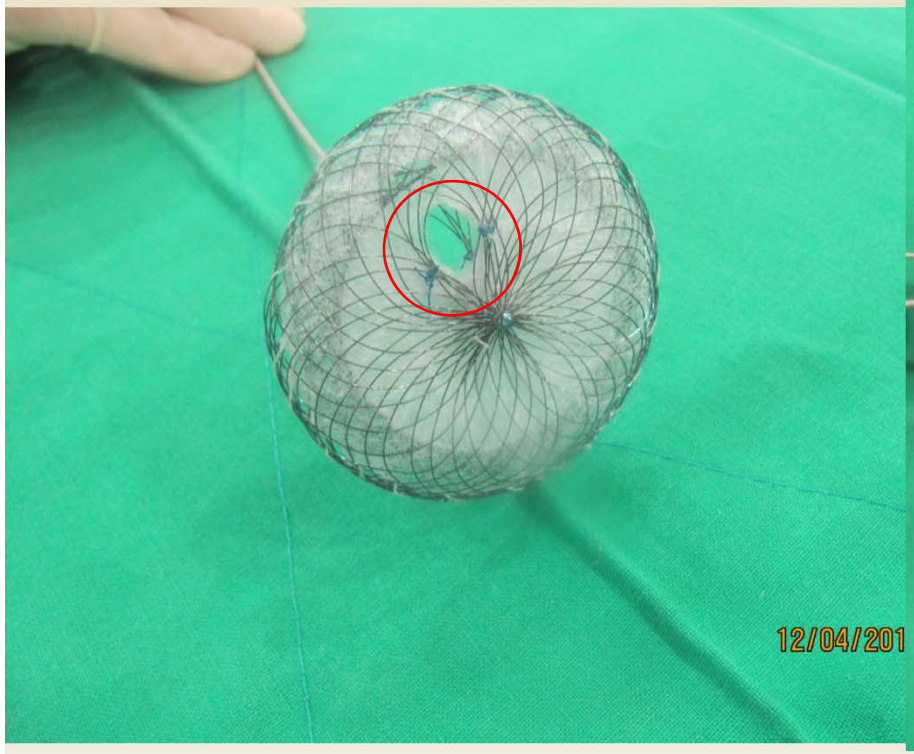


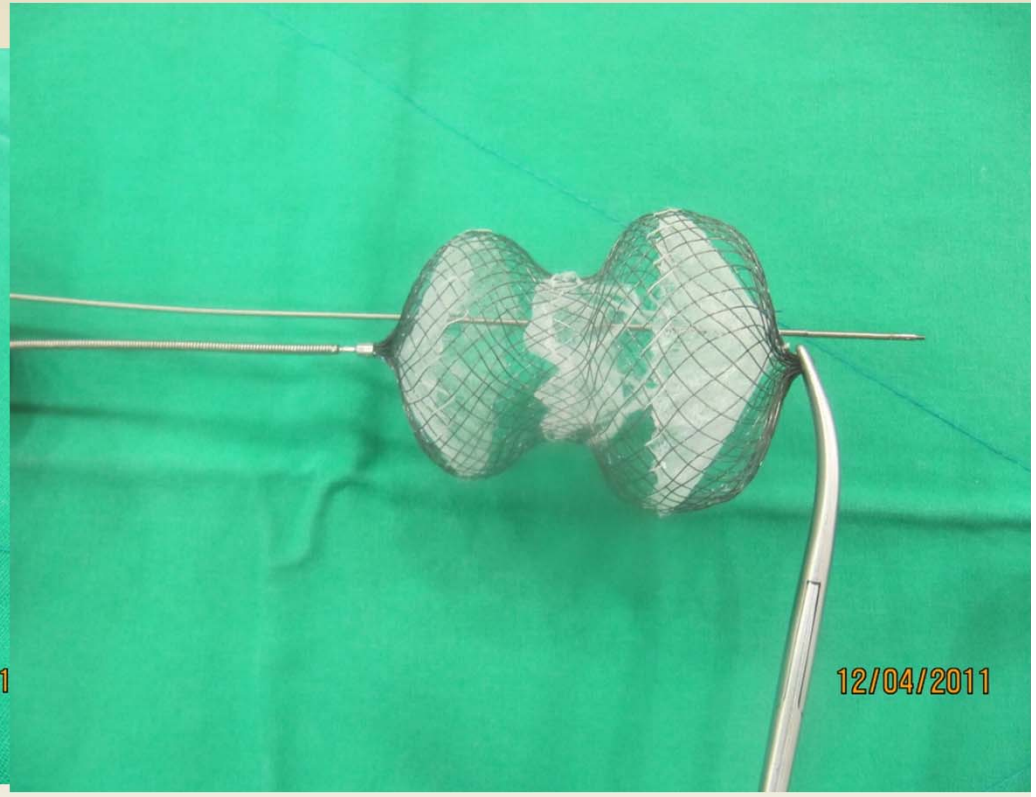
Fenestration by dilator or balloon





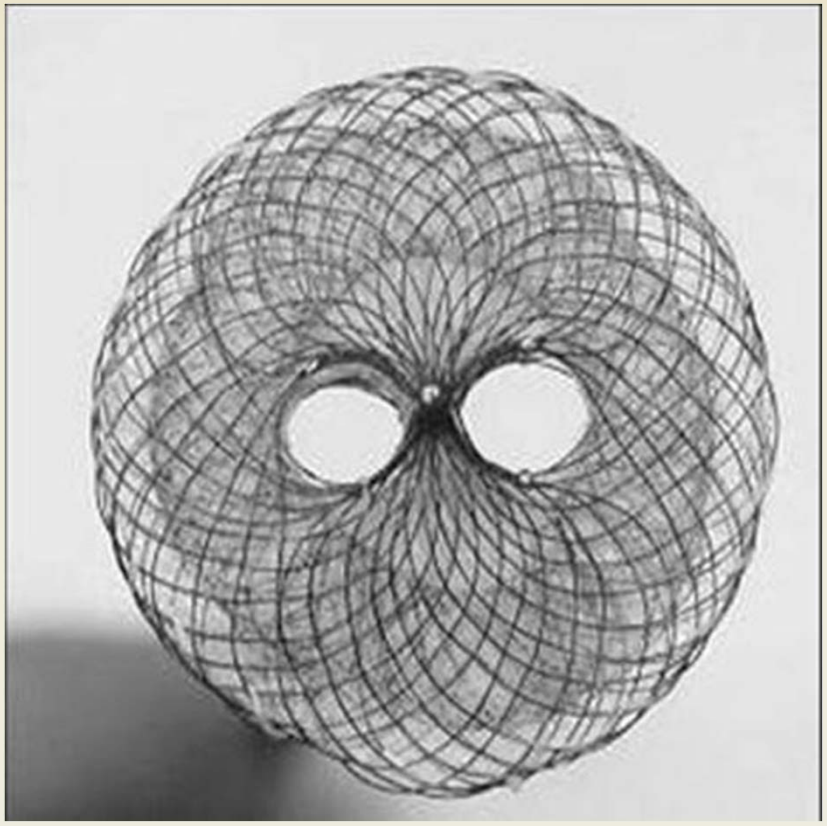
Clin Res Cardiol 95:88-92

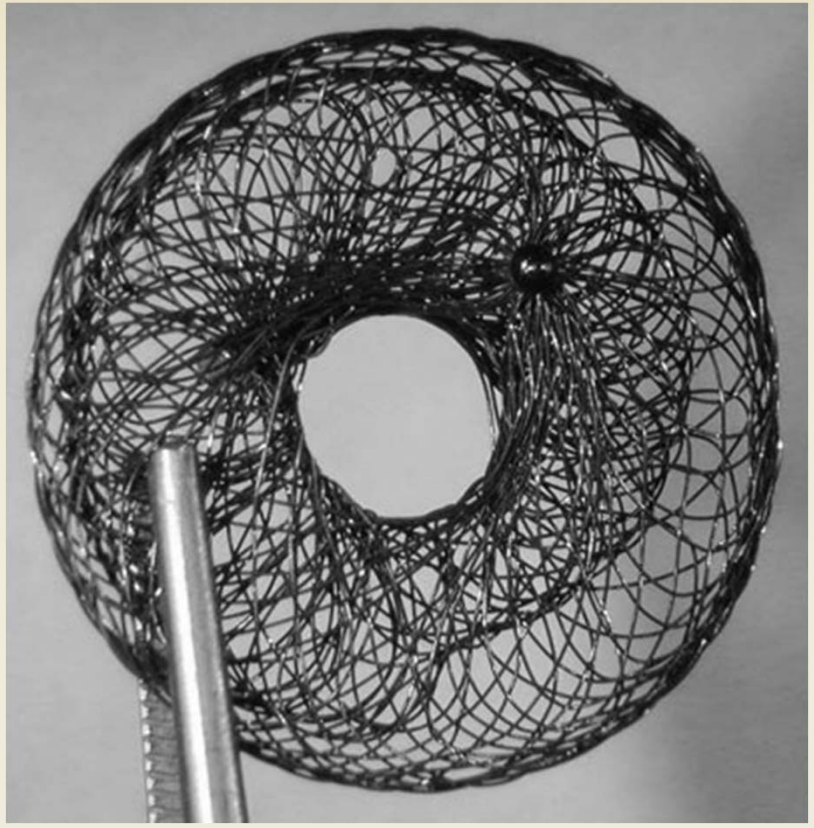




Fenestration by suturing → fixed hole

Custom – made fenestrated device





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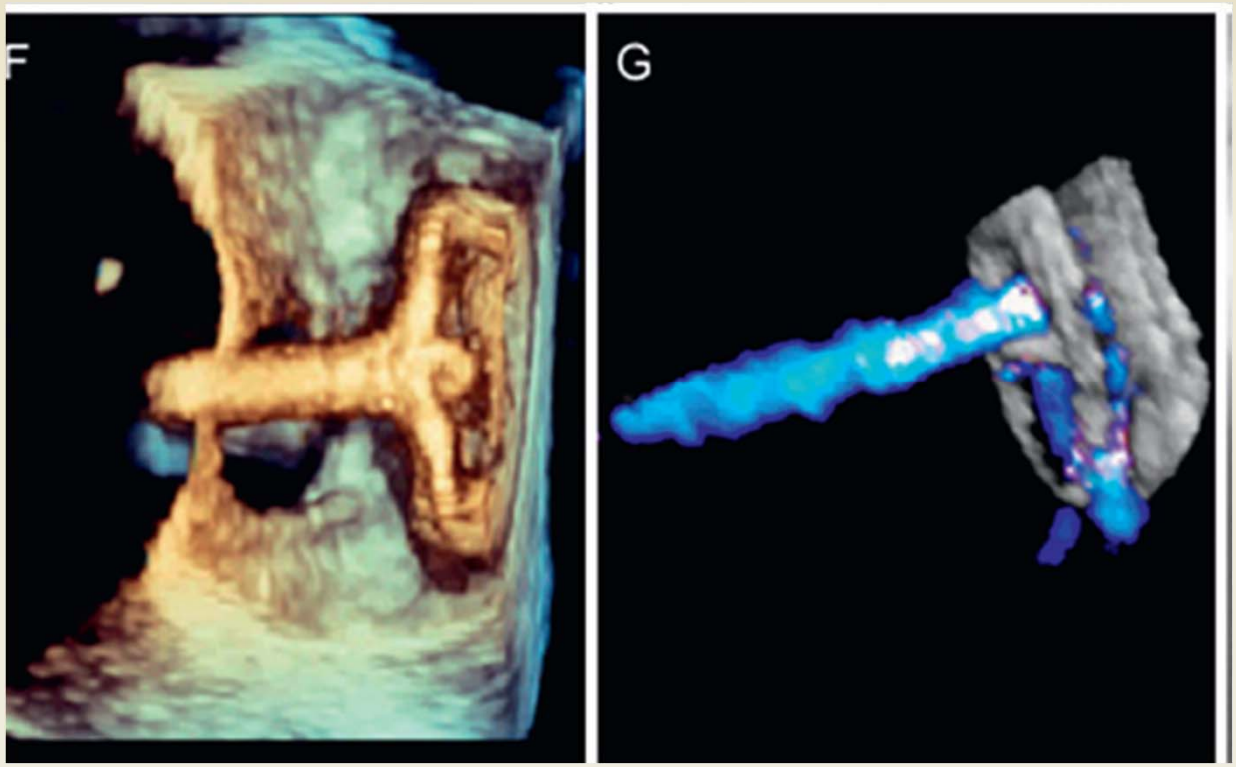

Heart 2011:97;438

Fenestrated Device

- Indication

1. severe pulmonary hypertension
   (except Eisenmenger)

2. might develop PVOD later in life
   (Down synd)

3. Who have progressive pul. Vascular Dz
   (pul. dysplasia, ch. Lung Dz..)

Fenestrated Device

- Indication (elderly pt c Restrictive LV)

