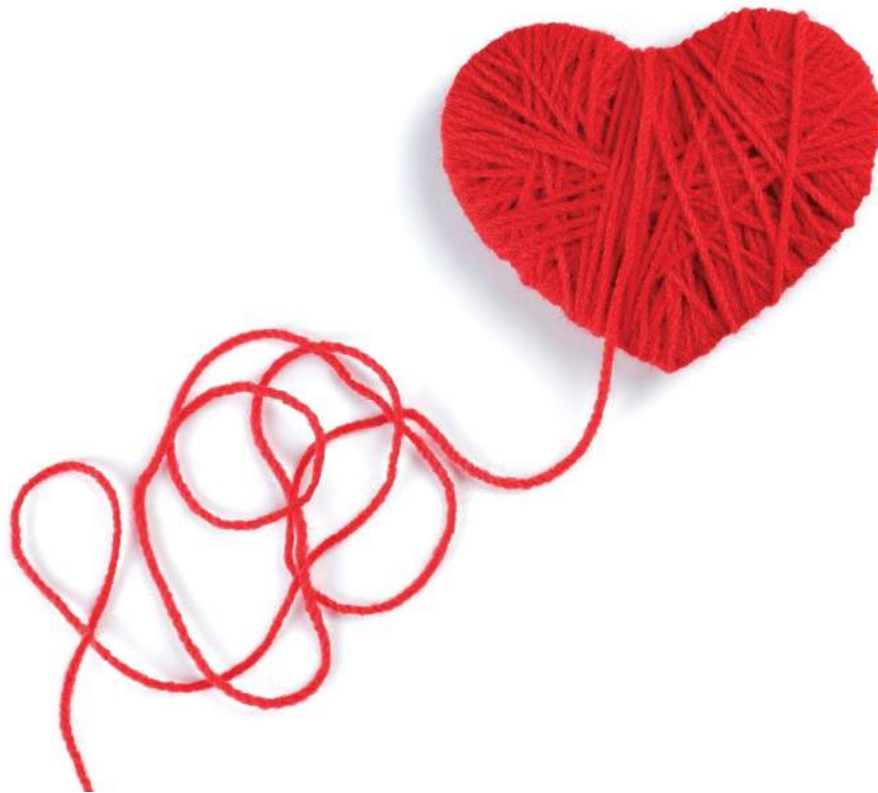


HEART BLOCKED

Case Study: VSD Repair Complications

Jarae Payne MSN, CPNP-AC, CCRN
February 25, 2023



DISCLOSURES

- None

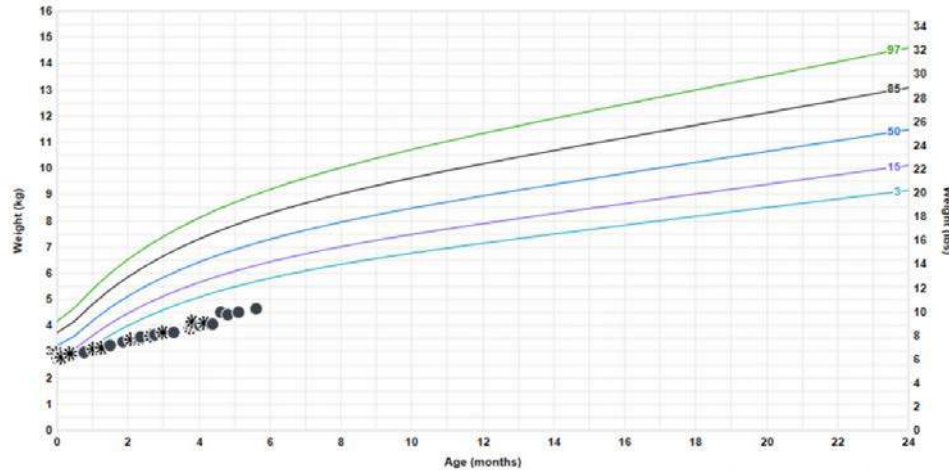
OBJECTIVES

- Describe Atrial and Ventricular Septal Defects (ASD & VSD)
- Utilize patient case to describe common preoperative management
- Discuss postoperative complications
- Recognize types of heart block
- Identify pacing nomenclature

PATIENT CASE

HPI: 4-month-old (F), large secundum ASD & large conoventricular VSD with FTT presenting for surgical repair

