

A practical approach to holes in the heart: When not to close

"I have a hole in my heart and they're doing nothing about it!"

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Adult Congenital Heart Disease

Echocardiography

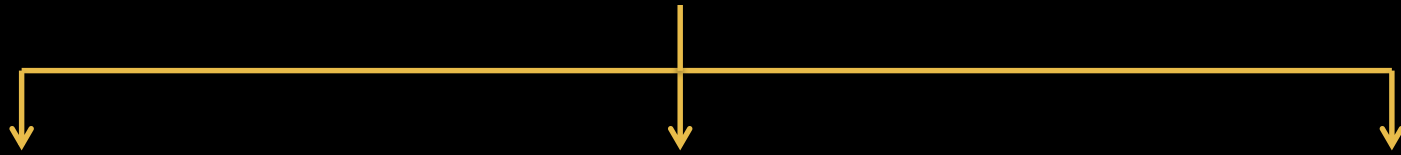
Maternal Cardiology

September 2019

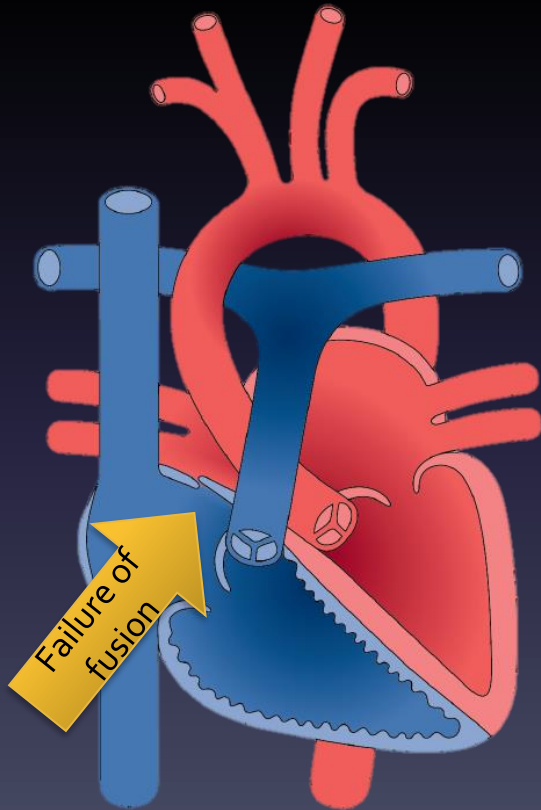
Objectives

- List the common “holes in the heart”
- Describe basic indications for closure
- Describe when observation alone is indicated for
 - PFO
 - ASD
 - VSD

