

“The Right” Treatment FOR Right-side Endocarditis

- Olga Morelli MD, Yaron Shapira MD, Idit Yedidya MD.
- Department of Cardiology, Rabin Medical Center, Petach Tikva, Israel



Background

Systematic Review

Valvectomy versus replacement for the surgical treatment of infective tricuspid valve endocarditis: a systematic review and meta-analysis

Jessica G. Y. Luc¹, Jae-Hwan Choi², Karishma Kodia², Matthew P. Weber², Dylan P. Horan², Elizabeth J. Maynes², Laura A. Carlson², H. Todd Massey², John W. Entwistle², Rohinton J. M. Vakhtang Tchanchaleishvili²

¹Division of Cardiovascular Surgery, Department of Surgery, University of British Columbia, Vancouver, British Columbia, Canada; ²Cardiac Surgery, Thomas Jefferson University, Philadelphia, Pennsylvania, USA

Correspondence to: Vakhtang Tchanchaleishvili, MD, Assistant Professor of Surgery, Division of Cardiothoracic Surgery, Thomas Jefferson University, 1025 Walnut St, Suite 607, Philadelphia, PA 19107, USA. Email: Vakhtang.Tchanchaleishvili@jefferson.edu.

Background: Optimal surgical treatment of infective tricuspid valve endocarditis in patients with intravenous drug use (IVDU) remains controversial. Tricuspid valvectomy has been proposed for infective tricuspid valve endocarditis in this patient population given the inherent social concerns. The aim of this systematic review and meta-analysis was to compare outcomes of valvectomy versus replacement for the surgical treatment of isolated infective tricuspid valve endocarditis.

Methods: An electronic search was performed to identify all relevant studies published. After assessment for inclusion and exclusion criteria, 16 original studies were pooled for systematic review and meta-analysis.

Results: There were a total of 752 patients with infective tricuspid valve endocarditis, of which 14% underwent valvectomy and 86% underwent replacement (mean follow-up 4.2 years, 95% CI, 1.9–6.4 years). The most common indications for surgical intervention were septic pulmonary embolism in the valvectomy group (74%, 95% CI, 28–95%) and persistent sepsis in the replacement group (62%, 95% CI, 31–86%). There were no differences in rates of stroke [valvectomy 4% (95% CI, 1–11%) vs. replacement 3% (95% CI, 1–16%), P=0.85] but there was increased likelihood of prolonged ventilation in those who underwent valvectomy [valvectomy 40% (95% CI, 30–51%) vs. replacement 26% (95% CI, 23–30%), P<0.01]. There were no differences in 30-day post-operative mortality [valvectomy 13% (95% CI, 5–30%) vs. replacement 7% (95% CI, 5–10%), P=0.21], post-operative right heart failure [valvectomy 27% (95% CI, 10–53%) vs. replacement 11% (95% CI, 5–25%), P=0.17] and recurrent endocarditis [valvectomy 7% (95% CI, 2–23%) vs. replacement 19% (95% CI, 12–28%), P=0.81]. Valvectomy had a higher rate of tricuspid valve reoperation [valvectomy 56% (95% CI, 15–90%) vs. initial replacement 14% (95% CI, 7–27%), P=0.06].

Conclusions: Tricuspid valvectomy is an acceptable initial therapy for infective tricuspid valve endocarditis in patients with IVDU, providing a bridge to identify those who will self-select as candidates for staged valve replacement.