- **Echo:** both defects primarily shunting L→R with normal function
- **Preoperative medications:** Digoxin, Lasix & Famotidine

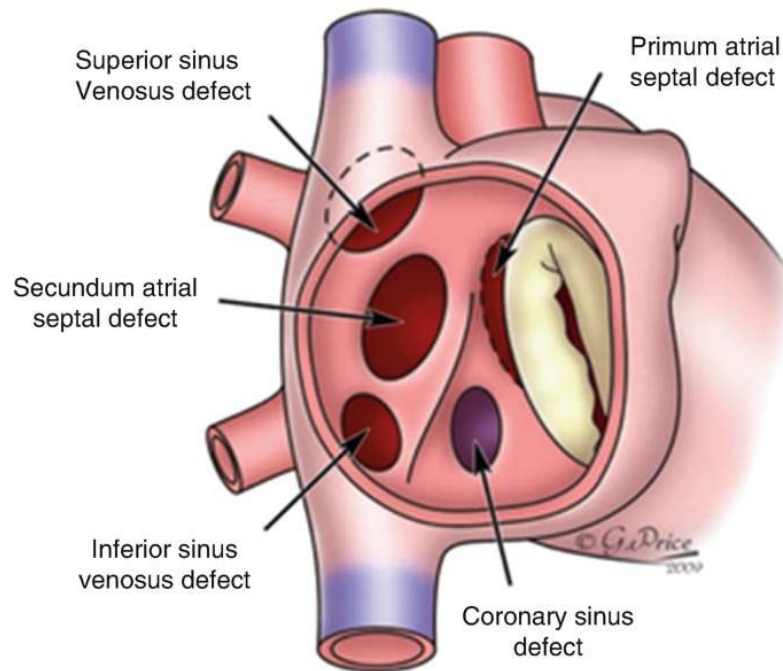


PATIENT CASE: REVIEW OF SYSTEMS

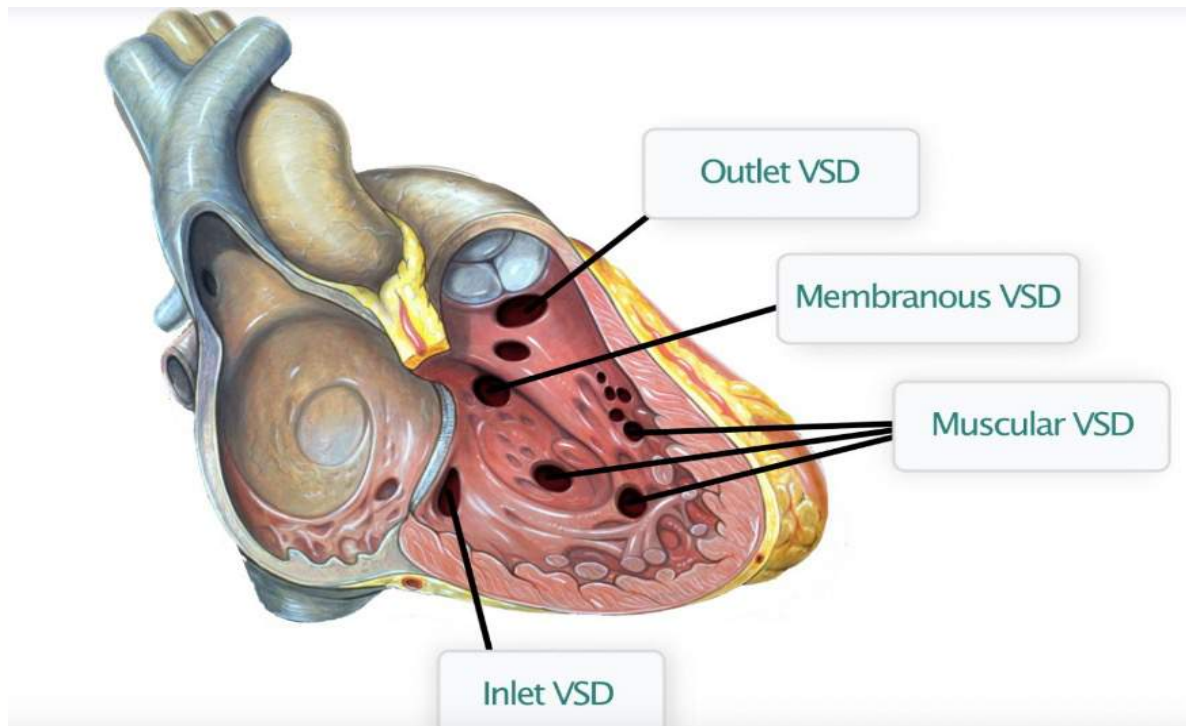
- **CV: CHF, diaphoretic** with and without feeds
- **Resp: tachypnea, mild subcostal retractions**
- **FEN/GI:** PO+NG tube feeds fortified to **27 kcal** 80ml every 3 hours, primarily all NG, GERD
- **ID:** one month ago, presented to OSH with rhinovirus and enterovirus
- **Social:** lives with mom, dad and two older siblings



