reconstruction. We need to understand whether the theoretical benefits of valve preservation lead to the intended benefit of right ventricular performance. I, for one, still hold on to the belief that preserving valve competence helps; I just need to reassure myself with supporting data.

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Commentary: Is it beneficial to add a monocusp during non–valve-sparing tetralogy of Fallot repair? Is there a way to settle this debate 3 decades later?

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CENTRAL MESSAGE

Pulmonary valve augmentation for repair of TOF reduces pulmonary insufficiency, at the expense of a small incidence of RVOT obstruction. Is it time to assess if the benefit justifies the risk?

In this issue of the *Journal*, Patukale and colleagues¹ present the experience of 2 centers with the pulmonary valve leaflet augmentation technique during non–valve-sparing tetralogy of Fallot (TOF) repair. This technique was first described by Sung and colleagues from Dong-A University Hospital in Pusan, South Korea.^{1,2} The patch used to augment the native pulmonary valve is sutured to the remnants of the divided anterior native pulmonary valve leaflet and then to the endocardium of the ventriculotomy rather than the epicardial surface, thus creating a long pulmonary neosinus. Any attachments of the leaflets and commissures

to the pulmonary artery wall are divided and the leaflets are mobilized. There are theoretical advantages of this modification compared with the standard monocusp. The patch used in the leaflet augmentation technique uses the native valve hinge mechanism. This may lead to better coaptation with the native pulmonary valve tissue and thus to less regurgitation. By attaching the patch to the leaflets, this technique may preserve a growth potential. Finally, by separating the patch used for the augmentation of the leaflet from the epicardial transannular patch (TAP), this technique creates a pulmonary root neosinus, mitigating a common mechanism of failure, the adherence of the monocusp to the TAP material.²

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Previous reports have shown that compared with patients who had TOF repair with TAP, patients who underwent the leaflet augmentation technique had shorter intubation times, less use of inotropes, and shorter length of stay.³ The initial function of the augmented pulmonary valve leaflet is great; however, with time the mobility of the leaflet decreases and the degree of pulmonary regurgitation tends to increase.⁴ It has also become clear that the chances of valve function deterioration can be improved if thin expanded polytetrafluoroethylene patch material is used instead of glutaraldehyde-treated autologous pericardium.^{1,4} The freedom from more than moderate pulmonary insufficiency in the study by Patukale and colleagues was 69% and 30% at 5 and 10 years and compared reasonably well with the 10-year results of the group in South Korea but also with the results of the standard expanded polytetrafluoroethylene monocusp.^{1,4,5}

The authors ought to be congratulated for their excellent results, which reinforce that TOF repair should be achieved with minimal or no mortality. It is not clear whether these mid-term results would be different if this technique were to also be used in neonatal TOF repair. Neonates in this series who were cyanotic had initial palliation with a shunt. Additionally, in this series there was a small number of patients (9% or 6.9%) who required reintervention for recurrent right ventricular outflow tract obstruction. The proponents of the use of monocusps and of the pulmonary leaflet augmentation technique point to the smooth early course of these patients and the overall long-term decrease in the degree of free and severe pulmonary insufficiency.

The surgeons who use TAP alone argue that the postoperative course is not that complicated and that TAP is seldom associated with a need for early catheter or surgical reintervention for residual or recurrent right ventricular outflow tract obstruction. The only way to sort through all this, of course, is to study the patients with pulmonary leaflet augmentation and other monocusp techniques with magnetic resonance imaging assessment of the right ventricular (RV) ejection fraction, RV end-diastolic volumes, and RV regurgitant fraction long term and to compare them with patients repaired with the standard TAP. As the different monocusp techniques become more elaborate and occasional problems arise leading to reinterventions, maybe it is time to find a way to comprehensively study the long-term merits of these techniques and settle the debate that started 3 decades ago.

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