Follow-Up for Common Congenital Heart Defects: Surgical

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Follow-Up

Who?

Why?

When?

Who to follow-up with?

* This talk will contain biases!
Simple CHD Mortality

- An interesting study from Denmark looked at children with simple CHD diagnosed between 1963 and 1973 and followed 1,241 patients until 2012.
- Syndromic patients and those with other co-morbidities were excluded.
- Incidence of heart disease was 1.3/1000 Danes.
- 2 Fold higher risk of death found in those patients.
Follow-up With Whom?

• For the pediatric patient the patient should be seen by us.
• The adult patient, other then those with aortic valve disease, ideally should be seen by a cardiologist with a specialty in adults with congenital heart disease.
• In most places, this service is not available, so would stick with a pediatric cardiologist.
M. D.

- Patient had a sinus venosus atrial septal defect with partial anomalous venous return repaired at age 3. Hemodynamics excellent.
- 24 hour ECG monitor at age 11 showed one 2 second pause. 24 hour ECG monitor at age 18, 20 showed many pauses greater then 3 seconds. On a treadmill M. D. had low peak HR.
> 3 Sec Pause
M. D.

• Pacemaker placed when patient 21 years old to augment baseline heart rate. One follow-up visit soon after pacemaker placed.

• Next follow-up 4 years later. Patient reports that he did not know he needed follow-up.

• ? Barrier to follow-up. Patient is college-educated with no language barrier.
Angio of PDA
Device Closure of PDA
PDA Closed With Device
Figure 3 – Ductus arteriosus type A with a 2.8 mm diameter at the pulmonary extremity. An 8 mm Amplatzer® Vascular Plug II device was successfully employed. In A, initial aortography in left view. In B, control aortography showing the device well positioned within the ductus, with two discs inside the aortic ampulla and with no residual flow.
Patent Ductus Arteriosus

- In the patient with small PDA, without signs of PAH or left heart volume overload, follow-up is recommended every 3-5 years.
- In the patient with ligated or coil embolized PDA no follow-up is recommended after closure documented by echocardiogram.
- For the patient who had a PDA closed with device follow-up is recommended every 5 years.
Atrial septal defect locations

- Superior sinus venosus defect
- Primum atrial septal defect
- Secundum atrial septal defect
- Inferior sinus venosus defect
- Coronary sinus defect
ASD

• Discussion limited today to the patient with a Patent Foramen Ovale or Secundum ASD.

• Other ASD types (AVSD, sinus venosus) more likely to have sequelae related to rhythms or associated valve disease after repair.

• For small ASD (less then 5 mm) not closed, follow-up every 2-3 years.

• Device closed ASD/PFO F/U is periodic after year 1.
ASD

- Device closure is procedure of choice for Secundum ASD/PFO without complications.
- There is a risk of device erosion, which incites anxiety in the practitioners.
- Surgically closed ASD’s do not need as frequent follow-up unless the closure was as an adult, or co-morbidities (PAH, arrhythmias) exist.
ASD Device Closure

ASD device closure: Is it as simple as it looks?

Step 1

Step 2

Step 3

Step 4
Why Not Follow PFO

• Considered by most cardiologists to be a normal finding with an occurrence in 20-25% of population.
• Cryptogenic strokes do not appear to occur more frequently in this group.
• Data suggesting migraines ameliorated by PFO closure is not there.
• For the anxious follow-up can amp anxiety.
TYPES OF VENTRICULAR SEPTAL DEFECTS

TYPE 1: (1) subarterial valve; defect in the left ventricular outflow tract just below the aortic valve (conal, subpul, infundibular, supracristal, doubly committed) (4) outlet

TYPE 2: (2) perimembranous defect, membranous septum (yellow, white, and blue dashed circumference for outlet, trabecular and inlet subtype)

TYPE 3: (3) inlet or atrioventricular defect, which lies inferior to the septal leaflet of the tricuspid valve; and (5) inlet and apical

TYPE 4: (6) muscular defects, which are entirely bounded by the muscular septum and are often multiple
Atrioventricular Septal Defect
PM VSD locations from Above
VSD Locations
Parasternal (Side) View of PM VSD
Supracristal PM VSD
VSD

• Only simple VSD will be discussed (not VSD associated with AVSD)

• Small residual VSD after surgery or unoperated VSD should have follow-up every 3-5 years.

• Device closure VSD follow up every 1-2 years.

• Reason for follow-up is to assess for other lesions that may develop; double-chamber RV, AI and sub-AS.
Double-Chambered RV/Sub-AS.

• A double-chambered RV is when accessory muscle tissue develops in the mid-RV cavity and causes obstruction.
• This and subaortic membrane development can occur with or without VSD closure.
• VSD follow-up recommended every 3-5 years for this reason.
Double-Chambered RV
Double-Chambered RV
VSD and AI

• AI is not an infrequent finding in a perimembranous VSD, and most common in the supracristal subtype.
• AI is related to prolapse of aortic cusp into VSD.
• Even “normal” aortic valves have discrepant leaflet size, and the non-coronary and right coronary are larger; these are closest to VSD locations. With prolapse 50% have AI.