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New Technique for Mitral Valve: Towards a More Anatomic Result

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Objectives:
Most of the techniques of mitral valve repair offer excellent physiological results. Removing the regurgitation, but with no optimal anatomic preservation due to the reduction of posterior leaflet mobility. During systole, the tension of main and secondary chordae is specifically related to the height and the surface of the leaflets cooptation, and it is important to offer a simple, reproducible and reliable reconstruction of the mitral valve with complete restoration of a bi-leaflet motion.

Methods:
740 mitral valvuloplasty were performed from May 1991 to November 2012. The last consecutive 152 patients were operated using a new technique: the reconstruction of all broken chordae was performed by special braids suture of Gore-Tex. Exact length was calculated by immediate preoperative ultrasound trans-esophageal echocardiography (TEE). The length was determined by the distance between the tip of papillary muscle and the free edge of the non-prolapsing valve face to the leaflet broken chordae. The braids were performed in situ before the start of cardiopulmonary bypass, using 2 Gore-Tex 4 / 0. There were 4 braids implanted per patient (3 to 7). A flexible ring homothetic reduction was inserted systematically. Follow-up was 100% complete at a mean of 40+/-19 months

Results:
No operative or long-term mortality was observed. No reoperation was required; 139 patients showed no leakage, and 13 had minimal regurgitation. TEE analysis showed a preservation of bi-leaflet mobility in 111patients (73%), in comparison to our previous series where only resection of posterior valve was performed (5% if quadrangular resection, 17% if triangular resection, 35% if partial triangular resection).

Conclusions:
This new technique offers better and alternative reparation which reproduces the real anatomy and physiology of the mitral valve with a full reconstruction and preservation of the mitral valve, allowing thus a better distribution of stress mechanisms on different valvular and subvalvular structures.