



Valvular Heart Disease

DIFFERENT PATTERNS OF LEAFLET ELONGATION IN NON-PROLAPSING MITRAL SEGMENT IN PATIENTS WITH SINGLE SEGMENT PROLAPSE: IN VIVO MITRAL LEAFLET GEOMETRY ANALYSIS USING 3D FULL VOLUME DATA

Moderated Poster Contributions

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To determine in vivo geometric factors associated with leaflet elongation and adaptation patterns in both prolapsing and non-prolapsing segment, 3D full volume data were obtained during transesophageal echocardiography in 20 healthy subjects and 60 patients with severe mitral regurgitation due to myxomatous degeneration (MD) confined to a single scallop either in anterior (n=14, group A) or posterior leaflet (n=46, group B). A customized software was used to evaluate mitral leaflet surface area (MLSA) and annular area (AA). Compared to controls, patients with MD showed larger total MLSA (12.9 ± 2.3 vs 18.6 ± 3.9 cm², $p < 0.01$) and AA (8.7 ± 1.3 vs 11.9 ± 2.5 cm², $p < 0.01$). In controls, the ratio between anterior to posterior MLSA was 1.4 ± 0.2 , which decreased significantly in patients with MD (1.2 ± 0.4 , $p < 0.01$). Both anterior ($r = 0.62$, $p < 0.001$) and posterior MLSA ($r = 0.77$, $p < 0.01$) showed a strong positive association with AA in patients with MD. In group B, there was a stronger association ($p = 0.012$) between posterior MLSA and AA ($r = 0.832$, $p < 0.001$) than anterior MLSA and AA ($r = 0.602$, $p < 0.01$). However, in group A, there was no difference in association ($p = 0.369$) between posterior MLSA and AA ($r = 0.62$, $p = 0.017$) than anterior MLSA and AA ($r = 0.79$, $p = 0.001$).

Conclusions: MLSA increase in both prolapsing and non-prolapsing segment proportional to AA is characteristic in MD and a potentially unifying mechanism of leaflet elongation in MD may have a propensity for preferentially affecting posterior leaflet.