ATRIAL SEPTAL DEFECTS



VENTRICULAR SEPTAL DEFECTS



SURGICAL APPROACH

ASD

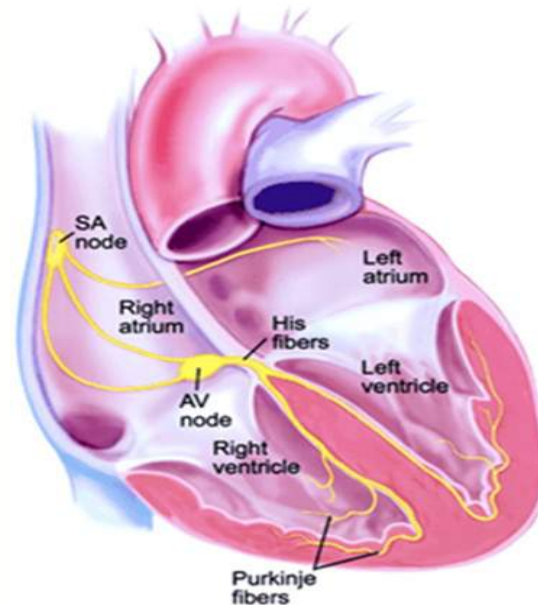
- Primary: suture closure
- Patch closure: **autologous pericardium** or synthetic material

VSD

- Primary: pledgeted suture closure
- Patch closure: autologous pericardium or **synthetic material**
- Approach via right atriotomy, +/- tricuspid valve detachment, ventriculotomy
 - **Tricuspid valvuloplasty**

POSTOPERATIVE COMPLICATIONS

- Arrhythmias
 - ASD: sinoatrial (SA) node dysfunction, atrial, and junctional
 - VSD: heart block, and junctional
- Pulmonary Hypertension
- Residual lesions:
 - ASD/VSD
 - Tricuspid Regurgitation
 - Mitral Regurgitation
 - Aortic insufficiency
- Post-pericardiotomy syndrome
- Ventricular Dysfunction



POSTOPERATIVE COURSE

POD 0

- Arrhythmias: junctional and **heart block (ventricular escape ~80)** transiently paced and converted to NSR
- Echo: normal function, **tiny apical muscular VSD, trivial TR**
- Initially arrived on milrinone, epinephrine and nicardipine infusions
 - Epinephrine discontinued overnight
- Extubated to high flow nasal canula
- Intermittent diuretics started overnight

POD 1

- Another episode of **heart block** with transient pacing
- Milrinone discontinued
- Captopril started for persistent hypertension

POSTOPERATIVE COURSE

POD 3

- Nicardipine discontinued

POD 4

- Diuretics transitioned enteral
- *Transferred to step down unit*
 - **Intermittent heart block and transferred back to the CICU**
 - DDD → VVI Pacing

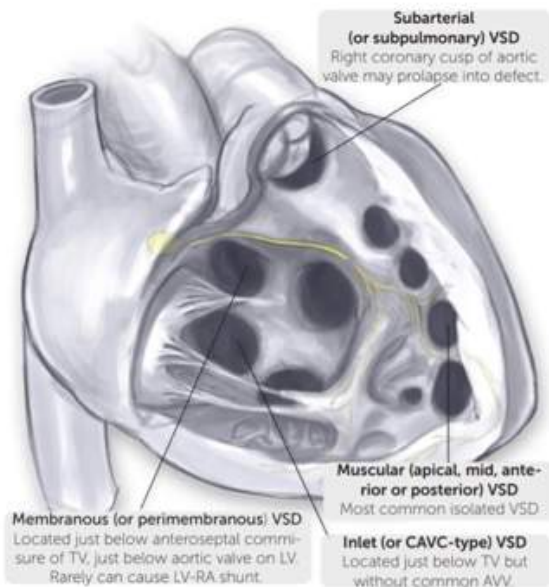
POD 8

- Stridor noted NPL by ENT showed left vocal cord paresis

POD 9

- Persistent emesis and diarrhea, **norovirus positive**

HEART BLOCK



First degree AV block



Second degree AV block (Mobitz I or Wenckebach)



