Letter to the Editor

Vertical split of the posterior leaflet increases mitral valve area

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I read with interest the article by Kurazumi and colleagues about mitral valve replacement for a severely calcified annulus [1]. I congratulate the authors for their excellent results and simple technique to overcome this difficult problem. My only concern is about the valve size of 21 mm in the mitral position producing about 2 cm² mitral valve area. This might be marginal for small-body-weight patients but definitely not acceptable for 70 kg or more body weight, causing patient–prosthesis mismatch. Most of the surgeons have to excise the posterior leaflet, especially in heavily diseased or calcified valves, to gain more valve area. Recent publications recommend preserving at least the posterior leaflet to keep the ventriculoannular connection and to maintain the conical shape of the ventricle and thus improving the left-ventricular function. The technique described by Kurazumi and colleagues addressed this issue, but we are still left with the small-sized prosthetic valve. To overcome this problem, I shave the posterior leaflet as much as possible and perform a vertical split of the posterior leaflet from the middle of its free edge to the annulus. This usually increases the effective orifice area to enable the surgeon to use bigger-sized valves of 25 mm and more. The authors used St. Jude Medical mechanical (SJM) heart valves (St. Jude Medical, St. Paul, USA) with a specific structure (Regent), but I think all other supra-annular valves will do the same work.

Reference


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Reply to the Letter to the Editor

Reply to Al-Ebrahim

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We appreciate the constructive comments made by Dr Al-Ebrahim about our article [1]. However, there are some misconceptions regarding the size of the prosthetic valve and the advantages of the St. Jude Medical (SJM) valve. We did not implant 21-mm heart valve prostheses in the mitral position in our patients: ‘21 mm’ is the diameter of ball-sizer, not the size of the mechanical heart valve itself [2]. The ball-sizer is the ball-shaped sizer used to calibrate the valvular annulus or aortic diameter intra-operatively. To confirm that a 21-mm-diameter ball-sizer could pass through the mitral annulus after excision of the anterior leaflet, we ensure that the orifice area of the native mitral annulus is approximately 3.46 cm² = 10.5 mm (radius) × 10.5 mm (radius) × 3.14(π). We think this is adequate to obtain a larger native mitral orifice area than the geometric orifice area of the prosthetic valve and is suitable for patients, even when the severely calcified posterior leaflet is preserved. We agree with him that a bigger prosthetic valve of 25 mm or more should be implanted to prevent postoperative patient–prosthesis mismatch in the mitral position. In fact, a 27-mm SJM MT valve was implanted in four patients and a 25-mm SJM MT valve was implanted in the other two patients in our series.

Although he mentioned that other supra-annular valves do almost the same job, the SJM valve is the best for these patients. The SJM mechanical heart valve has a specific structure, and its hinge shifts to the left atrial side, and most of the leaflet moves within its housing. Thus, its specific structure minimizes the chance of the mechanical valve leaflet movement being interrupted by sub-prosthetic tissues such as extended calcification or the preserved posterior leaflet. We think that this structure helps prevent ‘stuck valve’ being caused by contact with native tissues. The schematic drawing in our article illustrates the profile of the SJM MT 25 mm (Fig. 2).