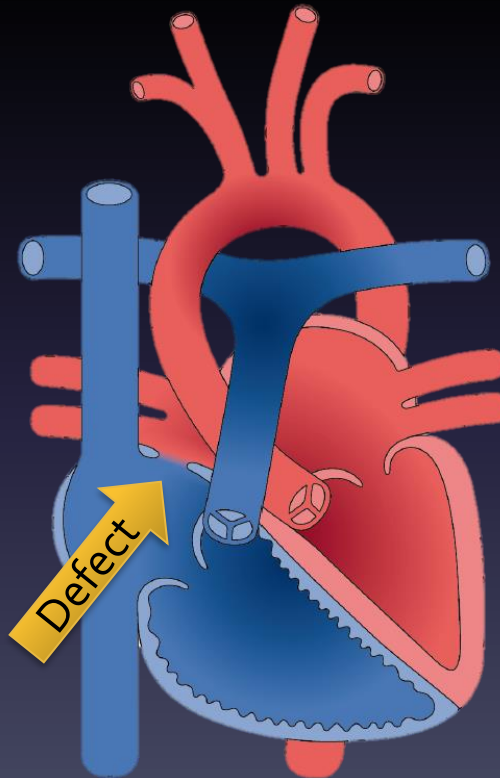
Types of holes



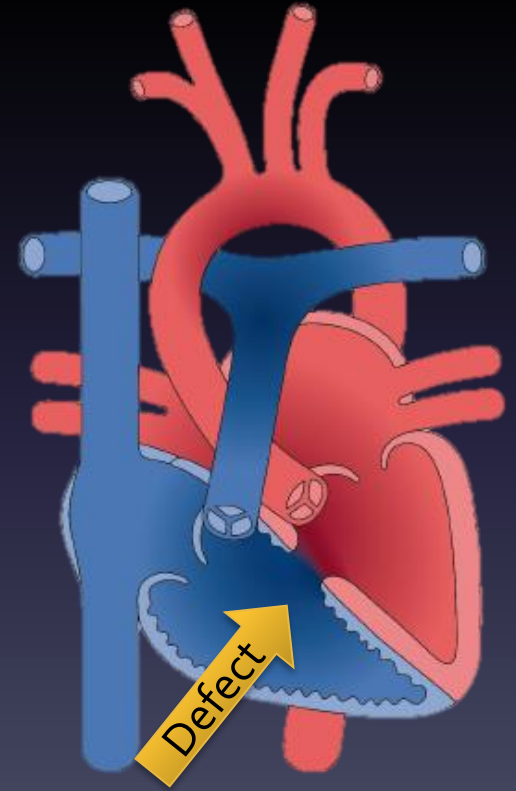
Patent Foramen Ovale
(PFO)



Atrial Level
(ASD)



Ventricular septal
(VSD)



General Indications for Closure

- “Hemodynamically significant”
 - Cardiac chamber dilation
 - Shunt fraction > 1.5:1
- Absence of severe pulmonary hypertension

Also done if:

- Stroke
- Hypoxia

Ms. Singh

45 year old female with SOB

- Normal vitals and physical exam
- Mild 2/6 systolic murmur

Ms. Singh

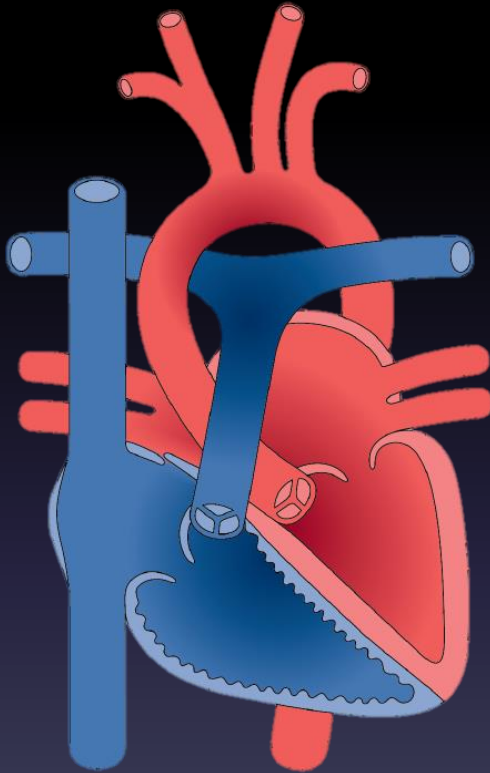
Echo ordered for work up:

- Normal bi-ventricular size and systolic function
- Aortic valve sclerosis
- “PFO with left to right shunt”

