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# Valvuloplasty for Anterior Mitral Leaflet Prolapse due to Infective Endocarditis: Report of 2 Cases

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## ABSTRACT

We report 2 clinical cases of successful repair of an infected mitral valve with a broad-range prolapse of the anterior mitral leaflet (AML) with large vegetation. The chordal transfer technique was used in both cases, and autologous pericardium was transplanted in one case. There was neither residual mitral regurgitation nor recurrence of mitral valve infection. Chordal transfer is a useful technique for AML lesions of infective endocarditis if the corresponding area of the posterior ML remains normal, and even in the case of a broadly destroyed lesion of the AML, it is valuable to try to apply this technique with an autologous pericardial patch.

## INTRODUCTION

Mitral valve repair rather than replacement is widely applied for not only noninfectious mitral regurgitation (MR) but also infected mitral valves. Some reports have suggested that mitral valve repair in active and healed endocarditis is feasible and effective [Dreyfus 1990, Hendren 1992]. On the other hand, feasibility and results of repair for the anterior mitral leaflet (AML) infections remain unknown. The triangular resection for relatively small lesion and the autologous pericardium patch for perforated AML have been regarded as typical techniques for the repair of infected AML, but it seems difficult to repair extensive lesion with those techniques. Here, we present 2 cases of successful repair of mitral valves with broad-range prolapsed AML and large vegetations due to chronic infective endocarditis. The chordal transfer (flip-over) technique was used in both cases, and autologous pericardium was transplanted in one case.

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## CASE REPORT

### *Case 1*

A 58-year-old woman who had a continuous fever for a month was found to have severe MR secondary to AML prolapse and vegetation on the AML. Following continuous administration of antibiotics, she was transferred to our hospital and underwent surgery.

A lower partial sternotomy was initially performed. The left atrium was entered through the superior trans-septal approach. The posteromedial side of the AML seemed to be prolapsing due to torn chordae, and there was large vegetation on the prolapsed area of the AML. Because that part of the AML was elongated and severely thickened, it was triangularly resected of 20 mm in width with a part of the strut chordae. The basal side of the defect was approximated with a 5-0 monofilament continuous suture. The edge of the defect of AML was matched with the corresponding area of the posterior mitral leaflet (PML) and anchored with a 5-0 monofilament. The PML was quadrangularly resected between these anchors, and the segment of the PML was fitted and sutured to the defect of the AML using a 5-0 monofilament. The posterior annulus was plicated with a 2-0 pledgetted mattress suture, and the free edge of the PML was approximated. The regurgitation test demonstrated minimal leakage through the center of the mitral valve. Therefore, we decided to place a 26-mm Cosgrove Edward annuloplasty ring. A repeated regurgitation test demonstrated good coaptation of both leaflets and no leakage. The schema of this surgical procedure is shown in Figure 1.

### *Case 2*

A 21-year-old woman whose heart murmur was discovered while she was in high school suffered from fever of unknown origin for almost 2 months. She saw a doctor, and the echocardiogram examination revealed moderate MR and some vegetation on both mitral leaflets. Her illness was diagnosed as infective endocarditis, and antibiotic treatment was administered for approximately 8 weeks. Cardiac function was well maintained and infectious signs improved. Vegetation and moderate MR due to AML prolapse remained, however, so she was referred to our institution for mitral valve operation.

