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The value of Global Longitudinal Strain and Global Circumferential Strain as a predictor of outcomes after Mitral Valve Surgery

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Background: In patients with chronic severe mitral regurgitation, the preoperative systolic function may be preserved as a consequence of the loading conditions imposed by the regurgitant lesion. This study aimed to find out if Strain Imaging could predict short-term outcomes in patients with chronic severe mitral regurgitation who underwent mitral valve surgery.

Objectives.

1. To determine GLS and GCS score before mitral valve surgery.
2. To determine incidence of adverse clinical outcomes postoperatively.
3. To determine cut off score of GLS and GCS predictive of adverse post operative clinical outcomes.
4. To determine the sensitivity, specificity, PPV, and NPV of GLS and GCS in predicting adverse post operative clinical outcomes.

Methodology: 42 patients with Severe Mitral Regurgitation who underwent mitral valve surgery in Philippine Heart Center from 2016 to 2017 were included. Patients with coronary artery disease, aortic stenosis, aortic regurgitation and shunt anomalies, LVEF <30% were excluded. Variables included are GLS and GCS, and short-term postoperative outcomes like mortality, prolonged intubation, arrhythmia, LV failure, and prolonged ICU stay and need of inotropic support.

Results: GLS is a sensitive test in predicting outcomes of mitral valve surgery (sensitivity 100%, NPV 100%). GCS is neither a sensitive nor a specific test to predict outcomes of corrective surgery for mitral regurgitation (sensitivity 21%, specificity 46%).

Conclusion: GLS is a sensitive test to predict adverse clinical events after mitral valve surgery for Chronic Severe Mitral Regurgitation. The cut-off value is – 19.86%. GCS is not a good predictor of outcome after mitral valve surgery. The cut-off value is – 18.38%. GLS was able to detect subclinical myocardial dysfunction in early stages of mitral regurgitation before the Ejection Fraction starts to decrease. Thus, it can be used as a diagnostic test to predict outcomes of mitral valve surgery.

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