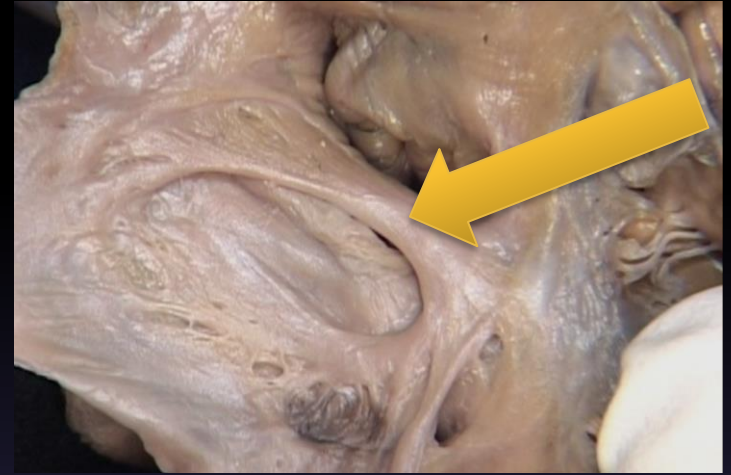
PFO

1. What is it?
2. How common is it?
3. When should we close a PFO?
4. If we don't close it, do I need to follow this?

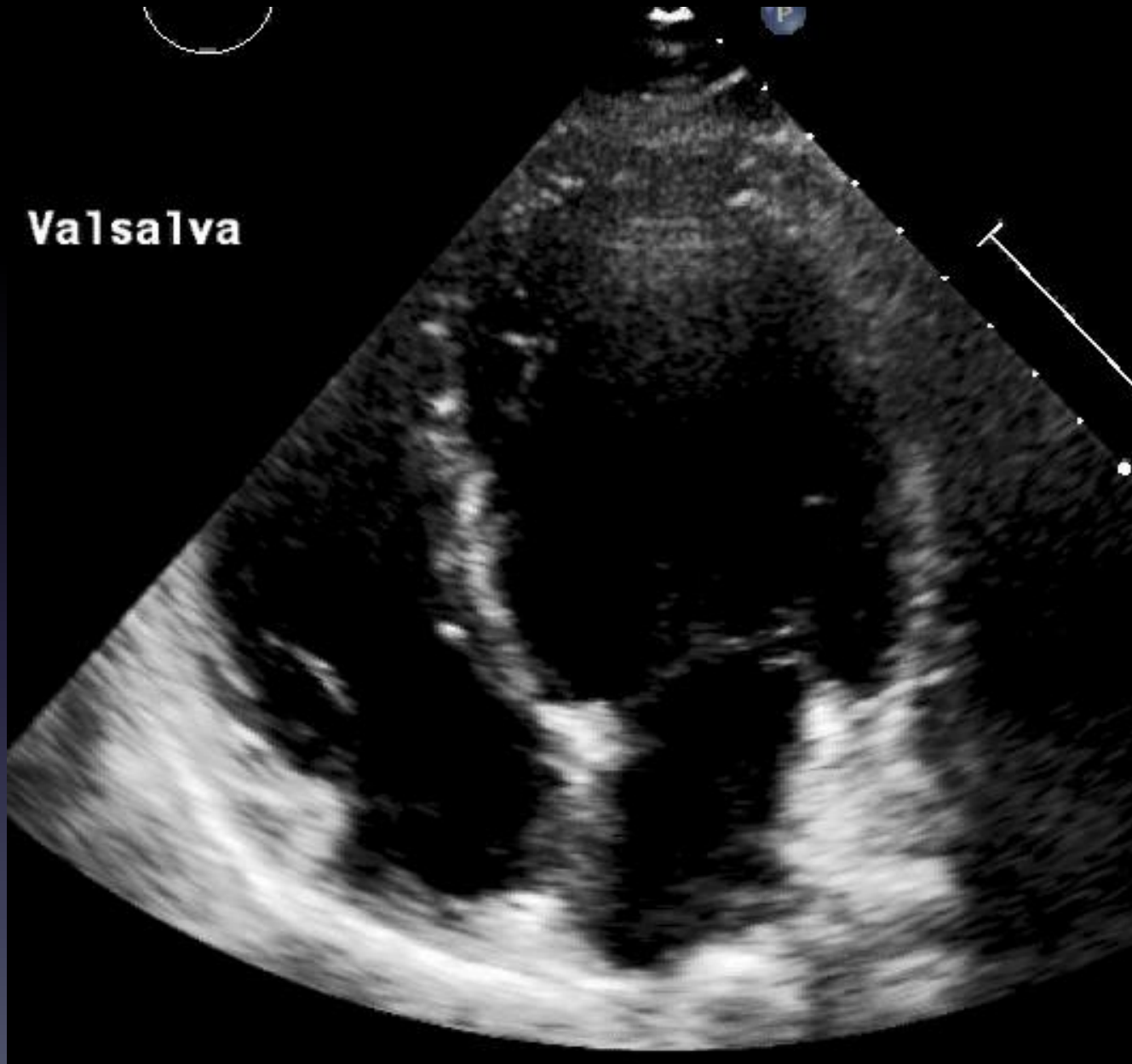
Patent Foramen Ovale



25% of population



Agitated saline contrast "Bubble" study



PFO

When to consider closing

1. Cryptogenic stroke
2. Paradoxical stroke
3. Orthodeoxia/platypnea
4. ?SCUBA

When NOT to close

- Asymptomatic

PFO

- Follow up:
 - If asymptomatic from PFO → None

PFO Summary

1. What is it?
 - Persistence of normal fetal structure
