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Commentary: Belt and suspenders—Hybrid repair of postinfarct VSDs using the Amplatzer device and patch-exclusion

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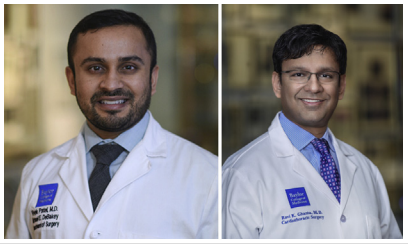

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CENTRAL MESSAGE

A novel hybrid repair for postinfarction ventricular septal defects might represent a reasonable solution to a vexing problem.

Postinfarction ventricular septal defects (VSDs) result in a left-to-right shunt and biventricular failure and are almost universally fatal without surgical repair. Even with repair, mortality can be as high as 60%.[1] Anterior VSDs are more common, typically involve an infarction along the left anterior descending territory and are relatively easier to repair compared with posterior VSDs, which result from an infarction in the right coronary artery distribution and are more technically challenging to repair given the posterior location. Historically, delayed repair was preferred because it allowed for formation of a scar around the infarcted area, which helped hold sutures more securely.[1] Ensuring a secure repair of the defect with a patch, which will prevent patch dehiscence, bleeding, or residual VSD remains the most vexing problem for this condition.

The Daggett repair, one of the first popular techniques to repair postinfarction VSDs, involves resection of the necrotic septum and ventricle free wall, followed by a 2-patch repair, 1 for the VSD and 1 for the ventriculotomy.[2] Both patches are reinforced with pledgeted sutures. The ventriculotomy can also be closed with felt strips and pledgeted sutures. The more contemporary David repair involves a patch-exclusion of the defect by securing a patch to healthy endocardium, septum, or ventricular free wall around the infarcted tissue.[3] Emerging repair techniques now include the use of the percutaneous Amplatzer septal occluder device (ASOD; Abbot, Chicago, Ill), a self-expanding plug composed of nitinol and titanium, or mechanical circulatory support (ie, Impella; Abiomed, Danvers, Mass) as a bridge before definitive repair.[1,4,5]

Using this novel hybrid surgical technique, Madou et al[4] reports repair of postinfarction VSDs with the ASOD, which was deployed after ventriculotomy, and an additional patch-exclusion with bovine pericardium to provide a more rigid, secure 2-layer repair. The advantage of this hybrid repair is that the ASOD provides a more rigid repair compared with open patch repair alone. The technique used by Madou et al[4] has never been reported before, although the ASOD has been used for percutaneous repair of postinfarction VSDs. Their technique might be superior to the percutaneous application, because it allows for complete visual inspection of the infarcted area and ventricle free wall, which will often require additional repair.[4] Percutaneous placement of the ASOD for postinfarction VSDs has been investigated. However, at present, limited evidence is available to support its use, except perhaps in patients who might not be surgical candidates owing to significant comorbidities.[1,5] Periprocedural complications such as device dislodgement, ventricular rupture, embolization, and reintervention have been reported to be as high as 44%.[5] Additionally, the use of the ASOD for either percutaneous or hybrid repair is limited to select defects given the device size (3-38 mm) and the required rim of tissue, 6 to 8 mm, for deployment.

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Further investigation into patient selection and demonstration of improved outcomes with the ASOD compared with traditional open patch repair is still warranted. Nevertheless, the technique presented is certainly a novel, innovative solution to a challenging surgical problem.

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