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# Valvuloplasty treatment and three-dimensional analysis for isolated cleft of the anterior mitral valve leaflet: a case report

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**Introduction:** Isolated cleft of the anterior mitral valve leaflet is a very rare congenital disease and a cause of mitral regurgitation: not associated with atrioventricular septal defect. In this case, we report our experience in valvuloplasty treatment for mitral regurgitation with this rare aetiology.

## Case description

23-year-old Russian women. Although cardiac murmur was pointed out in her childhood and she was diagnosed as mitral regurgitation, she refused treatment. After getting married with a Japanese man and moving to Japan, her symptoms had worsened and she visited our hospital for treatment. Preoperative transthoracic echocardiography (TTE) had indicated the regurgitation from the central part of the mitral valve. Preoperative transoesophageal echocardiography (TOE) had pointed out the isolated cleft of the anterior mitral valve.

Surgical mitral valvuloplasty was scheduled, and the TOE after anaesthetic induction showed the isolated cleft of the anterior mitral valve the same as in the preoperative period and pointed out the posterior leaflet billowing. The operative finding was also similar to TOE: the largely bisected central anterior mitral valve and billowing, P2 billowing, shortening of P1 and P3, P2-3 cleft. There were no chords at the anterior cleft. The valvuloplasty was performed including five-time pump runs in total: 1) Continuous suture for the anterior cleft and ring annuloplasty were performed, and the regurgitation was seemed to be almost controlled at the water-leak test and the ink test; 2) Artificial chordae and leaflet plications were added to residual regurgitation from the posterior region; 3) The residual regurgitation was controlled to Mild but it became a lateral jet toward the ring; 4) Mild remnant flow was pointed out: the regurgitation seemed to be from the posterior cleft, where immediately below the ring suture; 5) Pericardium patch was added and the remnant flow was almost eliminated. The pump was weaned and the operation was finished without any problems.

**Discussion:** The cause of difficulty in this valvuloplasty was thought to be caused by the difficulty in evaluating the mitral valve morphology. It was evident that the anterior leaflet of the mitral valve was largely bisected. However, it was difficult to evaluate the coaptation line and area due to the absence of chordal cords in the anterior cleft and the billowing or shortening of the posterior leaflet. Although preoperative three-dimensional analysis helped evaluating the isolated cleft and the regurgitation was almost controlled in the evaluation in the operation field, nevertheless, a residual regurgitation occurred and indicated in the TOE after re-beating.

**Conclusion:** It is important and necessary to use fine evaluation of coaptation is needed in valvuloplasty for isolated cleft of the anterior mitral valve leaflet; not only apply three-dimensional analysis but also apply two-dimensional echocardiogram.

Abstract P224 Figure.

