

Mitral Annulus Dynamics after Valve Repair: Effect of Resectional versus Non-Resectional Approaches

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Background: Mitral repair is recommended for patients with significant organic mitral regurgitation (MR). The “Non resectional dynamic mitral valve repair” method (NDR) involves a complete flexible ring artificial chordal insertion but without leaflet resection or annular plication. The aim of the study was to compare changes in mitral annular (MA) structure and function after the NDR technique with that of a Modified Carpentier method (CAR) (involves leaflet resection and annuloplasty with a partial flexible ring).

Methods and Results: Patients with organic severe MR undergoing mitral valve repair with either technique underwent 3-Dimensional transesophageal echocardiography prior to and after surgery. The MA was tracked off-line and measured throughout the cardiac cycle. Mitral leaflet mobility was defined as the difference in angulation between leaflet and MA from diastole to systole. There were 15 patients who underwent repair with NDR and 13 with CAR (age 56 vs.61 years, respectively). Both operations reduced MA area significantly (maximum area reduction from 18.5±4.6 cm² to 6.6±1.7 cm² and 20.1±4.8 cm² to 6±1.5 cm² with NDR and CAR techniques respectively; p<0.001). In contrast to CAR, patients who underwent NDR operation maintained dynamic change in MA area, circumference and anterior-posterior diameter during the cardiac cycle. Mitral leaflets mobility was reduced with both techniques; however, posterior leaflet mobility was limited with CAR operation.

Conclusions: MA size is reduced after repair with either surgical approach. Compared to CAR valve repair, the NDR technique allows maintenance of MA dynamics during the cardiac cycle and preserved leaflet motion, particularly the posterior leaflet.