Abstract: P6489
Preoperative determination of artificial chordae length by transesophageal echocardiography

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On behalf: Thessaloniki Heart Institute

Topic(s):
Valvular Heart Disease: Surgery

Citation:
The use of artificial chordae is one of the main techniques used in mitral valve repair to treat prolapsing leaflets, especially in anterior and bileaflet prolapse. With the use of PTFE sutures to replace elongated or ruptured chords mitral valve repair rates have significantly improved. The main difficulty with this technique is to determine the optimal length of the artificial chordae. Intraoperative transoesophageal echocardiography (TOE) is mandatory in mitral valve repair in order to determine the type of lesion of the mitral valve but also to evaluate the quality of the repair. We examined the accuracy of preoperative prediction of artificial chordae length by the preoperative TOE.

Patients and methods: Twenty-one consecutive patients (7 females) underwent mitral valve repair with artificial chordae for significant mitral valve prolapse in our department during the last year. The median age of the patients was 62 y. (range 25 - 87) and the mean EuroSCORE II 3,36% (SD 4,61%). During the prep TOE we determined the predicted length of the required replacement chordae for the repair using mainly the 4 chamber view to calculate the distance between the tip of the papillary muscle and the coaptation point of the two leaflets and we subtracted 5mm which is the minimum of the desired coaptation length (top right part of the Figure). All the patients underwent totally endoscopic mitral repair through a 3 cm right periareolar incision. 14,3% of the patients had anterior leaflet (AML) prolapse, 23,8% bileaflet and 61,9% posterior (PML). The appropriate length of the required chordae was measured intraoperatively.

Results: We used on average 3 loops of artificial chordae size 23,3 mm (SD 1,15mm) to treat the AML prolapse, 5 loops size 23,2 mm (SD 2,28mm) to treat the bileaflet prolapse and 2,23 loops size 18mm (SD 2mm) to treat the PML prolapse (bottom part of the figure). The predicted size of the artificial chordae had a positive correlation to the length used (Pearson correlation, p<0,001) as demonstrated in the top left part of the Figure. An annuloplasty band was implanted to all the patients. All the patients had no mitral regurgitation in the postoperative TOE. The mean valve area was 3,54cm² (SD 0,57) and the mean peak gradient 5,6 mmHg (SD 1,82). There was no mortality.

Conclusion: The length of artificial chordae can be predetermined with great accuracy with the use of TOE, making TOE an important tool not only for the determination of the mitral lesion and quality of the repair but also for the planning of the operation.
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