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Coaptation Length and Clinical Outcome in Degenerative Mitral Valve Repair

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Objectives:
Coaptation between valve leaflets is one of the key points of MV repair, and the importance of coaptation length has also been recognized in regulating MR. Although no reports to date have described the optimal length of coaptation in degenerative MV repair, it has been shown that coaptation length may affect repair durability in patients with ischemic MR.

Methods:
Between 2004, 467 patients underwent MV repair. Valve pathology was degenerative in 291 patients (62%), which were included in the study. Valve repair techniques included leaflet resection (59%), artificial chordal (44%), and edge-to-edge repair (3%), annuloplasty (98%). All late follow-up examinations that were performed in our institution echo-lab were re-reviewed by a single examiner blinded to the surgical technique. Measurements included: anterior posterior diameter, coaptation length and annulus to coaptation point.

Results:
There were 2 hospital deaths (1%). Mean follow up was 24.5±16 months. Freedoms from reoperation and from moderate or severe mitral regurgitation were 97% and 95%, respectively. In the 87 examinations that were re-reviewed, mean coaptation length was 7.9±2.4 mm (range 1-14). Patients with closed semi rigid annuloplasty had significant longer line of leaflet coaptation (9.1±2.7 mm) as compared with open band annuloplasty (7.1±1.9 mm), $p<0.01$. Patients with closed semi rigid annuloplasty has tendency for less residual significant MR. Correlation model, found the following predictors for increased coaptation line: use of closed annuloplasty ($p<0.01$), use of artificial chorda ($p=0.03$) and repair without resection of the posterior leaflet ($p=0.09$).

Conclusions:
Patients with closed semi-rigid annuloplasty rings and repair with artificial chorda, demonstrated a significantly longer line of leaflet coaptation and a tendency towards better echocardiographic mid-term results than patients with open bands, and may therefore benefit from improved repair durability.