Operative Techniques in Thoracic and Cardiovascular Surgery

Mitral Valve Replacement for Infective Endocarditis With Annular Abscess: Annular Reconstruction

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Mitral valve infective endocarditis (IE) is the most common form of left-sided IE. A mitral annular abscess is present in 15% of cases of mitral valve IE. Annular abscesses are almost always located in the posterior mitral annulus. The presence of an annular abscess mandates careful debridement and reconstruction of the atrioventricular (AV) groove with a patch, prior to mitral valve replacement. We use a bovine pericardial patch to reconstruct the posterior annulus. The patch is fashioned to cover the defect by at least 1 – 2 cm circumferentially and is anchored with a running suture, starting at the deepest location in the ventricle and working in both directions toward the atrium. This suture line then extends across the AV groove and anchors the patch to the posterior left atrium. Close spacing of sutures, solid bites in the myocardium, and gentle tension on the suture assures a reliable and hemostatic repair.

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Introduction

Mitral valve infective endocarditis (IE) is the most common form of left-sided IE and has an in-hospital mortality rate of 20%-30%. Though nearly half of the patients with mitral valve IE undergo surgical intervention, this remains an uncommon procedure, making up less than 5% of all mitral valve operations, and thus, individual surgeon experience is limited. Choosing the correct patients for operative intervention, at the optimal time, and performing a technically sound operation are critical for optimizing outcomes in this challenging disease process.

At our center, indications for operation include the presence of severe mitral regurgitation, paravalvular abscess, vegetations that are mobile or are more than 1 cm in size, embolic events, failure of antibiotic therapy, and fungal etiology. Most patients with mitral valve IE present with cerebral embolism, which we do not consider a contraindication to surgical repair unless associated with significant hemorrhage.

The key principle of operative therapy for mitral valve IE is complete debridement of all vegetations and infected tissue, leaving only native tissue that is of sufficient quality to hold suture. Diligence in this regard is essential for the durability of subsequent repair or replacement. A mitral annular abscess is present in approximately 15% of cases of mitral valve IE.[1] Mitral abscesses are almost always located in the posterior mitral annulus and involve the posterior leaflet, the annulus, and the underlying myocardium. The presence of an annular abscess or significant destruction of the posterior annulus mandates careful debridement and reconstruction of the atrioventricular groove with a patch, before mitral valve replacement or repair. We prefer to use bovine pericardium to reconstruct the posterior annulus (Figs. 1–9).

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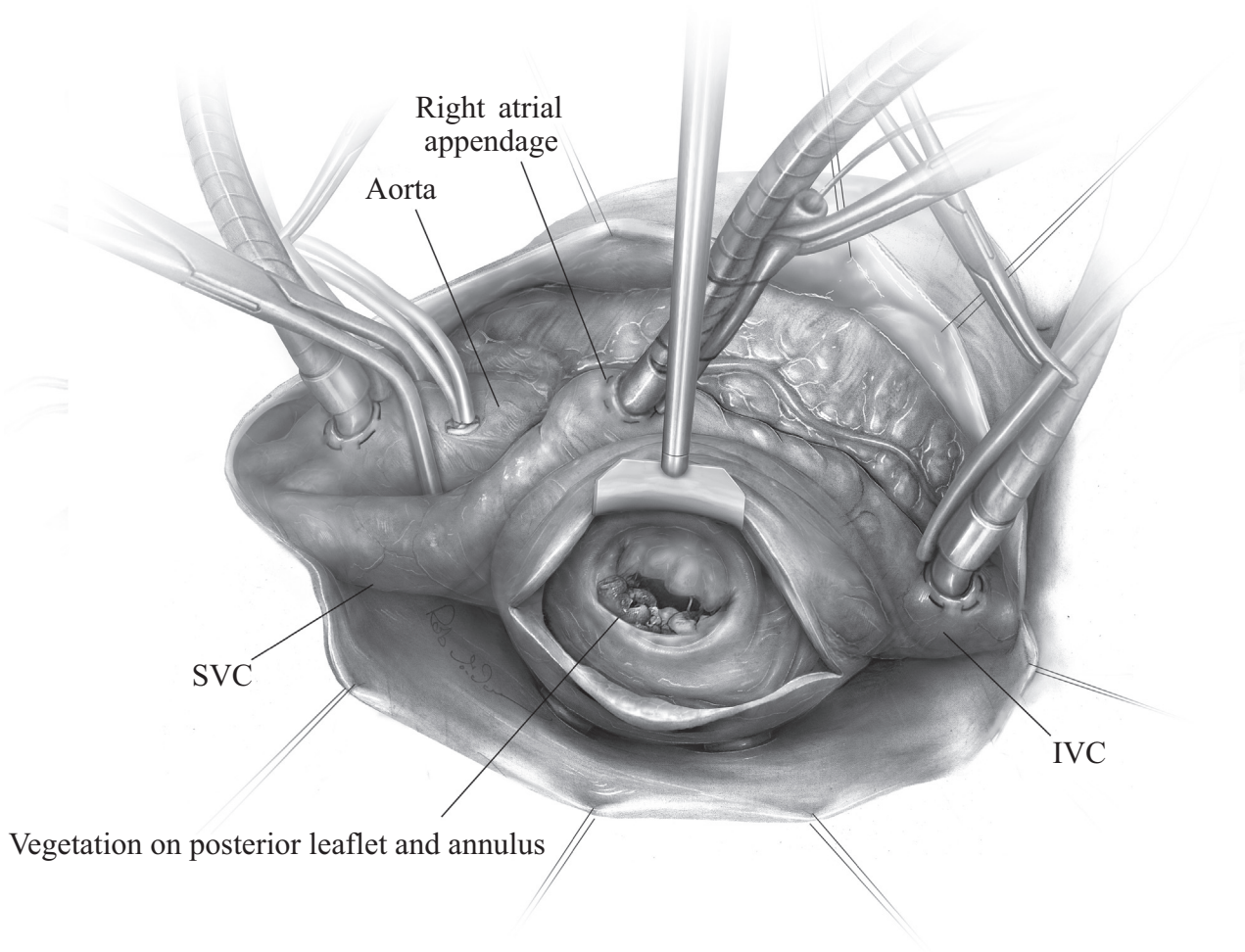

Figure 1 The patient is centrally cannulated for cardiopulmonary bypass with bicaval drainage. No pericardial stay sutures are placed on the left side of the heart, allowing the heart to rotate to the left. The cavae are mobilized, the interatrial groove is developed, and a longitudinal incision is made from the right superior pulmonary vein inferiorly toward the inferior vena cava, facilitating exposure of the mitral valve. The valve is then assessed. In this case, a vegetation is identified involving the posterior leaflet. SVC = superior vena cava; IVC = inferior vena cava.