



ACC.15

TCT@ACC-12 | innovation in intervention

A576  
JACC March 17, 2015  
Volume 65, Issue 10S

## FIT Clinical Decision Making

**FIXED AND DYNAMIC LEFT VENTRICULAR OUTFLOW OBSTRUCTIONS IN TANDEM: NOT A ROUTINE PREOPERATIVE EVALUATION**

Moderated Poster Contributions

Pulmonary Hypertension and FIT Clinical Decision Making Moderated Poster Theater, Poster Hall B1

Saturday, March 14, 2015, 10:30 a.m.-10:40 a.m.

Session Title: FIT Clinical Decision Making: Moderated Poster Session I

Abstract Category: Heart Failure and Cardiomyopathies

Presentation Number: 1127M-07

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**Case:** A 75 year old woman with hypertension, borderline diabetes mellitus, hypercholesterolemia and hypertrophic cardiomyopathy was referred for preoperative cardiovascular evaluation prior to left total hip arthroplasty for stage IV osteonecrosis. She was asymptomatic at rest. On examination, carotid upstroke was 1+ parvus and tardus and she had a grade III/VI mid-late peaking crescendo-decrescendo systolic ejection murmur at the right upper sternal border that amplified slightly with the Valsalva maneuver. She had bibasilar rales on auscultation of the chest and pulmonary venous hypertension on chest X-ray.

**Decision Making:** Echocardiogram revealed severe basal septal hypertrophy, hyperdynamic left ventricle (LV), systolic anterior motion of the mitral valve with severe LV outflow tract obstruction (a late peaking systolic velocity of 5 m/s) and calcific aortic valve stenosis (mean systolic gradient of 40 mmHg by Doppler). We were concerned that the modified Bernoulli equation would not apply to obstructions in series; this was important since non-cardiac surgery would probably be tolerated if there was a severe dynamic obstruction but not if there was a severe fixed obstruction. To determine the relative contribution of the dynamic and fixed stenoses, we performed a hemodynamic study with an LV and aortic catheters. LV apex and aorta pressure tracings showed a severe dynamic gradient of 120 mmHg, whereas LV outflow and aorta pressure tracings showed only a mild fixed gradient of 20 mmHg. Increasing afterload with phenylephrine substantially reduced the total gradient from LV apex to aorta to 30 mmHg. On the basis of this information, we up-titrated her beta blockade to minimize her dynamic outflow tract obstruction. She remained asymptomatic and tolerated hip replacement very well.

**Conclusion:** This case illustrates the pathophysiology and hemodynamic consequences of fixed and dynamic LV outflow obstructions, emphasizes the importance of dynamic auscultation in clinical decision making and underscores the role of invasive hemodynamic testing with pharmacologic modulation in determining the nature, location and severity of each obstruction in a series.