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Non Invasive Imaging

ECHOCARDIOGRAPHIC VISUALIZATION AND QUANTIFICATION OF MITRAL VALVE CHORDAE TENDINEAE USING 3D TRANSESOPHAGEAL TRANSGASTRIC APPROACH

Poster Contributions
Hall C
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Background: Echocardiographic evaluation of the submitral apparatus is challenging from both transthoracic and transesophageal approaches. We tested the feasibility of using transgastric views to visualize the chordae tendineae by 3D transesophageal echocardiography (3DTEE) and measure their length.

Methods: 3DTEE transgastric images were acquired in 8 patients before mitral valve surgery. A short axis plane at the chordal level was extracted from the 3D dataset to identify leaflet segments and the corresponding chords (figs. A-B). Then, for each marginal chord, the optimal plane was selected to visualize and measure the entire chordal length (fig. C) from its origin at the leaflet to the papillary muscle tips. Measurements were performed at when chordal length reached its maximum. Measured values were compared to surgical measurements using linear regression and Bland-Altman analyses.

Result: 53 chords were measured intra-operatively by the surgeon. 3DTEE was able to measure all these chords pre-operatively. The surgical measurement and 3DTEE (1.87±0.47 vs. 1.89±0.43 cm, respectively) correlated highly ($r=0.93$, $p<0.01$), with a minimal bias of 0.03 cm and narrow limits of agreement from -0.38 to 0.33 cm.

Conclusion: Transgastric 3DTEE imaging allows visualization and accurate pre-surgical measurement of chordae tendineae length. This may be useful for pre-surgical preparation of the neo-chords, thereby reducing aortic cross-clamp time, which is associated with improved outcomes.