2. How common is it?
 - 25% of the population
3. When should we close a PFO?
 - Consideration if cryptogenic/paradoxical stroke
 - “Orthodeoxia”
4. If we don't close it, do I need to follow this?
 - Not usually

My advice to Ms. Singh

Asymptomatic PFO:

- Does not need to be closed
- General follow up with family MD
- No routine cardiology follow up or echo required

Mr. Smith

76 year old male with recent NSTEMI

- Normal vitals
- 2/6 systolic murmur

Mr. Smith

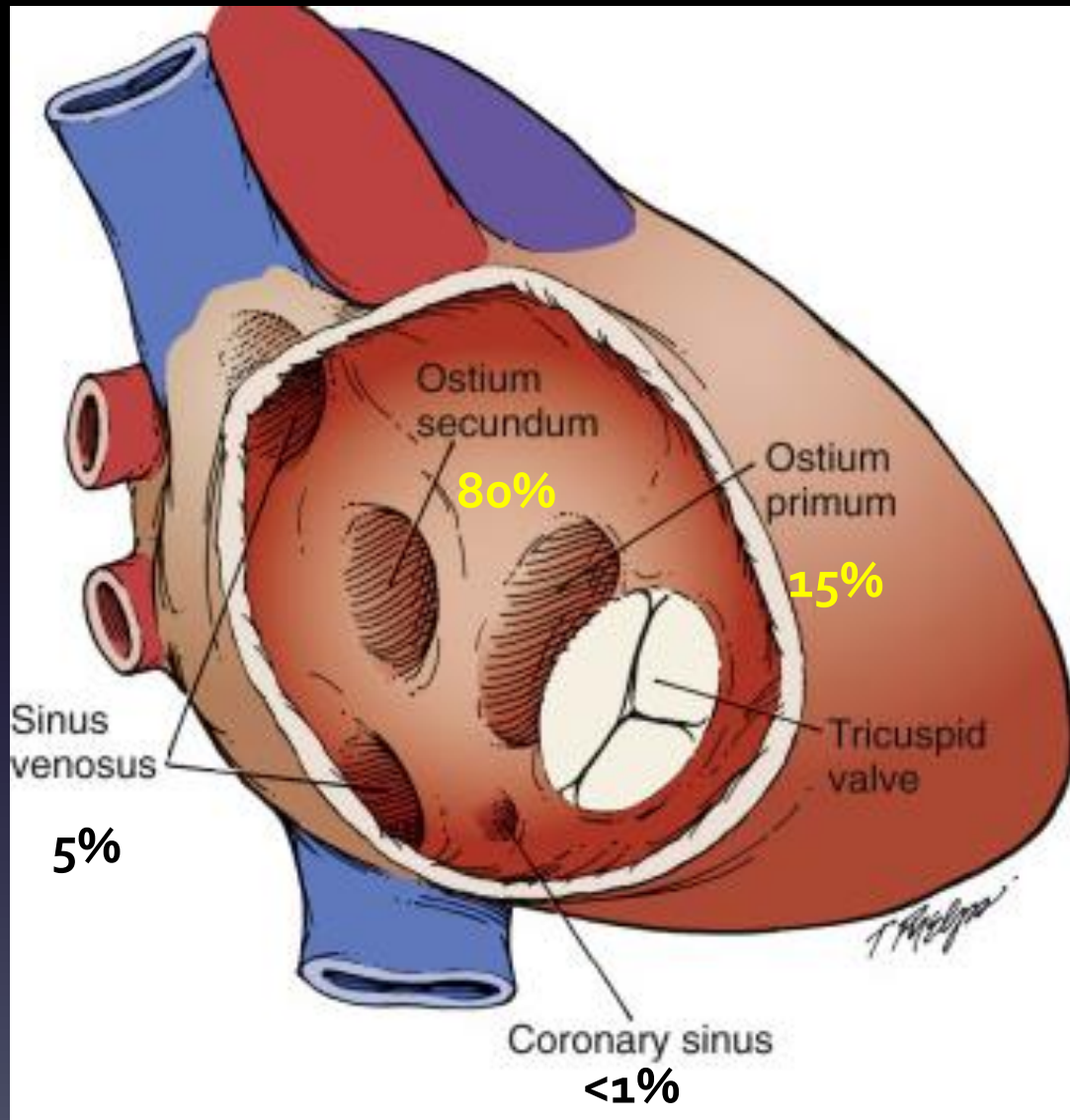
Echo ordered:

