Case report

An alternative surgical approach for aortic infective endocarditis: vegetectomy

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Abstract

We describe a case of successful vegetectomy of the aortic valves for early infective endocarditis. An aortic vegetectomy was performed as an alternative to valve replacement for a 54-year-old man with three vegetations and mild regurgitation in aortic valve due to infective endocarditis. Postoperative clinical course was without signs of recurrent infection after follow-up of 19 months, and transesophageal echocardiography demonstrated aortic valve competence. We would suggest that vegetectomy with valve sparing may be a viable option in the context of early infective endocarditis involved aortic valve in selected patients.

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1. Introduction

Infective endocarditis (IE) involving aortic valve nowadays remains to be associated with high morbidity and mortality. Although it is primarily treated conservatively with antimicrobial therapy, early surgical intervention is often mandatory when various complications arise, including intractable heart failure, persistent uncontrolled infection, peripheral embolism from vegetations [1]. Vegetectomy, which was initiated by Chandraratna and co-workers [2], was defined as a simple excision of the vegetation with preservation of the native valve and has been also reported as a conservative approach. We report a case of early IE involved aortic valve, which was successfully treated by simple vegetectomy without signs of recurrent infection after follow-up of 19 months.

2. Materials and methods

A 54-year-old man was admitted to the department of rheumatic disease with a complaint of daily fever and arthralgia for more than one month. After an antibiotic therapy with levofloxacin and roxithromycin for more than two weeks, his symptoms did not resolve. He had history of hypertension for 10 years.

On examination, he had hemorrhagic spots in conjunctiva, an audible diastolic murmur in the area of aortic auscultation, skin rash in left digitus minimus and the fourth finger, papulae in the left arm and splenomegaly. No sign of lymphadenectomy, inflammatory tonsil, joint swelling, and unstable circulatory status existed. Laboratory findings showed leucocytosis and increased ratio of neutrophilic granulocyte, anemia, and accelerated blood sedimentation rate. Red blood cell in the urine and Streptococcus mitis growth in blood culture was found. The chest X-ray film was normal but transthoracic echocardiography (TEE) demonstrated aortic valve incompetence. We would suggest that vegetectomy with valve sparing may be a viable option in the context of early infective endocarditis involved aortic valve in selected patients.

After the patient was diagnosed with IE in aortic valve, he was transferred to our department for further treatment. His fever began to resolve with a sensitive antibiotic therapy with vancomycin based on blood culture for one more week, however, another TEE showed an increased size of vegetations as shown in Fig. 1A. Surgical treatment was then recommended to avoid further circulatory embolism.

The operation was performed using standard cardiopulmonary bypass with crystalloid cardioplegia at mild hypothermia. Three friable vegetations with size of 1.5 cm x 0.5 cm, 1.2 cm x 0.4 cm and 1.0 cm x 0.5 cm were found located on the ventricular side of three coronary cusp of the aortic valve, respectively. There was no evidence of annular abscess, perforation of valve leaflet, or destruction of subvalvular apparatus. All vegetations were completely excised from the surface of leaflet using a blade and the
surface wound on the valve was carefully electrocauterized with low-strength electrocautery and then scrubbed with iodophors repeatedly, with all leaflet sparing. Microbiological investigation revealed a bacterial mass composed of Gram-positive cocci within the vegetation, and the culture of excised tissue grew *Streptococcus mitis*.

On the third day after operation the patient had a normal body temperature and antibiotic therapy with vancomycin and cefoperazone, and then with penicillin and streptomycin, which was continued for 12 weeks until normal blood sedimentation rate and repeated negative blood culture was obtained. Then, the patient was discharged in a good physical state. TEE examination at three months after operation showed a trivial aortic regurgitation and no vegetation in aortic valve, as shown in Fig. 1B. After a regular follow-up of 19 months after operation, there was no sign of recurrent infection in aortic valve.

### 3. Discussion

The diagnosis of IE in aortic valve in our patient was established by fever, hemorrhagic spots in conjunctiva, and skin rash as well as papulæ, leucocytosis and increased ratio of neutrophilic granulocyte, *Streptococcus mitis* growth in blood culture, the spleen embolism, aortic regurgitation and vegetations in aortic valve. IE involving aortic valve remains a very serious and difficult issue because of its high mortality and morbidity.

The indication for surgical treatment for this patient was moderate aortic regurgitation, persistent infection with positive blood culture, the spleen infarct from vegetation, and an increased size of vegetation in the process of antimicrobial therapy. It has been reported [1] that the surgical therapy of the infected aortic valve performed in a timely fashion contributes substantially to a reduced early and late mortality. Therefore, we chose an early surgical treatment for the patient in our report.

The eradication of the infection and the correction of the associated hemodynamic abnormality was the basic goal of surgical therapy for IE. Thus valve replacement for aortic IE was a preferential choice for most surgeons. But valve replacement carries the risk of recurrent endocarditis and of early and late related complications such as leak, hemolysis, compromised heart function, mismatch of implanted valve size and redo operation for dysfunctional prosthetic valve and also requires lifelong anticoagulative medication for this patient. The aortic homograft molds well to the infected aortic annulus, has good resistance to infection, has excellent hemodynamic performance, and does not require anticoagulation, compared to artificial valvular prostheses, however, the availability is limited [3,4].

Vegetectomy was successfully and firstly used as a surgical approach without combined treatment in a case of IE in tricuspid valve in 1978 [2]. Ever since, other surgeons worldwide used it successfully as a single surgical approach in the treatment of IE involved tricuspid valve [5—7], pulmonary valve [8], aortic valve and mitral valve [9,10] for more than 10 cases. Its main advantage includes preservation of the normal, native valve, preservation of normal hemodynamic function, abolition of the risks of anticoagulative medication, and abolition of the risks of prosthetic endocarditis. Rapid temperature drop and postoperative clinical course without signs of recurrent infection after follow-up of 19 months and TEE demonstration of aortic valve competence in our report provides additional support that vegetectomy can be used as a surgical alternative in the treatment of IE. Based on our and others experience [2,5—10], vegetectomy could be used in early phase of IE where there was merely vegetation on the involved valve, without any sign of abscess, perforation, or destruction in valve leaflet or subvalvular apparatus. Moreover, duration of postoperative antibiotic therapy based on blood culture and drug sensitive test must be long enough to avoid the recurrence of infection.

In conclusion, we would suggest that vegetectomy may be used as an alternative to valve replacement or other surgical approach in the context of infective aortic endocarditis in selected patients.

### References


