

Surgical Lessons

from the Repair of Recurrent Tricuspid Regurgitation after DeVega Annuloplasty

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A 67-year-old man had undergone DeVega annuloplasty (with use of monofilament polypropylene suture) and mitral valve replacement 3 years before he presented at our hospital. Transesophageal echocardiograms showed paravalvular leakage of the mitral prosthesis, moderate-to-severe tricuspid regurgitation (TR) associated with annular dilation (diameter, 4.2 cm) (Fig. 1A), an echodense streak at the tricuspid annular level in diastole (Fig. 1B), and a pulmonary artery systolic pressure of 26 mmHg. During repair of the paravalvular mitral leak and the TR, one strand of tricuspid annuloplasty suture was found tethered across the valve aperture consequent to atrial tissue laceration; another suture strand was superficially buried in the annulus (Fig. 2). The TR was repaired with use of a no. 28 Edwards MC3 Tricuspid Annuloplasty Ring (Edwards Lifesciences Corporation; Irvine, Calif).

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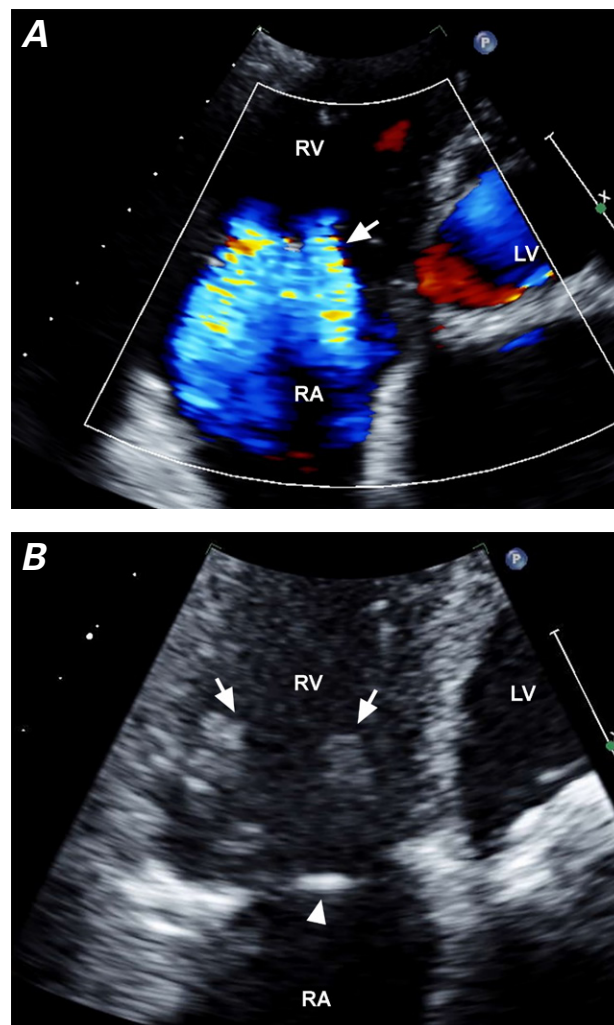


Fig. 1 Transesophageal echocardiograms. **A**) Color-flow Doppler mode reveals moderate-to-severe tricuspid regurgitation (arrow). **B**) In diastole (4-chamber view), an echodense streak (arrowhead) is visible at the annular level. Arrows point to the tricuspid valve leaflets.

LV = left ventricle; RA = right atrium; RV = right ventricle

Supplemental motion images are available for [Figure 1A](#) and [Figure 1B](#).

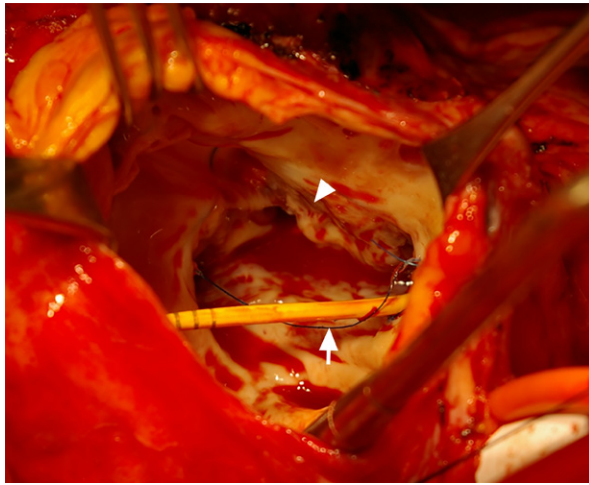


Fig. 2 Photograph during repeat tricuspid valve annuloplasty shows one strand of the annuloplasty suture (arrow) tethered across the tricuspid valve aperture; another strand (arrowhead) is superficially buried in the annulus.

Comment

Recurrent TR after DeVega annuloplasty has been described.¹ Whereas the risk factors for recurrent TR include chronic obstructive diseases, pulmonary hypertension (>60 mmHg), and a left ventricular ejection fraction <0.50, the DeVega annuloplasty technique (in comparison with ring and modified DeVega annuloplasty) also poses a risk.

In several DeVega patients with a suture-tethering sequela, the culprit material was a monofilament polypropylene suture. Even when pulmonary artery pressure is low, the monofilament suture material might lacerate tissue in the annulus and atrial wall during cardiac motion. This risk can be reduced by using the modified DeVega annuloplasty technique with multiple pledgets¹ and deep stitching with a braided Dacron suture instead of monofilament polypropylene.² A high likelihood of avoiding recurrent TR can be expected with the use of a partial¹ or complete³ ring, as opposed to DeVega annuloplasty.

References

1. Kara I, Koksall C, Cakalagaoglu C, Sahin M, Yanartas M, Ay Y, Demir S. Recurrent tricuspid insufficiency: is the surgical repair technique a risk factor? *Tex Heart Inst J* 2013;40(1):34-41.
2. Kouchoukos NT, Blackstone EH, Hanley FL, Kirklin JK. Tricuspid valve disease. In: Kirklin/Barratt-Boyes cardiac surgery. 4th ed. Philadelphia: Elsevier Saunders; 2013. p. 656-71.
3. Mestres CA, Bernal JM, Pomar JL. Surgical treatment of tricuspid valve diseases. In: Selke FW, del Nido PJ, Swanson SJ, editors. *Sabiston & Spencer surgery of the chest*. 9th ed. Philadelphia: Elsevier; 2016. p. 1430-56.