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Commentary: Surgical ventricular reconstruction is the right choice

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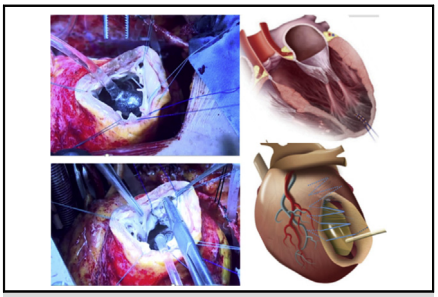

Upper, Remodeling the new apex; *lower*, remodeling the anteroseptal wall.

CENTRAL MESSAGE

Surgical ventricular remodeling in post-AMI patients reduces left ventricle volume, improving survival. The RWT can identify an SVR population that has a very low risk of surgical mortality.

According to previous studies, at least 30% of patients with acute myocardial infarction experience an increase in left ventricular (LV) volume of at least 20% from baseline, despite a successful primary recanalization.[1] LV volume is a major determinant of mortality.[2] The ultimate goal of surgical ventricular reconstruction (SVR) is to induce a reverse remodeling, excluding the scar from the LV cavity and rebuilding the chamber with volume and shape as physiologically as possible. The goal is to achieve an end-systolic volume index of approximately 60 mL/m^2, avoiding sphericalization and respecting the physiologic ellipsoid shape of the left ventricle.[3] The phenotypes of LV dilatation have a wide-ranging appearance, spanning from the classic aneurism, with a well-defined neck and apical dyskinetic dilatation, to an ischemic dilated cardiomyopathy. In this case, there is no neck; the dilatation involves more than 4 segments of the anterior wall. Secondary mitral regurgitation is often present, depending also on the site of the remodeling: anteroseptal or inferoposterior.

A complete revascularization has to be performed, avoiding residual ischemia. However, more and more frequently, no coronary stenosis is present due to repeated coronary angioplasty. The cavity is approached through a ventriculotomy performed on the scarred region. The ventricle is remodeled with a shaper used as a scaffold, keeping volume and shape in a physiological range. Nowadays, the use of a patch to close the ventricle has been abandoned to avoid sphericalization of the cavity.[3]

The procedure is successful if the surgical technique is properly conducted and the selection of patients is accurate. The risk of an unsuccessful procedure is related to the extension of the myocardial scar, to the contractility of the remote myocardium, not involved in infarcted area, and to the thickness of the posterior wall, which, in the case of anterior infarction, is a good indicator of function.[4] In this issue of *JTCVS Open*, Adhyapak and colleagues[5] report their experience with SVR in a population of 165 patients. They investigated the relative wall thickness (RWT) as a predictor of outcome. This parameter it easy to calculate (2 times the posterior wall thickness divided by the left-diastolic diameter). Normal RWT identifies an ideal candidate population that presents a very low risk of mortality. This information can be useful for a team with little experience starting this surgical program. A normal RWT is also predictive of improvement of diastolic function after surgery.[6] When the RWT is low and the risk of mortality increases, the quality of surgical techniques can improve the outcome; using a sizer inside the cavity is important to reduce not only the volume but also the transverse diameter. Closing the wall over the sizer, including part of the septum, avoids the use of a patch and it brings the cavity, building a new apex, to an elliptical shape. The RWT is a simple parameter helping in the decision-making of how to treat patients with transmural necrosis and enlarged left ventricles. In these patients, SVR is the right choice.

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