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Commentary: "Belt and suspenders" or panacea: A hybrid approach to the complex problem of postmyocardial infarction ventricular septal defect

Gabor Bagameri, MD, and Juan A. Crestanello, MD

Juan A. Crestanello, MD, and Gabor Bagameri, MD

CENTRAL MESSAGE

Use of a hybrid surgical approach using the Amplatzer septal occluder during the infarct exclusion technique decreases residual and/or recurrent VSD and thus has the potential to improve outcomes.

Although postmyocardial infarction (post-MI) ventricular septal defect (VSD) is a rare complication of acute myocardial infarction (MI), it remains responsible for a significant proportion of early deaths following MI. The mortality rate of medical treatment exceeds 90%, whereas that of surgical repair ranges between 19% and 60%.[1-4] Outcomes from the Society of Thoracic Surgeons (STS) National Database observed an operative mortality rate of 42.9%, representing the greatest risk of all cardiac procedures recorded in the STS database.[1]

In the STS database report, early surgery was associated with significant operative mortality, but this was driven by selection bias, as sicker patients underwent surgery earlier. Even though this study suggests a progressive improvement in mortality when VSD repair is delayed in relation to MI, there is bias of not knowing how many patients died while awaiting repair. Many authors and current guidelines advocate early or immediate repair in patients who develop post-MI VSD before the development of hemodynamic compromise.

The surgical repair of post-MI VSD has evolved from the classical technique of infarctectomy with Dacron graft to a more conservative approach of "infarct exclusion."[2,3] The exclusion technique was able to dramatically reduce mortality, especially in patients with posterior septal rupture. Multiple modifications of the infarct exclusion technique have been described in the literature. Irrespective of the chosen technique, the essential principle is effective closure of VSD without any residual shunt and/or recurrence. The transcatheter VSD closure emerged as a less-invasive option in the management of post-MI VSD. As a result, transcatheter VSD closure is often a temporizing measure to clinically stabilize patients and/or in very high surgical risk patients as a definitive treatment.[5] However, it has its own shortcomings and failures. Unfortunately, successful sealing of the VSD does not necessarily translate to an improved postinfarct VSD outcome, nor does it change the condition's natural history.

In the current manuscript, the authors describe a novel hybrid surgical repair of post-MI VSD using the Amplatzer septal occluder under direct vision to augment surgical repair during infarct exclusion technique.[6] It is reported that recurrent and/or residual VSD is associated with a 2.7 times greater relative risk of long-term mortality.[4] This is a creative solution and reflection of an increased collaboration and sharing of knowledge between cardiologists and surgeons. There is a paradigm shift in the treatment of post-MI VSD from early surgery to early intervention, either with percutaneous closure devices, or placing a mechanical support device to bridge the patient so that their end-organs are preserved and their heart may recover.[1] Early surgery with the aforementioned hybrid technique seems an excellent option in an otherwise low-risk

From Cardiovascular Surgery, Mayo Clinic, Rochester, Minn.

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Address for reprints: Juan A. Crestanello, MD, Mayo Clinic, 200 First St SW, JO-5200, Rochester, MN 55905 (E-mail: Crestanello.Juan@mayo.edu).

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candidate without evidence of shock. Unstable or high-risk patients may be better served with percutaneous approach plus/minus mechanical support, followed by definitive surgical repair if they don't achieve a satisfactory result with initial approach. This concomitant or staged hybrid approach using transcatheter technology with the exclusion technique could further improve the outcome of post-MI VSD by combining the best of both worlds and using a heart team approach.

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