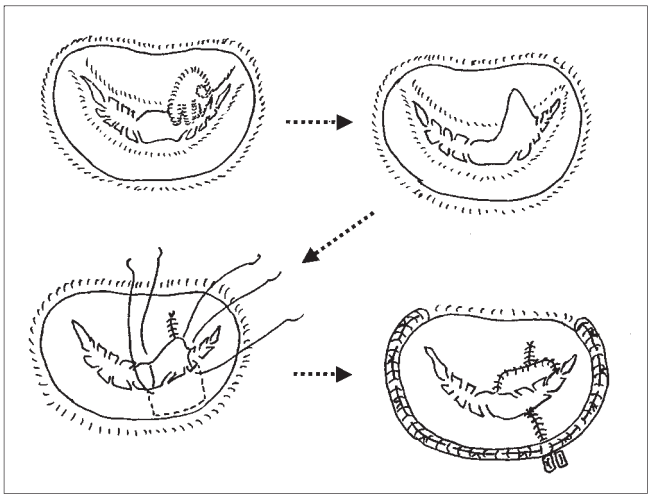

Figure 1. The schema of the surgical procedure with chordal transfer in case 1.

After a right-sided incision to the left atrium, the mitral valve was carefully inspected. There was vegetation of approximately 7 mm in length on the posteromedial side of the AML and of 2 mm in length on the PML, which was successfully curetted. The AML was triangularly resected approximately 18 mm in width with the surrounding degenerative tissue and a part of the strut chordae. The corresponding area of the PML was quadrangularly resected with rough zone chordae and sutured to the defect of the AML. More triangular defect remained, so trimmed autologous pericardium was fitted and sutured with a 5-0 monofilament continuous suture. Then the posterior annulus was plicated, and the free edge of the PML was closed and sutured. Finally an annuloplasty ring (28-mm Cosgrove Edward ring) was placed. The regurgitation test demonstrated good coaptation of both leaflets and no leakage (Figure 2). The schema of the surgical procedure is shown in Figure 3. The postoperative transesophageal echocardiography showed no residual MR.

In both cases described above, there was neither relapse of MR nor reinfection of mitral valve after the operations. Postoperative courses in both patients were uneventful, and they remained well at 11 months and 7 months of follow-up.

## DISCUSSION

Mitral valve repair has been widely applied for MR secondary to myxomatous degeneration, rheumatic disease, and ischemic injury of the mitral valve [Cosgrove 1989]. In native mitral valve endocarditis, antibiotic treatment is usually administered first. If that treatment is not effective or some finding such as destroyed mitral leaflet, heart failure associated with mitral insufficiency, or mobile and large vegetation remains, some type of surgical treatment is needed. In such cases, it has been controversial whether valve replacement or valve repair is preferable. Becker and colleagues reported that