Second degree AV block (Mobitz II)



Second degree AV block (2:1 block)



Third degree AV block with junctional escape



POSTOPERATIVE DAY 5 ECG



MANGEMENT AND NEXT STEPS

Watch and wait

- ... how long?

Epicardial Pacing: temporary versus permanent

- DDD versus VVI



I	II	III	IV
Chamber(s) paced	Chamber(s) sensed	Response to sensing	Rate adaptive
O = none	O = none	O = none	O = none
A = atrium	A = atrium	I = Inhibited	R = rate adaptive
V = ventricle	V = ventricle	T = Triggered	
D = dual	D = dual	D = dual	



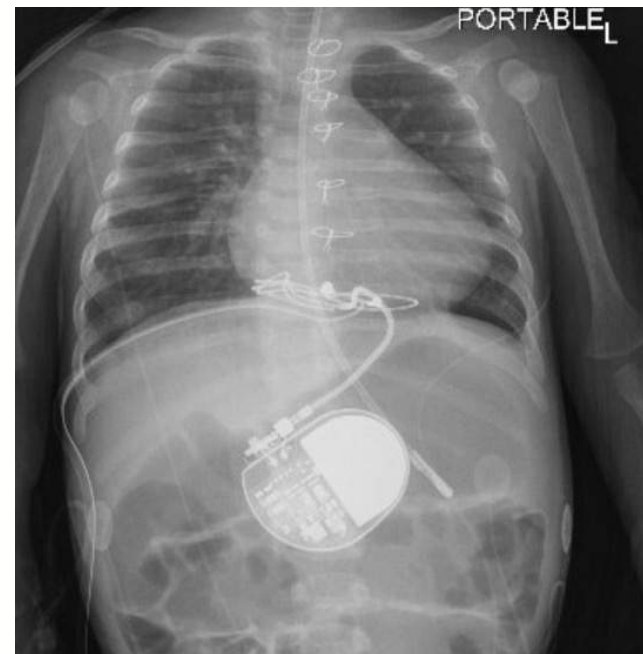
PACED ECG: DDD vs. VVI



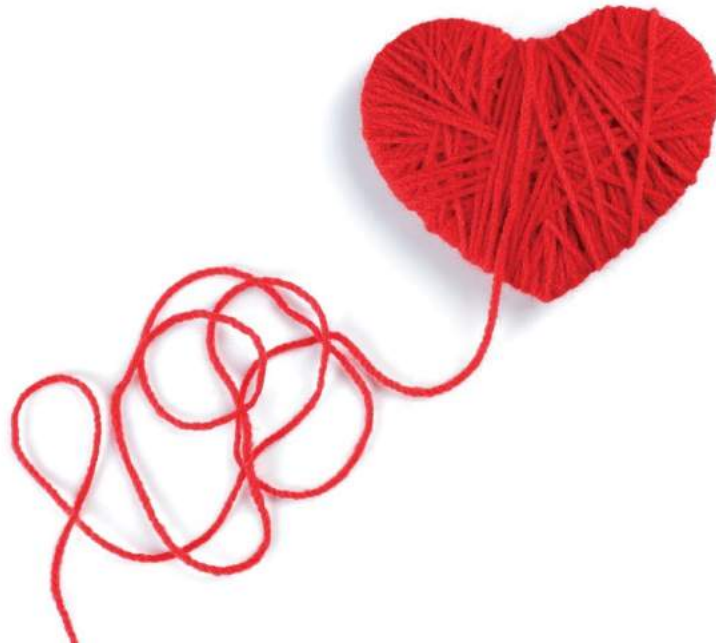
PATIENT UPDATE: INTERNAL PACEMAKER

POD 21 underwent internal permanent pacemaker with bipolar ventricular wire

- Pacing: VVI (back-up rate) 90
- Extubated in the OR to nasal cannula
- Resumed feeds as tolerated
- Ancef → Keflex (7 total days)
- Discharged home POD 4



THANK YOU



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