- Normal bi-ventricular size, LVEF 50%
- Mild MR
- Small ASD with continuous left to right shunt

Atrial septal/level defects

1. What are they?
2. How common are they?
3. When should we close an ASD?
4. If we don't close it, do I need to follow this?

Atrial Septal/Level Defect



Atrial septal/level defects

- Less than 1% of the general population
- Most common congenital heart defect in adults
 - 21%

Atrial septal/level defects

When to consider closing

- Symptoms + RV dilation
- Progressive RV dilation
- Paradoxical stroke
- ?pacemaker

When NOT to close

- Asymptomatic
 - Small ASD
 - Normal RV size
- Severe pulmonary HTN

Atrial septal/level defects

All ACHD patients should be seen at least once by ACHD Cardiologist.

- F/U family MD → reasonable q 1 y symptoms
- F/U cardiology (+ echo):
 - If asymptomatic and normal RV size → 3-5 years
 - If symptoms or RV enlargement → every 1 year

Atrial septal/level defects

1. What are they?
 - True defect in atrial tissue (4 types)
2. How common are they?
 - Most common adult congenital lesion
3. When should we close an ASD?
 - RV enlargement, symptoms
4. If we don't' close it , do I need to follow this?
 - YES!
 - Assess for symptoms, intermittent Cardiology follow up

My advice to Mr. Smith

Asymptomatic, small ASD, no chamber dilation:

- Does not need to be closed now
- Excellent dental hygiene
- Routine follow up with family MD
- Follow up Cardiology + echo in 3 years

Mr. Lee

20 year old male with murmur since childhood

- Normal vitals
- 3/6 holo-systolic murmur

Mr. Lee

Echo ordered:

- Normal bi-ventricular size, LVEF >60%
- No valve lesions
- Peri-membranous VSD with left to right shunt
 - Gradient across the VSD of 90 mmHg

Ventricular septal defects

What are they?

How common are they?