: Balloon test occlusion (esp > 60 yrs)

(after LV pre-conditioning Tx)

-→ mLA pr > 10 mmHg or

mLA pr > 3 mmHg 이상 상승

(compared to baseline)

LV Pre-conditioning

- In pt with LV dysfunction (esp. elderly pt)
  ; prior-use of inotropics (Dopa, milrinone)
  Diuretics (Furosemide)
  (for 2-3 days)

→ balloon test occlusion

→ try fenestated device

J Interven Cardiol 2008:44-9

Post- Management

1. Pulmonary vasodilator (Bosentan, sildenafil…)
   for several months or more
2. Re-cath. After 6-12 months.

3. Fate of fenestration
   ; tend to spont. closed (esp. self-made)
   (by tissue in-growth
   thrombosis
   loss of metal shape memory)
   -→ closure of fenestration, if needed.

Given case (M/32)

- Large ASD with pul. Hypertension

  ; 28mm,

  ; MPA pr ; 95 // 70 mmHg

  Rp= 8.2 WU/m2,

  Rp / Rs = 0.33

=➔ lower risk of restrictive LV

high risk of pul. Hypertension.

➔ ***Rec) Partial closure by fenestrated device***

Conclusions

- Fenestrated device can be a feasible and effective option in pts with significant PAH and restrictive LV physiology.

- However, further studies are needed to justify the closure of ASD in high risk patients using the fenestrated device.

Introduction

- Device closure of ASD
  ; safe & effective procedure.

  -> becoming alternative to surgery.
  =➔ more popular procedures

ASD device closure

- Performed from child
  to elderly patients

- Widely performed from low risk pt
  to high risk pts.