Abstract: P6491

Predictive effect of mitral annular size on persistent mitral valve dysfunction after transcatheter edge-to-edge mitral valve repair for functional mitral regurgitation

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Topic(s):
Valvular Heart Disease: Intervention

Citation:

Backgrounds: In patients with functional mitral regurgitation (FMR), deformation of the mitral valve (MV) apparatus leads to deteriorating coaptation of both leaflets. The MV geometry is essential to predict procedural success of using the MitraClip™ for FMR patients. Persistent such mitral regurgitation (MR) and post-procedural mitral stenosis (MS) are parameters for an increasing mortality rate after MitraClip implantation. The anterior-to-posterior mitral annulus diameter (MAD) is simple to evaluate with a high reproducibility rate. However, the predictive effect has not been determined to date.

Purpose: We evaluated the predictive effect of baseline anterior-to-posterior MAD on persistent MV dysfunctions after MitraClip™ implantation.

Methods: We investigated the prevalence of procedural failure (MR at discharge > grade 2+) and post-procedural MS (mean transmural gradient (mTMG) at discharge = 6 mmHg) in a patient cohort with FMR (n = 190), who underwent MitraClip™ implantation. We measured the MV apparatus geometry on mid-systole using transoesophageal echocardiography before the index procedure. The MAD was stratified by interquartile ranges (IQR) in the comparison. (= 34 mm, 35 to 37 mm, 38 to 40 mm, and = 41 mm, respectively)

Results: The mean age was 75 ± 9 years, and 63 patients (33%) were female. The mean left ventricular ejection fraction was 34 ± 14 %. Moderate-to-severe (3+) or severe MR (4+) were documented in all patients before the procedure. Transthoracic echocardiography at discharge revealed residual MR (>2+) in 10 patients (5%) and post-procedural MS in 13 patients (7%), in which one patient presented with both residual MR and MS.

After stratification by the IQRs of MAD, there were significant differences in body weight (p < 0.001), height (p < 0.001), and body surface area (p < 0.001), but no significant differences in the other baseline characteristics. Notably, significant differences in the prevalence of procedural failure (p = 0.004) and post-procedural MS (p = 0.022) were observed among the groups. (Figure) Specifically, in the cohort with the 4th IQR (MAD = 41 mm, n = 44), procedural failure was observed in 7 patients (16%), although the prevalence was only 2% in the other IQR groups. Moreover, the cohorts with the 1st and 2nd IQR presented with higher prevalence of post-procedural MS in 6 of 46 patients (13%) in the 1st IQR group, and 6 of 51 (12%) in the 2nd IQR group) than those with the 3rd and 4th IQRs. (1 of 49 patients (2%) in the 3rd IQR, and none of 44 patients in the 4th IQR)

Conclusion: In this analysis we showed that the mitral annulus size affected MV dysfunction after MitraClip™. Anterior-to-posterior MAD was useful to predict the procedural result. For FMR candidates with dilated mitral annulus larger than 40 mm, new-generation MitraClip-XTR™ system or other therapeutic concept such as annuloplasty may be reasonable to obtain satisfactory MV function.
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