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One clip to treat them all: A case of simultaneous mitral and tricuspid jet reduction

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One clip to treat them all: A case of simultaneous mitral and tricuspid jet reduction

Short title: TR improvement after transcatheter mitral edge-to-edge repair

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In recent years, mitral transcatheter edge-to-edge repair (TEER) has become an important method of mitral regurgitation (MR) treatment. Patients with MR are often diagnosed with secondary tricuspid regurgitation (TR), which leads to the exacerbation of symptoms and is considered a negative prognostic factor. In cases of concomitant MR and TR, the staged procedure starting with MR treatment is usually advised because successful reduction of the first may have a beneficial effect on the latter. The presented case exemplifies this phenomenon.

A 76-year-old woman with a history of heart failure with reduced left ventricular ejection fraction accompanied by at least severe MR and TR was referred to the hospital for the treatment of valvular heart disease. After optimization of pharmacotherapy, including diuretic treatment and atrial fibrillation rate control, the transthoracic echocardiography revealed an ejection fraction of 24%; dilated both mitral and tricuspid valve annuli, severe MR (MR ERO of 0.44 cm^2, MR vol of 57 ml); with visible leaflet restriction and massive TR (TR ERO of 0.65 cm^2, TR vol of 65 ml) accompanied by calculated systolic pulmonary artery pressure (SPAP) of approximately 50 mm Hg (Figure 1A) In transoesophageal echocardiography (TEE), the patient was found to be a potential candidate for both mitral and tricuspid TEER.

The mitral procedure was carried out under TEE guidance with the implantation of the single PASCAL P10 device (Edwards Lifesciences) in the central region of the mitral valve, which led to the significant reduction of MR (Figure 1B). After further pharmacological treatment follow-up transthoracic echocardiography confirmed a good result of mitral TEER with the residual mild MR and reduction of SPAP to approximately 30 mm Hg. Moreover, a significant reduction of TR was achieved, which eliminated the need for further percutaneous treatment.

Moderate or severe TR is present in about one-third of the patients undergoing surgical or transcatheter mitral valve interventions [1]. Optimal medical therapy, especially diuretic treatment, may lead to TR reduction. Furthermore, mitral repair may cause further TR improvement. In one of the studies, among the patients with MR and concomitant severe or worse TR, after the mitral TEER, the TR improved to a mild or moderate degree in 51% of cases [2]. Among factors predisposing to the TR reduction after the mitral TEER, obtaining good results of the mitral valve repair is one of the most important. The possible mechanism might include the decrease of postcapillary pulmonary pressure, resulting in decompressing pulmonary hypertension, decreasing right ventricle afterload and dilation, overturning negative left atrial remodelling and enlargement, which previously led to volume overload and right atrium enlargement [3]. TR reduction was also described after decreasing right ventricle preload with percutaneous embolization of the coronary artery fistula [4].

The presented case shows a positive impact of combined optimal medical therapy and a successful mitral TEER procedure on TR severity, eliminating the need for transcatheter tricuspid valve repair and advocating the staged approach for treating patients with combined mitral and tricuspid insufficiency.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/polish_heart_journal.

Article information

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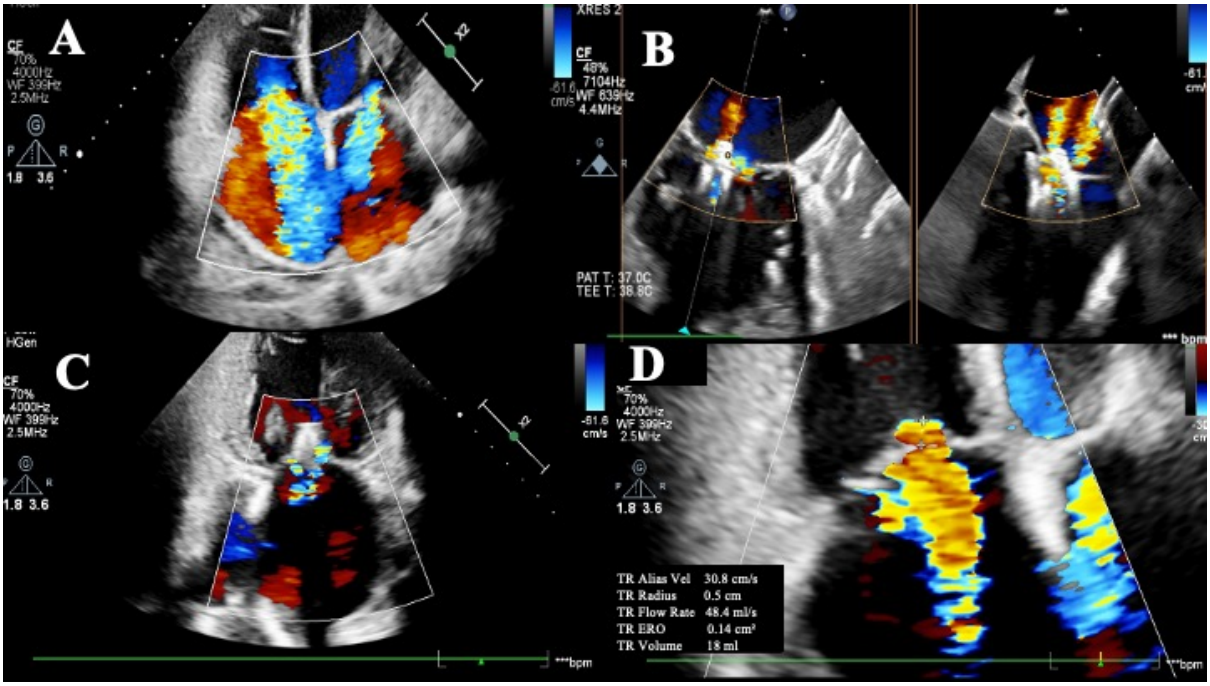

Figure 1. Mitral and tricuspid regurgitation (MR/TR) before and after the treatment. **A.** Severe MR and TR before the treatment in the transthoracic echocardiography. **B.** Significant MR reduction after mitral transcatheter edge-to-edge repair procedure in periprocedural transesophageal echocardiography. **C.** MR reduction in postprocedural echocardiography. **D.** TR reduction in postprocedural echocardiography