



A150.E1413
JACC March 9, 2010
Volume 55, issue 10A



VALVULAR HEART DISEASE

PRE-OPERATIVE GEOMETRY OF THE MITRAL VALVE IMPACTS THE OUTCOMES OF MITRAL ANNULOPLASTY IN ISCHEMIC MITRAL REGURGITATION

ACC Poster Contributions

Georgia World Congress Center, Hall B5

Monday, March 15, 2010, 3:30 p.m.-4:30 p.m.

Session Title: Clinical Decision Making in Valvular Disease

Abstract Category: Valvular Disease

Presentation Number: 1226-381

Authors: *Muralidhar Padala, Vinod H. Thourani, David H. Adams, Ajit P. Yoganathan, Georgia Institute of Technology, Atlanta, GA*

Background: 40% of the patients undergoing annuloplasty for ischemic mitral regurgitation(IMR) have persistent or recurrent IMR. In this in-vitro study we sought to investigate the impact of variability in 3D geometry of the mitral valve on the outcomes of annuloplasty.

Methods: Porcine mitral valves (N =8;Size 28)were studied in an in-vitro pulsatile heart simulator at 120mm Hg transmitral pressure; 5L/ min cardiac output; and 70bpm. Each valve was first evaluated with its physiological geometry to obtain baseline conditions. Two pathological geometries of the valve were replicated - [A] Annular Dilatation(34mm)+10mm Apical papillary muscle displacement(PMD); and [B] Annular Dilatation+ 10mm (Apical+ Lateral+Posterior) PMD. Mitral annuloplasty(28mm) was performed in both cases and MR volume(ml/beat), coaptation length(mm) and tenting area (mm²) were measured and compared to baseline.

Results: At baseline none of the valves had IMR; but, annular dilatation and PMD induced significant MR (Fig 1A). For apical displacement, annuloplasty reduced IMR to trace levels while in the other case significant remnant MR was measured. Differences in leaflet tethering were also evident between the two pathological geometries(Fig 1B)

Conclusions: Variability in the 3D valve geometry significantly impacts the outcomes of annuloplasty. Instead of performing annuloplasty in all patients, a thorough analysis of the valvular and ventricular geometry with 3D echocardiography may aid in optimal patient selection.

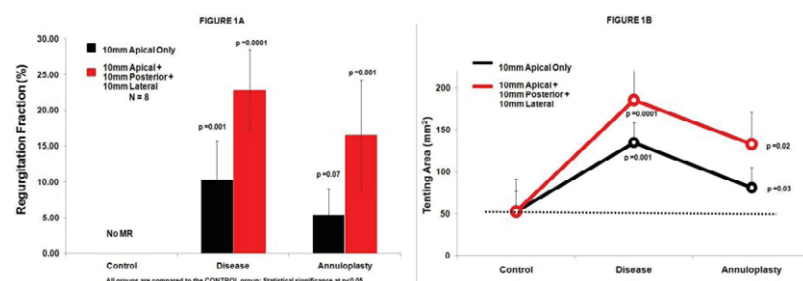


Fig 1(A): Mitral regurgitation fraction before and after annuloplasty in the A-ONLY (apical only) and APL (Apical-Posterior-Lateral) cases

Fig 1(B): Tenting area, a geometric measure of sub-valvular tethering for both the A-only and APL cases