CASE PRESENTATIONS

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CASE – Aortic Stenosis

77 yr. old ♀ referred for AVR:
- Prior MI
- No major comorbidities
- Nonobstructive CAD by recent cath
- Admitted with CHF despite optimal meds
- Responds to IV diuretics

LVEF = 23%
Moderate RV dysfunction
CASE – Aortic Stenosis

AVA = 0.75cm²
Peak/mean gradients = 33/19 mm HG

What is your diagnosis?

1) Severe “fixed” AS
2) AS with “pseudo-stenosis”
3) Can’t tell, not enough information
CASE – Aortic Stenosis

What do you recommend?
1) Dobutamine echocardiogram
2) Medical management
3) AVR
4) TAVI
5) Nipride
6) IABP

CASE – Aortic Stenosis

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CASE – Aortic Stenosis

Low gradient / low output severe AS/ LV dysfunction: (components of definition)
1) Severe AS (AVA < 1.0 cm²)
2) Mean gradient ≤ 30 mmHg
3) LVEF ≤ 35%
4) ↓ stroke volume
**CASE – Aortic Stenosis**

**Clinical problems:**
1) “Fixed” AS or “pseudo-stenosis”
2) Determining presence of contractile reserve
3) Deciding if patient will benefit from AVR
How do you do dobutamine echo to distinguish between “fixed” and “pseudostenosis”? 
1) Same protocol as for CAD – measure AV gradients at peak
2) Measure AVA at each dose dobutamine
3) Measure AVA and assess contractile reserve at each dose dobutamine

Dobutamine – 5 ug/kg/min
CASE – Aortic Stenosis

Dobutamine 5 mcg/kg/min

VTI LVOT = 15 cm

CASE – Aortic Stenosis

Dobutamine 5 mcg/kg/min

CASE – Aortic Stenosis

Dobutamine 20 mcg/kg/min
CASE – Aortic Stenosis

Pre (33/19 mmHg) ; AVA = 0.75 cm²

Post (55/23 mmHg) ; AVA = 0.8 cm²

Dobutamine 20 mcg/kg/min

VTI LVOT = 23 cm

Pre (33/19 mmHg) ; AVA = 0.75 cm²

Post (55/23 mmHg) ; AVA = 0.8 cm²

CASE – Aortic Stenosis

LVEF

Pre = 23%

Post = 28%

CASE – Aortic Stenosis

How do you interpret these results now?

1) Severe fixed AS; contractile reserve
2) Severe fixed AS; no contractile reserve
3) Moderate AS; contractile reserve
4) Moderate AS; no contractile reserve
How do you interpret these results now?

1) Severe fixed AS; contractile reserve
2) Severe fixed AS; no contractile reserve
3) Moderate AS; contractile reserve
4) Moderate AS; no contractile reserve

**Contractile Reserve:**
- Stroke volume $\geq 20\%$ (VTI$_{LVOT} \times \text{Area}_{LVOT}$)
- $\text{EF} > 10\%$

**Severe “Fixed” AS (after dobutamine):**
- $\text{AVA} < 1.0 \text{ cm}^2$
- $\text{AVA} < 0.3 \text{ cm}^2$
- $\text{Gradients}$

**“Pseudo-stenosis” (after dobutamine):**
- $\text{AVA} > 1.0 \text{ cm}^2$
- $\text{AVA} > 0.3 \text{ cm}^2$
- $\text{Gradients unchanged}$

**Perioperative Mortality**
- 8% - Group I (Contractile Reserve)
- 50% - Group II (No Contractile Reserve)

Monin JACC 2001; 37: 2101
CASE – Aortic Stenosis

Severe AS
Low gradients
LV dysfunction

CAD assessment
(-) ischemia

Dobut. ECHO

+CR/Fixed
-CR/Fixed
AVR

-TTE/TEE/Fluoro/CT

+CR/Fixed
-CR/Fixed
-CR/Pseudostenosis

Medical therapy