ClinicalTrials.gov

Tricuspid valvectomy without replacement. Twenty years' experience

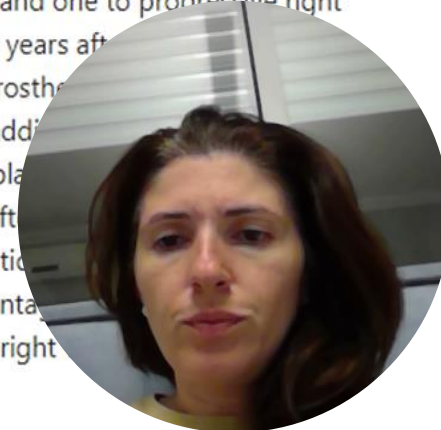
A Arbulu¹, R J Holmes, I Asfaw

Affiliations + expand

PMID: 1960998

Abstract

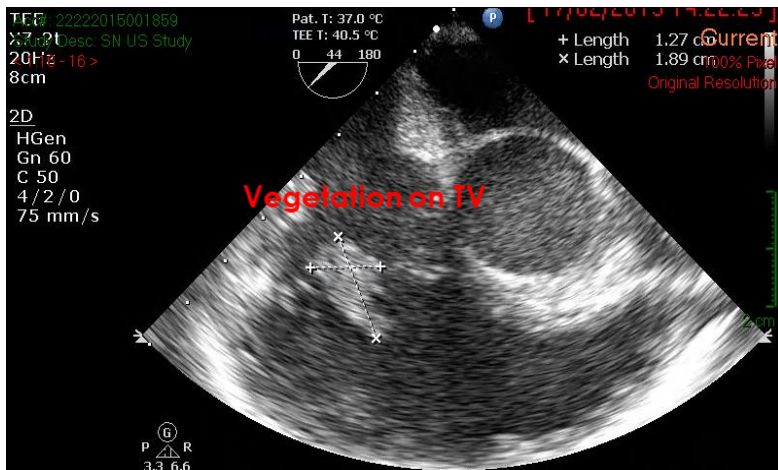
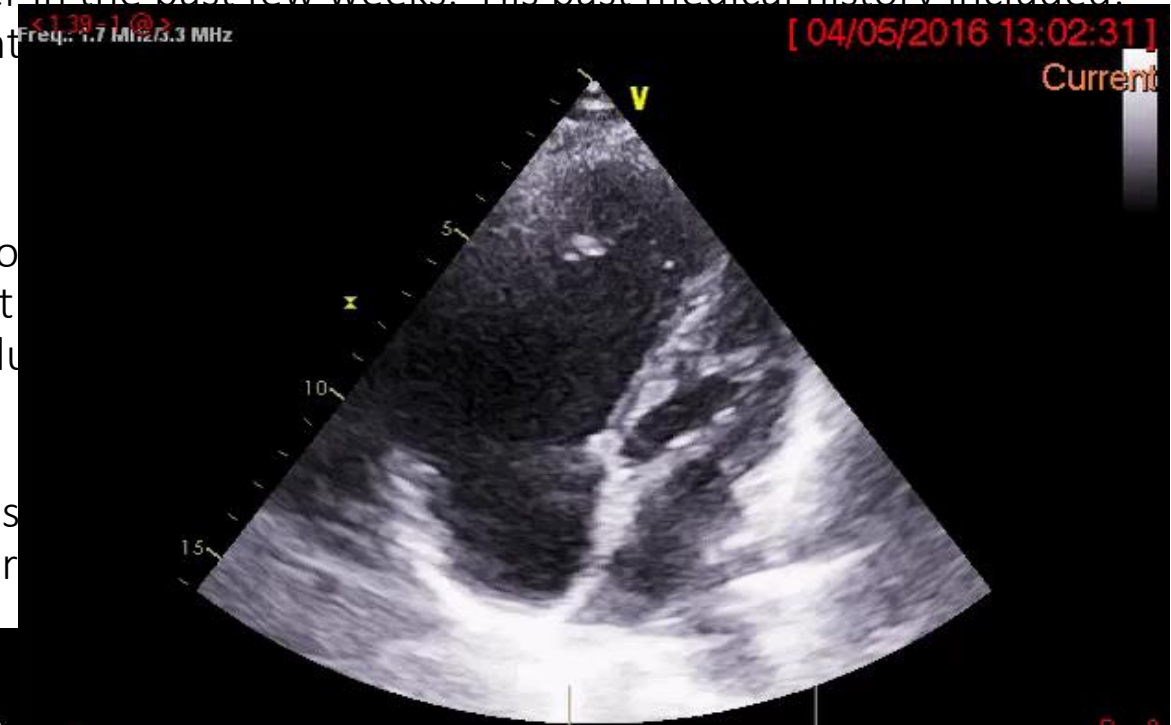
Since September 1970, we have operated on 55 patients with intractable right-sided endocarditis. All patients were addicted to heroin. Fifty-three underwent tricuspid valvectomy without replacement and in addition two had pulmonic valve excision. Twenty-four patients (49%) returned to their drug addiction. Six patients (11%) required prosthetic heart valve insertion 2 days to 13 years later for medically refractory right-sided heart failure, and four of these died. Overall, 16 patients (29%) died, six (11%) within 45 days after the tricuspid valvectomy. One (2%) of these deaths was related to the operation and five were due to uncontrollable infection. Ten (18%) deaths occurred 9 months to 13 years after the tricuspid valvectomy. Nine were due to drug addiction and one to progressive right ventricular failure 2 months after prosthetic heart valve insertion and 10 years after removal. Of the 39 patients who are alive, 37 (67%) have not required prosthetic heart valve insertion. From our observations we reached the following conclusions: (1) Drug addiction is a lethal disease. Among these patients, tricuspid valvectomy without replacement is a good choice for the management of intractable right-sided endocarditis; (2) after valvectomy without replacement, only six of 55 patients (11%) had required prosthetic heart valve insertion to control medically refractory right-sided heart failure; (3) in a small percentage of patients, control of the tricuspid valve may lead to severe and permanent impairment of right