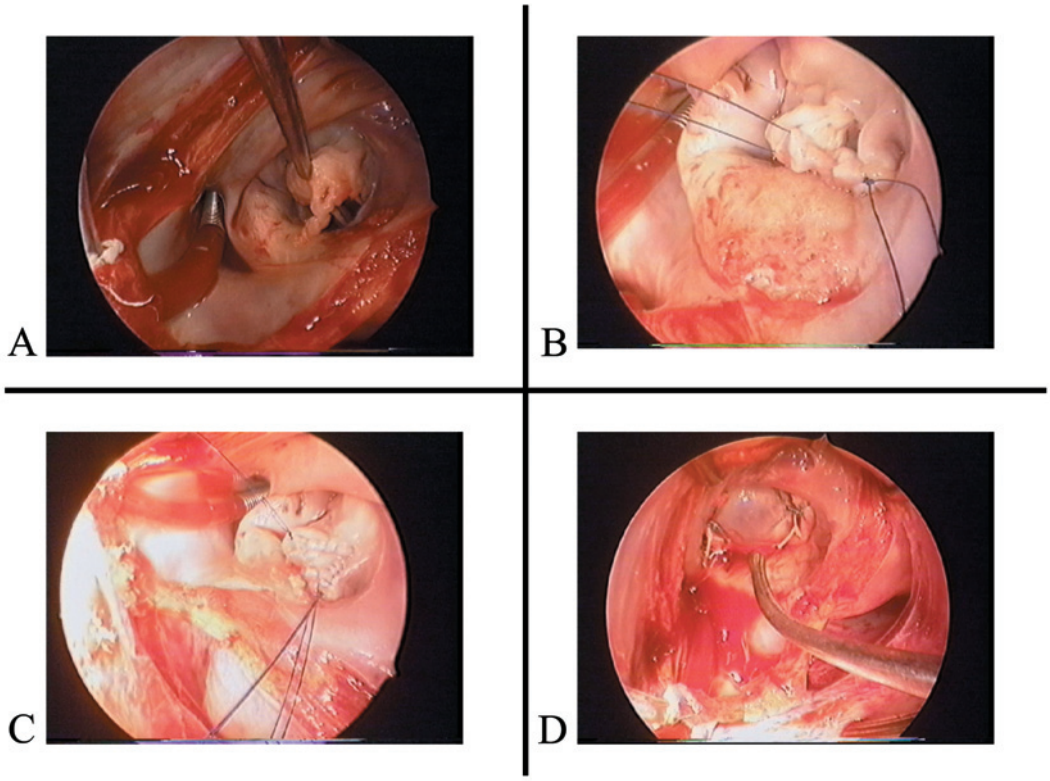


Figure 2. Surgical scenes of chordal transfer and autologous pericardial patch in case 2. A, Vegetation on the anterior mitral leaflet, 7 mm in length. B, The resected posterior mitral leaflet was sutured to the defect of the anterior leaflet, but more triangular defect remained. C, Trimmed autologous pericardium was fitted and sutured. D, The regurgitation test demonstrated no leakage.

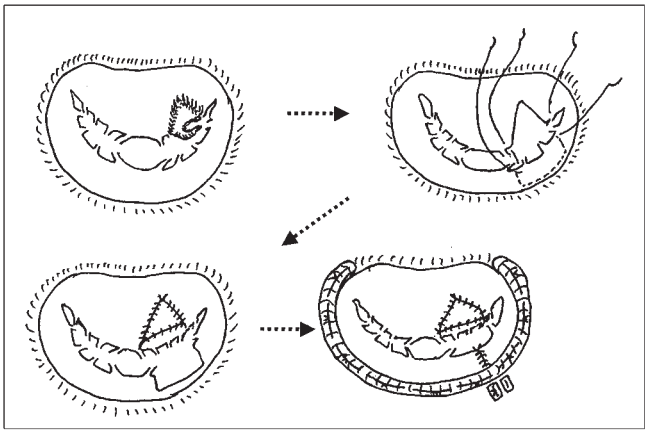

Figure 3. The schema of surgical procedure in case 2.

mitral valve repair techniques are associated with high reinfection rates and poor durability [Becker 1979]. Recently, however, mitral valve repair rather than replacement has yielded good functional results with a low risk of recurrent disease [Pagani 1996, Muehrcke 1997]. Not all patients are candidates for mitral valve reconstruction, however, because of the variable extent of mitral valve tissue destruction, including adhesion of vegetation on leaflets. It seems especially difficult to carry out mitral valve repair with usual techniques for extensive AML lesions. The triangular resection had limitation in excising more than 15 mm of the AML lesion [Spencer 1998], autologous patch was hardly applied for the free edge of the AML, and use of artificial chordae was concerned for infected lesion. In our 2 cases, despite infective AML of rather wide area, mitral valve repair could be accomplished and showed excellent results with chordal transfer technique augmented with autologous pericardial patch.

Another concern is the risk of reinfection after implantation of a prosthetic annuloplasty ring. To date, some reported studies showed that there were no instances of reinfection after implantation of a prosthetic ring in the settings of chronic and even acute endocarditis [Dreyfus 1990, Hendren 1992, Pagani 1996]. In our cases, no recurrent infection was seen at 11 months and 7 months of follow-up each.

In summary, chordal transfer is a useful technique for AML lesions of infective endocarditis if the corresponding area of the PML remains normal. Even in the case of broadly destroyed lesions of the AML, it is valuable to try to apply this technique with an autologous pericardial patch.

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