Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.elsevier.com/locate/crvasa

Original research article

Tricuspid annuloplasty using De Vega modified technique – Short-term and medium-term results

Monika Kunová *, *Radim Frána*, *František Toušek*, *Aleš Mokráček*, *Ladislav Pešl*

Cardiocentre České Budějovice Hospital, Inc., Czech Republic

ARTICLE INFO

Article history:
Received 2 August 2015
Received in revised form
21 November 2015
Accepted 23 November 2015
Available online 20 December 2015

Keywords:
Tricuspid valve
De Vega tricuspid annuloplasty
Outcome

ABSTRACT

Background: Tricuspid regurgitation is very often present in patients undergoing combined cardiosurgery operation. Tricuspid annuloplasty using modified De Vega technique is one of the possible approaches during the operation.

Aim: To evaluate short-term and medium-term results of tricuspid valve annuloplasty by De Vega modified technique.

Methods and results: From 1 April 2000 to 31 December 2013, there were total of 529 tricuspid valve repairs performed, out of which 43 patients had De Vega modified annuloplasty, in the Cardiocentre of České Budějovice Hospital, Inc. The cohort is composed of 17 males and 26 females with mean age (±SD) 69 ± 7 years (range 45–83 years).

The tricuspid annuloplasty was performed using modified De Vega technique.

The results were evaluated by transoesophageal echocardiography (TEE) postoperatively and by transthoracal echocardiography (TTE) prior to discharge, and then afterwards once a year by TTE and clinical examination.

In the cohort we have followed-up the degree of tricuspid regurgitation, left ventricle ejection fraction (LVEF), heart rhythm, NYHA functional class, need for reoperation, and mortality.

Tricuspid valve repair has always been a part of combined procedure, including 3 patients who were reoperated.

In the early post-operative period (30-day mortality), 5 patients died (11.6%), and there were total of 8 patients who died within one year after surgery (18.6%).

The mean time of follow-up was 4 years and 7 months.

Conclusion: Tricuspid annuloplasty using modified De Vega technique to treat secondary tricuspid regurgitation appears to be a reliable technique of valvular repair in short-term and medium-term follow-up, especially in cases where valve insufficiency and degree of valvular annulus dilatation are of borderline significance. During the follow-up period we have not noted any case of purse-suture-related tissue tearing after the modified surgery as it has been reported in the classic procedure.

* *Corresponding author at*: Nemocnice Prachatice, Nebahovská 1015, Prachatice, Czech Republic. Tel.: +420 776750544.
E-mail address: kunova@centrum.cz (M. Kunová).

http://dx.doi.org/10.1016/j.crvasa.2015.11.006

Introduction

Tricuspid regurgitation is a frequent finding even in healthy individuals. The incidence rate is about 65% in general population, and in individuals over 70 years of age, it reaches 93% [1].

The most frequent cause of tricuspid regurgitation is the valve secondary (functional) damage caused by annulus dilatation resulting from pressure overload or volume overload of the right heart – in most cases due to valvular disease of the left heart.

Pathophysiology of the tricuspid valve annulus dilatation is as follows: because of its position, the smallest septal leaflet is resistant to prolongation during dilatation of the right heart chambers compared to the posterior and the largest, anterior leaflets. The part of the annulus where those two leaflets meet is in the free part of the right ventricular wall. The surgical procedure consists of remodelling of the dilated annulus (suture repair or implantation of annuloplastic ring), and rarely, valvular replacement is performed where repair is not possible.

In 1970s, Dr. Norberto De Vega introduced into clinical practice his tricuspid valve suture annuloplasty technique (Fig. 1) [2]. The procedure consists of a double continuous suture along the circumference of the annulus in the part between anteroseptal and posteroseptal commissures. At the commencement and end of the suture, there is a pledget placed and affixed. After tightening the suture, the tissue is retracted and the dilated annulus is reduced. A late complication of this procedure has been reported a tissue tearing of the intercalated sutures with a bow-string effect (Fig. 2) [3]. Because of simplicity and efficacy of the suture annuloplasty, the procedure became widespread but it has been modified many times to minimize this complication – modifications by Antuenes, Revuelt, Brugger, and others [3].