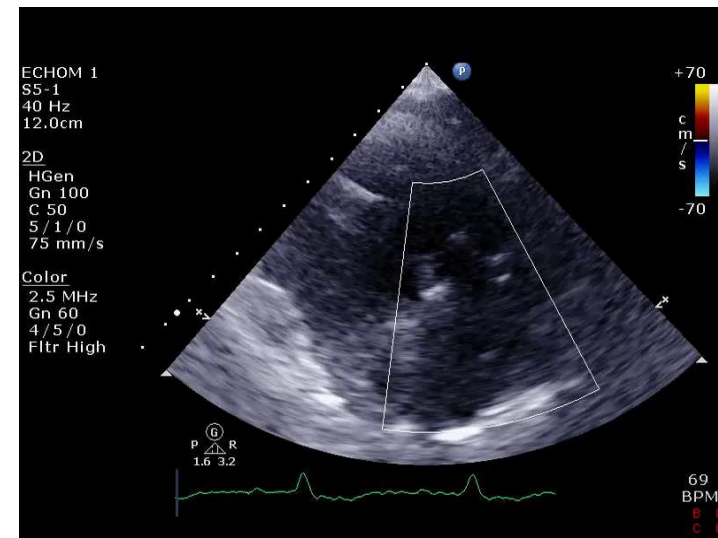
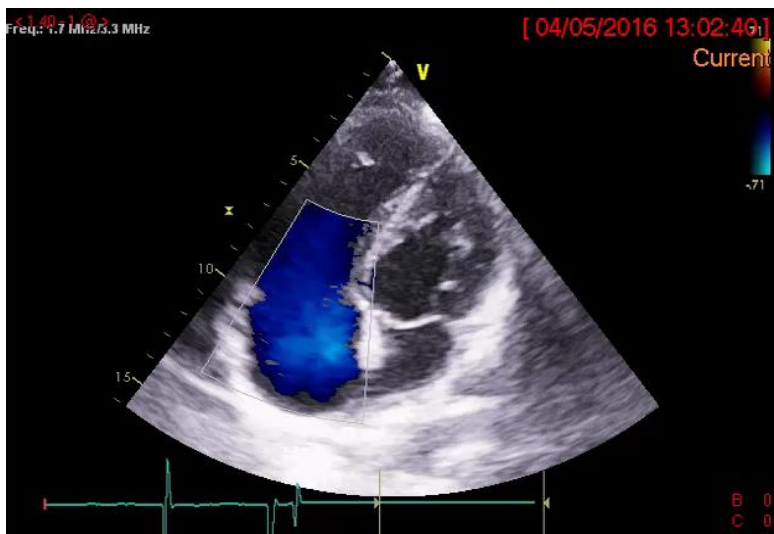
➤ A 51-year-old man was hospitalized due to fatigue, weakness fever in the past few weeks. His past medical history included: active intravenous drug abuse, hepatitis C, smoking. It is important to consider his economic status.

➤ Diagnostic work-up revealed positive Methicillin-resistant Staphylococcus aureus. TEE note large echogenic mobile mass (18X12 mm), consistent with vegetation. Patient has extensive experience with antibiotic treatment (Vancomivon + Garamycin), due to recurrent endocarditis.

➤ After that the Endocarditis Team discussed several surgical options (aortic valve replacement, mitral valve repair, tricuspid valve excision as part of his treatment).



