VSD closure
Intra-procedural Guidance

Azza El Fiky  MD,
Professor of Cardiology
Structural and congenital heart disease unit
Ain shams university

CardioEgypt 2018

VSD

• The most frequent types of congenital malformations

• A VSD is the most frequent of the various types of CHD
  (25%-30% of all CHD).

• Approximately one infant in 500 will be born with a VSD
• Standard treatment for VSD is open surgery, which is widely performed with minimal operative mortality but still carries risks, such as

- complete atrioventricular block (cAVB),
- residual shunt,
- post pericardiotomy syndrome,
- wound infection,
The inclusion criteria

• (i) congenital VSD as shown by echocardiography
• (ii) body weight >10 kg and age >2 years
• (iii) maximum VSD diameter <20 mm by TTE
• (iv) a distance of >1 mm from the pmVSD to the aortic valve
• (v) left-to-right shunt
• (vi) calculated pulmonary vascular resistance <8 Wood units.

• X severe aortic regurgitation
• X severe aortic valve prolapse

Intra-procedural guidance:

• Aim:
  • Anticipation and avoidance of complication
  • Ensure safety of the patient
  • Choice of the best device type and size for the intended defect
Intra-procedural guidance:

- Guidance can be done intra-procedural:
- Electrically by the ECG,
- Hemodynamically by the pressure waves tracing and Oxygen saturation
- Imaging (TTE, TEE, 3D or ICE)

Echocardiography guidance

- TTE
- TEE under general anesthesia to define number, location, relation to adjoining structures (chordae, papillary muscles & AV valves)
Three D

echocardiography permits projection of an en face view of the VSD from which accurate sizing can be performed irrespective of the shape or location of the defect and independent of pre-defined angles of insonation. VSDs may often have unusual or irregular shapes and the 3D technique has the ability to display such morphology and assist in selection of suitable device
Procedure – LV angiogram

• Perimembranous defects:
  
• the long axial oblique (LAO 60 degrees/15 degrees cranial) view is the best to profile such defects

• Size of aneurysm
  • No of fenestrations [largest hole, most central hole]
  • Distance from aortic valve

Procedure – LV angiogram

• Muscular defects

• Perimembranous ventricular septal defects
• The femoral vein access is helpful in anterior and Perimembranous VSD

• The right internal jugular access is especially helpful in patients with a mid, posterior and muscular VSD.
The most common complications associated with transcatheter pmVSD closure were heart rhythm disturbances (58 of 103)
A 30 month old girl
Under weight
Easy fatigability
However, we believe that it is crucial to review prior echocardiographic imaging and other diagnostic studies for their adequacy and completeness.
Intra cardiac echocardiography

Take home message

• Take your time before you start
• Rhythm monitoring is mandatory
• Echo (by its modalities) guidance is the secret of successful procedures.
• The formation of a loop is a crucial part of the procedure.
Thank you