Basic Principles of Degenerative Mitral Valve Repair – Technical Aspects and Results –

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Surgical treatment of posterior mitral valve prolapse: Towards one hundred percent repair

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**Methods:** From January 1998 to December 2012, 932 consecutive patients were submitted to first-time mitral surgery for degenerative regurgitation. Of these, 492 (52.8%) had isolated posterior leaflet prolapse [myxomatous degeneration 304 (61.8%) and fibroelastic deficiency 188 (38.2%)].

**Results:** Mitral valve repair was achieved in 484 patients (98.4%). Hospital mortality was 0.2%. Overall survival at 5, 10 and 15 years was 91.7±1.3%, 81.9±2.3% and 64.7±6.1%, respectively. Freedom from mitral reoperation at 5, 10 and 15 years was 99.2±0.5%, 97.4±1.1% and 97.4±1.1%, respectively.

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Neo-chordae for Mitral Valve Repair
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A 20-year experience with Neo-chordae for Mitral Valve Repair with artificial chordae in 608 patients.
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METHODS: Between November 1986 and November 2006, 608 consecutive patients underwent mitral repair with artificial neochordae. Prolapse of anterior, posterior, or both leaflets was present in 47 (7.7%), 308 (50.7%), and 253 (41.6%), respectively.

CONCLUSION: Neo-chordae for Mitral Valve Repair with GORE-TEX artificial chordae is effective, safe, and associated with low operative mortality and low rates of valve-related complications at long-term follow-up. Artificial chordae showed excellent biologic adaptation, retaining flexibility and tension with time.
The use of artificial chordae made of PTFE has been validated clinically over the past 2 decades and has been an increasing component of the surgical armamentarium for mitral valve repair.
Neo-chordae for Mitral Valve Repair

CONCLUSIONS

- Chordal substitution / reinforcement with PTFE is now the method of choice
- Long-term efficacy and durability proven
- Learning curve to master technique
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Toward a New Paradigm for the Reconstruction of Posterior Leaflet Prolapse: Midterm Results of the “Respect Rather Than Resect” Approach

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Background. The aim of mitral valve reconstruction is restoration of good coaptation surface. Resection of the prolapsed area has been the accepted technique to repair prolapse of the posterior leaflet (PPL). However, as leaflet tissue is the basic component of coaptation surface, the logical corrective approach was thought to be the transformation of the posterior leaflet into a smooth vertical buttress without resection, the “respect rather than resect” approach.

Methods. Between 1994 and 2004, 225 patients underwent a PPL repair for severe mitral regurgitation with the respect rather than resect approach, in which the prolapse was corrected with artificial chordae. In 193 patients, the prolapse was limited to the posterior leaflet; in the remaining 32 patients, both leaflets were involved. All patients received ring annuloplasty. Associated procedures included myocardial revascularization (21 patients) and tricuspid repair (19 patients). Patient demographics were as follows: mean age, 60.7 ± 12.9 years; male, 150 (67%); asymptomatic, 102 (45%).

Results. Three patients died postoperatively (1.3%). Survival at 10 years (88% ± 6%) was similar to expected survival rate (97% ± 2%) for asymptomatic patients and 82% ± 10% for symptomatic patients (p < 0.005). Ten patients were reoperated on, for a freedom from reoperation rate of 93% ± 3% at 10 years. At echocardiographic follow-up, 172 patients of 195 (88%) showed mitral regurgitation of 1 or less; and 195 of 203 patients (96%) were in New York Heart Association functional class I or II.

Conclusions. The respect rather than resect approach is safe, effective, and durable, and increases technical repair possibilities. Surgical strategy focuses on restoration of surface coaptation instead of location and extent of leaflet resection.

Neo-chordae for Mitral Valve Repair

Different ways to repair the mitral valve with artificial chordae: a systematic review

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Gore-Tex Loop Implantation for Mitral Valve Prolapse: The Leipzig Loop Technique

Joerg Seeburger, MD, Michael Andrew Borger, MD, PhD, Volkmar Falk, MD, PhD, Friedrich Wilhelm Mohr, MD, PhD
Conclusion: Both repair techniques for posterior mitral leaflet prolapse are associated with excellent results and appear comparable in the early postoperative course.
Acute Mitral Regurgitation due to Ruptured ePTFE Neo-chordae

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Chordal replacement with expanded polytetrafluoroethylene (ePTFE) sutures has proven to be a simple, versatile, and durable technique for the treatment of prolapsed cusps causing mitral valve regurgitation. ePTFE is known for its strong resistance to tension, and is judged to be unbreakable under physiological conditions. Herein are reported two cases of rupture of synthetic chordae tendineae; the possible causes of this extremely rare finding are analyzed.

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Mitral Valve Repair
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Conclusions: By systematically applying a “repair all comers” strategy we have achieved successful repair of all Barlow valve’s with stable early results and no obvious incremental risk. We believe that flexibility in approach (combination of resection and non-resection methods), and tailoring of technique according to specific pathology and lesions, is the key to achieving a 100% repair rate for Barlow valves - a target which is now particularly relevant in the context of expanding indications for mitral surgery in asymptomatic patients.
Conclusions: When optimal surgical techniques are used, the residual recurrence rate of mitral valve regurgitation remains between 2% and 3% per year and is related to progressive degeneration of the chordae and the leaflets. Long-term results of mitral valve repair in Barlow disease are essentially the same as in fibroelastic deficiency.
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Heart doi:10.1136/hrt.2010.199620

Cardiovascular registry

The lottery of mitral valve repair surgery

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To characterise ‘real-world’ clinical practice data were reviewed on 12,255 mitral valve operations performed in the UK between 2004 and 2008.

The data demonstrate a large variation in the use of mitral valve repair; while the national repair rate was 51%, this varied from 20% to 90% among different hospitals.

Outcomes were worse in patients who had valve replacement as opposed to repair, including a higher risk of operative mortality and stroke, in all subgroups examined.

Concentration of mitral valve surgery in designated regional reference centres should allow more equitable access to mitral valve repair.
Table 1  Targeted surgeon referral: degenerative mitral valve disease

Barlow’s disease
Younger patients
Early surgery-asymptomatic patients
Anterior leaflet or bileaflet prolapse

Yes  
Reference Mitral Surgeon

No  
Experienced Valve Surgeon
Conclusions: Patients with ALP or BLP can be submitted to surgery with low mortality and great probability of repair (95%) in expert hands. Patients should be operated on at an early phase (asymptomatic or mildly symptomatic), because there is a higher probability of repair and greater benefit on the long-term survival.
SAM: discrepancy between tissue excess and/or a very small ring
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Other Methods

- Folding plasty of posterior leaflet
- Partial fold of the free edge
- Short artificial chordae to LV wall
- Haircut technique
Thank you!