Extended trans-septal and left atrial dome incision combined with Manouguian’s aortotomy for complex double valve surgery

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Abstract

We describe a novel surgical approach combining a trans-septal, left atrium dome incision and Manouguian incision to facilitate complex double valve (aortic and mitral) surgery. This technique provides an excellent surgical exposure and good outcomes.

Keywords: Aortic valve replacement • Mitral valve replacement • Reoperation

TECHNIQUES

Double valve replacement (DVR) could be challenging in such cases when the aortomitral fibrous body is destroyed due to advanced endocarditis or when complex concomitant procedures, which would be difficult to complete under limited exposure with a routine approach, are required. Our approach provides an excellent exposure by combining a trans-septal incision, left atrial dome incision and the Manouguian incision.

From 2001 to 2012, a total of 402 DVR were performed in our institute. Eight patients underwent DVR using the extended approach. The surgical indications for this approach included advanced infectious endocarditis involving aortomitral curtain which require reconstruction of aortomitral continuity in 5 cases, complex DVR with concomitant intracardiac procedures such as decalcification of mitral annulus in 1 case, repair of LV rupture secondary to extensive decalcification and failure to cover the decalcified fresh muscle at the first attempt during AVR in 1 case and small mitral valve annulus which required mitral valve inflow enlargement in 1 case. This approach could be useful not only for infectious endocarditis but also for complex DVR in rheumatic valve disease.

COMMENT

Our incision is able to constantly provide an excellent exposure of the aortic and mitral valves and surrounding structures regardless of the complexity of cases. It should be important to note that the easy access to the posterior mitral annulus with this approach enables the surgeon to complete complicated tasks, such as decalcification of mitral annulus in patients with extended mitral annular calcification and subsequent posterior annulus reconstruction. Collateral merits from this technique include that the surgeon can pick up a valve in any desired size in the mitral position as it changes only the length of the exposed sewing ring after mitral prosthesis is put in place which is eventually covered with a pericardial patch. Likewise, any size of aortic prosthesis can be accommodated by adjusting the size of the LVOT patch.

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David et al. [1] reported a technique combining the Manouguian and left atrial dome incisions for DVR [2]. While it is a landmark study, their approach, however, occasionally suffers from limited exposure especially to the posterior mitral annulus in redo cases. Our approach provides optimal exposure of most intracardiac structures. Su et al. [3] reported their experience of the David approach for DVR in 30 patients. They needed to add transient superior vena cava (SVC) transection for a better exposure in 56.7% of patients. They added an extended trans-septal incision in 3 cases in an effort to obtain a complete exposure of the mitral valve and it eliminated the need for SVC division. This supports our findings in the present study.

Despite the apparent benefits, it is important to mention the possible demerits of our combined approach. First, the extended trans-septal incision compromises the sinus node artery, which may result in conduction system disturbance and in need for subsequent permanent pacemaker implantation. However, most of the patient populations who required this approach usually have a long history of atrial fibrillation and the conduction signal from the sinus is no longer functioning. Secondly, since the approach is intended for such a case where the aortomitral continuity is already compromised, mitral valve repair is not doable with this incision. It is presumably inappropriate to employ this approach in case mitral repair may be feasible.

In summary, the extended trans-septal and left atrial dome incision combined with Manouguian’s incision provided an excellent exposure to perform complex DVR safely.

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**REFERENCES**

