the annulus and PM has been reported from some institutes [8]. The surgery was successfully performed and early results were acceptable. Another intervention in PM is approximation or realignment [6, 7, 10–13]. Reestablishing a more normal annulus-to-PM alignment was expected to relieve the excess tethering on the mitral leaflets, and significantly restore leaflet mobility [7]. Leaflet tethering is considered to be improved by shortening the distance between both papillary muscles. This leads to the improvement of MR. This method would modify the shape of the left ventricle from spherical to elliptical. We have also followed this concept. In the present and other studies, early clinical and echocardiographic results were favorable.

In the present study, the severity of IMR was expressed by coaptation depth and tenting area. The coaptation depth has been used by Calafiore and colleagues as the parameter of the severity of IMR [14]. If this depth exceeded 10 mm, patients were considered poor repair candidates. In our study, patients had severe IMR by their definition because mean preoperative coaptation depth was 10.2 ± 3.1 mm. Srichai et al. demonstrated that tenting area has also been a powerful independent predictor of the severity of IMR [15]. In their study, however, tenting area was measured by magnetic resonance imaging while echocardiographic measurement was used in our study. The assessment of the tenting area may not have matched between the studies. We believe the echocardiographic evaluation is more easily obtained and less invasive than magnetic resonance imaging. The correct distance between papillary muscles has never been established, however, Hvass et al. [7] described normal values of 2.5 ± 0.3 cm in their report. We have measured diastolic and systolic values of inter-papillary muscle distance. These data significantly improved post-operatively. Furthermore, we found that the distance between PMs changed during the cardiac cycle even after this operation.

The limitations of this clinical study are that the number of patients is small and the length of clinical follow-up was short. The major weakness of this study is that the follow-up echocardiography could be obtained in only four patients. Furthermore, there was no control group in this study.

In conclusion, the combination of papillary muscle realignment and MAP seems to be an effective technique for patients with IMR. The duration of the effect may be expected to be long-term with these methods.

References

also a downsizing annuloplasty of the mitral valve. They had good results in terms of coaptation depth, tenting area, grade of mitral regurgitation. We used a similar but slightly different technique in approximately the base of the papillary muscles. We think that IMR in dilated post-ischemic heart would benefit from a treatment on the ventricle, and in particular the reduction of the sphericity index \[w_4\]. In a series of 39 patients undergoing CABG, presenting with dilated post-ischemic LV, reduced EF, and associated IMR grade I to 3, we associated surgical ventricular remodelling in the aim to restore a more physiologic ventricular shape. The LV was opened in the area of scar. A series of concentric polypropylene purse string sutures of different diameters were used around the free wall of the ventricle up to the septum. Those sutures also encircled the base of the papillary muscles. More mattress sutures were passed when needed in the areas of bulging of dilated segmental areas. In this way we approximate the base of the papillary muscles, and we also reduce the diameter of the LV at the height of the insertion of the papillary muscles. At echocardiography, this reduces the tethering pattern on the mitral apparatus. We associate downsizing ring annuloplasty for advanced grade of IMR. This approach is done with the aim of reducing the sphericity index, that correlates with the degree of mitral regurgitation (MR) and with the distance of papillary muscles \[w_4\]. Infarct has been reported that when sphericity index is high as in global dilatation of ischemic cardiomyopathy, mitral function is more impaired.

References