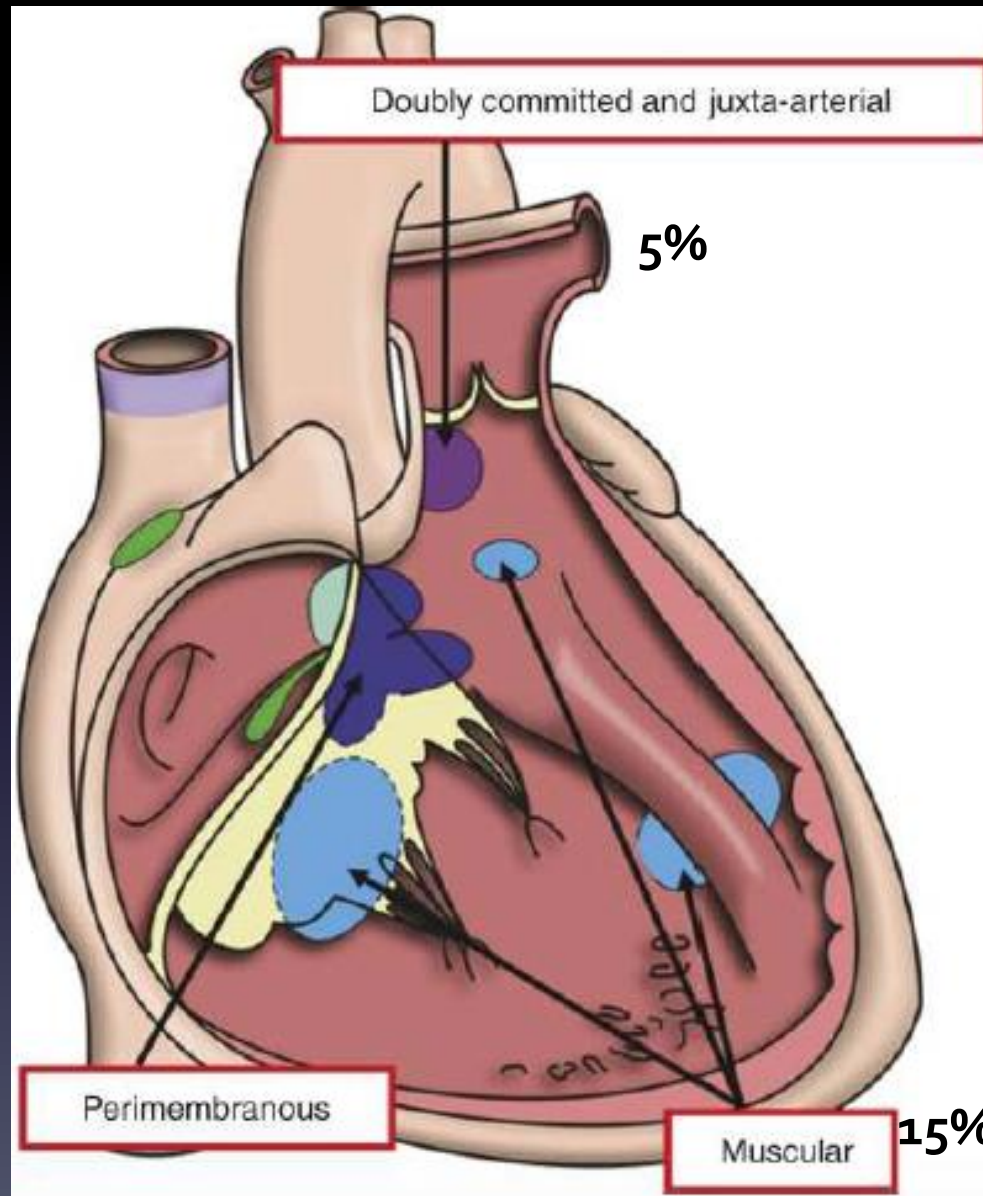
When should we close an VSD?

If we don't close it, do I need to follow this?

Ventricular septal defects

- Less than 1% of the general population
- Second most common congenital heart defect in adults
 - 20%

Ventricular Septal defects



Ventricular septal defects

When to consider closing

- Symptoms + LV dilation
- Progressive LV dilation
- Progressive AI
- Prior endocarditis

When NOT to close

- Asymptomatic
 - Small “restrictive” VSD
 - Normal LV size
 - No AI
- Severe pulmonary HTN

Ventricular septal defects

All ACHD patients should be seen at least once by ACHD Cardiologist.

- F/U family MD → reasonable q 1-2 y symptoms
- F/U cardiology (+ echo):
 - If asymptomatic and normal LV size → 3 years
 - If symptoms or LV enlargement → every 1 year

Ventricular septal defects

1. What are they?
 - True defect in ventricular septal tissue (3 types)
2. How common are they?
 - Second most common adult congenital heart lesion
3. When should we close an VSD?
 - LV enlargement, symptoms (AI, endocarditis)
4. If we don't' close it , do I need to follow this?
 - YES!
 - Assess for symptoms, intermittent Cardiology follow up

My advice to Mr. Lee

Asymptomatic, small VSD, no chamber dilation:

- Does not need to be closed now
- Excellent dental hygiene
- Routine follow up with family MD
- Interval follow up with Cardiology + echo in 3 years

Who to ask?

- **All** patients with congenital heart disease should be seen at least once by a congenital Cardiologist.
- Shared model of care for many “simple” lesions

Summary

"I have a hole in my heart and they're doing nothing about it!"

Sometimes "doing nothing" is
actually doing something
important