Patients and methods

From 1 April 2000 to 31 December 2013, there was a tricuspid valve repair performed in the Department of Cardiac Surgery of České Budějovice Hospital, Inc. in 529 patients, out of whom De Vega annuloplasty was used in 43 patients (17 males and 26 females), age range 45–83 years. De Vega annuloplasty was in all cases a part of a combined procedure, mostly a part of left heart valvular disease surgery or myocardial revascularization. In 3 cases, it was tricuspid valve repair along with right atrium myxoma removal or atrial septum defect closure (Fig. 3). Indication for tricuspid annuloplasty was done based on the decision of Heart team. The type of operation on tricuspid valve was selected according the operator with respect to perioperative echocardiography and morphological findings.

Pre-operation characteristics of the cohort are summarized in Table 1.

The procedure itself was performed by modified technique using 5 Teflon pledgets – not only in both ends, but also in the commissures and at the place of tying up the suture, which was in the area of the anterior leaflet. The annuloplasty was also extended compared to the original technique up to the right trigonum fibrosum. The annuloplasty has always been performed in the anteroposterior direction of the annulus from preoperative diameter larger or equal 25 mm/m^2 (as established by TTE/TEE) and was aimed to postprocedural reduction to approximately 16–18 mm/m^2 anteroposteriorly. The reduction of the annulus postoperatively was achieved by tightening of stitches line to the Hegar dilator of the appropriate diameter in the tricuspid ostium.

In an annulus with diameter 21 mm/m^2 without presence of significant tricuspid regurgitation, no annuloplasty was performed. In borderline cases, the cardiac surgeon decided usually based on significance of the tricuspid regurgitation and relative size of the anterior leaflet of the tricuspid valve.

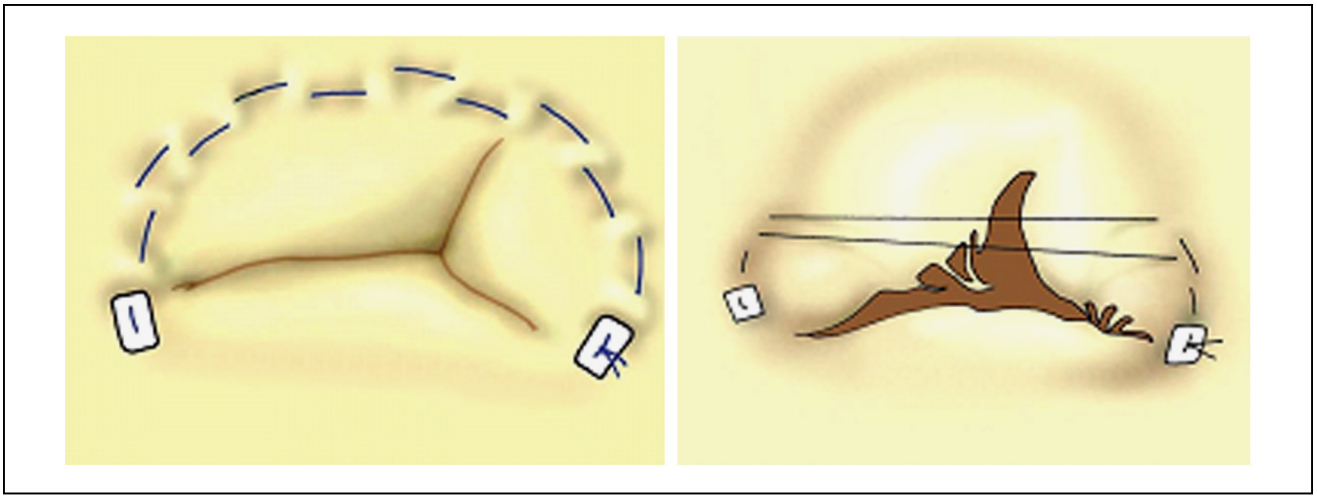

Fig. 1 – Classic surgical DeVega technique (in the left side of the figure), suture-related tissue tearing – "bow-string effect" on the right.