- 1 year later he was hospitalized with right side heart failure symptoms, worsening dyspnea, easy fatigability. Note that since last hospitalization due to IE the patient was rehabilitated from IV drug abuse.
- The Transthoracic Echocardiogram (TTE) demonstrated right ventricular dilatation with preserved function. The position of the tricuspid valve revealed 'free' tricuspid regurgitation.
- The laboratory results showed negative blood cultures. Additionally, CRP levels were normal at 0.5 mg/dL.
- As he had successfully stopped intravenous drug abuse at that time, by heart team it was decided that he underwent Redo TV replacement with a Hancock 2 – 31 Porcine Valve. Immediately post-operation, he developed complete atrioventricular block (CAVB), necessitating implantation of a pacemaker.
- Early post operative period was with resolution of the symptoms.



- The patient was lost to follow-up for 8 years. He was hospitalized again in the internal medicine department, presenting with prolonged dyspnea, fatigue, weight loss and signs of right heart failure.
- His blood pressure was – 100/70 mm Hg, pulse – 95-100 per minute.
- Blood tests revealed a high CRP level of 5.5 mg/dl, along with blood culture positive to *Enterococcus faecalis*.
- Drug screen - positive for Methadone.
- An echocardiogram from the hospitalization revealed an echogenic mass (up to 25 mm) attached to the tricuspid prosthetic valve, suggestive of vegetation.
- The case was discussed with the endocarditis team, which included a multidisciplinary group comprising a cardiologist, infectious disease specialist, echocardiographer, and cardiac surgeon. Given the patient's occasional intravenous drug use, conservative treatment was recommended. The patient received appropriate intravenous antibiotics, leading to a reduction in CRP levels and WBC count, as well as resolution of the blood culture.



Take home message.....

The approach to right-sided endocarditis in patients with IV drug abuse is challenging and should be tailored on an individual basis.



Never give up!

Prophylactic placement of permanent epicardial leads should be performed at the time of tricuspid valve surgery for right-sided IE, particularly if heart block is present in the operating room to prevent damage of a replaced valve during subsequent transvenous lead displacement and to lower the risk of reinfection.⁷³³

Recently, interest has been generated in the extraction of large vegetations using percutaneous extracorporeal circuitry for aspiration.⁷⁵³ The main goals have been debulking of septic intracardiac masses, reducing the infectious load, and achieving clinical stability.⁷⁵⁴

Results

Sixteen patients died, for an overall mortality rate of 29%. Six (11%) of the deaths occurred within 45 days after excision of the tricuspid valve. Only one of these early deaths was related to the absence of the tricuspid valve. The other five early deaths were due to uncontrollable infection.

Ten patients (18%) died 9 months to 13 years after tricuspid valve excision or tricuspid and pulmonic valve excision without replacement. In nine patients the death was related to the use of drugs, and one patient died of progressive and uncontrollable right ventricular failure 2 months after insertion of a prosthetic valve in the tricuspid position. The clinical course of this patient was as follows.

Recommendation Table 21 — Recommendations for the surgical treatment of right-sided infective endocarditis

Recommendations	Class ^a	Level ^b
Surgery is recommended in patients with right-sided IE who are receiving appropriate antibiotic therapy for the following scenarios:		
Right ventricular dysfunction secondary to acute severe tricuspid regurgitation non-responsive to diuretics. ⁴⁷⁹	I	B
Persistent vegetation with respiratory insufficiency requiring ventilatory support after recurrent pulmonary emboli. ^{479,755}	I	B
Large residual tricuspid vegetations (>20 mm) after recurrent septic pulmonary emboli. ^{145,471}	I	C
Patients with simultaneous involvement of left-heart structures. ⁷⁴⁹	I	C
Tricuspid valve repair should be considered instead of valve replacement, when possible. ⁴⁷⁹	IIa	B
Surgery should be considered in patients with right-sided IE who are receiving appropriate antibiotic therapy and present persistent bacteraemia/sepsis after at least 1 week of appropriate antibiotic therapy. ^{436,755}	IIa	C
Prophylactic placement of an epicardial pacing lead should be considered at the time of tricuspid valve surgical procedures. ⁷³³	IIa	C
Debulking of right intra-atrial septic masses by aspiration may be considered in selected patients who are high risk for surgery. ⁷⁵³	IIb	C

IE: infective endocarditis.

^aClass of recommendation.

^bLevel of evidence.