Cardiac Reintervention and Hemi-Commando Procedure in Double-Valve Endocarditis

Aortic and mitral double-valve infective endocarditis affecting the fibrous skeleton of the heart is a complex condition that requires a challenging surgical management. Extensive debridement of necrotic and infective tissue with removal of all the prosthetic material must be performed to achieve healing results.

A difficult reconstruction is usually required, particularly in cases of aortic root abscess also involving the fibrous skeleton and the mitral valve. The “commando procedure” is the reconstruction of the aortomitral fibrous body for invasive double-valve endocarditis. It is a technically challenging procedure that includes root and aortic valve replacement and mitral valve replacement, along with reconstruction of the aortomitral fibrous body.

The hemi-commando procedure is a suitable and less complex treatment option than the “commando surgery” for invasive double-valve endocarditis not involving the mitral valve anterior leaflet free edge. Its advantage is that most of the mitral valve and subvalvular apparatus are preserved.

We present the case of an asymptomatic 38-year-old male patient, with history of severe aortic regurgitation and bicuspid valve, requiring mechanical aortic valve replacement. Two months after the procedure, the patient progressed to an early prosthetic aortic valve endocarditis, requiring a second valve replacement (both procedures were performed at another center).

The patient was admitted to our center with persistent fever. The admission transthoracic echocardiography showed images consistent with prosthetic aortic valve endocarditis with 15 mm vegetation. Protrusion of a periannular abscess through the vegetation with mitral-aortic membrane and anterior leaflet of the mitral valve involvement were observed (Figure 1 A, B), and blood cultures of samples isolated from the center of origin revealed non-fermenting Gram-negative bacilli. An empirical therapy was initiated with piperacillin-tazobactam, levofloxacin and trimethoprim-sulfamethoxazole.

A brain CT scan showed no evidence of anatomical alterations (Figure 1 C), as opposed to the abdominal CT scan, which exhibited images consistent with splenic embolic foci (Figure 1 D).

Sepsis progressed, non-responsive to antibiotics; consequently, surgical treatment was decided. Considering anatomical involvement in the images, cardiac reoperation using the hemi-commando procedure was proposed, which consists of the extensive resection of the infected tissue (Figure 2 B), homograft implantation with mitral valve repair, preservation of first- and second-order cords, and reconstruction of the mitral-aortic membrane (Figure 2 C, D). Also, the roof of the left atrium was reconstructed using a bovine pericardial patch, with 120 minutes of cross-clamping time and 150 minutes of total cardiopulmonary bypass time.

The course was favorable, without complications in the postoperative period. Only low doses of vasoconstrictor and inotropic drugs were necessary due to

Fig. 1. Preoperative images. A, B: Transthoracic echocardiography with prosthetic, periannular, and mitral valve involvement. C: Normal brain CT scan. D: Splenic embolism.
mild vasoplegia and the patient remained in the Coronary Care Unit for 48 hours. A semi-permanent catheter was placed in advance for long-term outpatient antibiotic infusion, and the patient was discharged on the 7th postoperative day.

After one-year follow-up, the patient continues without clinical signs or images of reinfection, and has returned to his daily routine.

Technically, the hemi-commando procedure for double valve endocarditis represents a suitable and relatively less complex option than the “commando surgery”, with the advantage of preserving most of the mitral valve and its subvalvular apparatus. This is beneficial in certain scenarios, such as young patients and patients with poor ventricular function. (1, 2, 3) The integrity of the posterior leaflet and the mitral valve anterior leaflet free edge is required when choosing this procedure. (2)

As a result of intraoperative findings, this procedure should be considered in the following cases:

- Invasive double-valve infective endocarditis.
- Involvement of the aortomitral fibrous skeleton or the anterior leaflet of the mitral valve.

Performing the procedure in a reoperation would increase the surgical risk.

Mid- and long-term outcomes in different series, such as those of David and Navaia, support this procedure for endocarditis involving the aortic valve and part of the mitral valve, without need for a double prosthetic replacement. (4, 5)

In previous complicated replacements with extensive destruction, choosing homograft in combination with a bovine pericardial patch to reconstruct the cardiac anatomy is an excellent strategy. (4, 5) We believe that the hemi-commando procedure is a valid option, even in very complex scenarios such as cardiac reinterventions. In certain cases, this type of procedure is the only surgical option to restore the integrity of the heart. More importantly, preserving the mitral subvalvular apparatus and the left ventricular function provides an additional advantage in these high-risk patients.

Conflicts of interest
None declared.

(See authors’ conflicts of interest forms on the website/Supplementary material).

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REFERENCES

Subcutaneous Implantable Cardioverter Defibrillator in a Patient with Pacemaker

The implantation of a cardioverter defibrillator has shown to reduce mortality in primary and secondary prevention, in patients at high risk of sudden death. In the last 10 years, a new generation of totally subcutaneous implantable devices has been developed, i.e. extravascular devices that have provided a solution when vascular access must be avoided or is not possible. (1)

Current indications for subcutaneous implantable cardioverter defibrillator (S-ICD) focus on patients with inadequate vascular access, history of infection, or situations where it is preferable to avoid the use

Fig. 2. Intraoperative images. A: Prosthetic valve endocarditis. B: Extension of necrotic tissue. C, D: Homograft implantation