P1531

Changes in mitral annular dynamics with three different types of annuloplasty devices: measurement using three-dimensional transoesophageal echocardiography

Ito S.; Yoshitani K.; Yahagi M.; Onishi Y.

National Cerebral & Cardiovascular Center, Suita, Japan

OnBehalf: National Cerebral and Cardiovascular Center, Japan

Background/Purpose

Mitral annuloplasty plays a crucial role during mitral valve (MV) repair. The dynamics of the mitral annulus (MA) may be variously affected by the annuloplasty device. Therefore, we investigated the differences in MA dynamics when using a semi-rigid ring, semi-rigid band, and flexible ring.

Methods: We retrospectively reviewed 61 patients with mitral regurgitation who underwent MV repair, which included annuloplasty. Semi-rigid rings were used in 33 patients, flexible bands in 21, and semi-rigid bands in seven. Three-dimensional transoesophageal echocardiography (3D-TEE) images of the MV were recorded before and after annuloplasty. The 3D-TEE image datasets were analysed using semi-automated analysis software. We measured anterolateral–posteromedial (AL–PM) and anteroposterior (AP) diameter and height of the MV. The sphericity index (AP diameter divided by AL-PM diameter) and annular height to commissural width ratio (AHCWR) were calculated as the circular and saddle-shaped geometries, respectively. The differences in these values between end diastole (ED) and end systole (ES) were compared by t-test before and after mitral annuloplasty to analyse the MA among the semi-rigid ring, semi-rigid band, and flexible ring.

Results: Before annuloplasty (n = 61), the AL–PM diameter was significantly larger (ED: 4.26 ± 0.08 vs. ES: 4.24 ± 0.07, p = 0.016) and the sphericity index was significantly smaller (ED: 0.93 ± 0.01 vs. ES: 0.94 ± 0.01, p = 0.017) at ED than at ES. Table 1 shows the analysis after annuloplasty for each device. After annuloplasty, not every group demonstrated significant differences in AL–PM diameter or sphericity index. MA dynamics were reduced equally with the three devices.

Conclusion: Mitral annuloplasty reduced MA dynamics equally when using a semi-rigid ring, semi-rigid band, and flexible ring. There were no distinctive differences among the three devices in terms of maintaining flexibility and a saddle-shaped geometry.

MV dynamics after mitral annuloplasty

	Semi-rigid ring (n = 33)			Flexible band (n = 21)			Semi-rigid band (n = 7)		
ES	ED	P value	ES	ED	P value	ES	ED	P value	
AP (cm)	2.61 ± 0.38	2.67 ± 0.44	0.15	2.61 ± 0.38	2.67 ± 0.44	0.15	2.79 ± 0.44	2.80 ± 0.43	0.75
AL-PM (cm)	2.85 ± 0.31	2.91 ± 0.39	0.20	2.85 ± 0.31	2.91 ± 0.39	0.20	2.70 ± 0.39	2.73 ± 0.42	0.15
Height (cm)	0.49 ± 0.20	0.51 ± 0.21	0.35	0.63 ± 0.17	0.62 ± 0.17	0.48	0.63 ± 0.13	0.63 ± 0.13	1.00
SI	0.92 ± 0.09	0.92 ± 0.09	0.45	0.91 ± 0.09	0.91 ± 0.08	0.85	0.95 ± 0.12	0.95 ± 0.11	0.34
AHCWR(%)	17.1 ± 6.65	17.4 ± 6.67	0.56	20.4 ± 5.00	20.2 ± 5.10	0.52	21.3 ± 4.49	21.3 ± 4.80	0.95

Data are expressed mean ± standard deviation. AP: anterior posterior; AL-PM: anterolateral-posteromedial; SI: Sphericity index; AHCWR: annular height to commissure width ratio; ES: endsystole; ED: enddiastole.

Abstract P1531 Figure