COVID-19 for untreated myocardial infarction. We have to prepare. Let's start again!

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Commentary: Keys to surgical success: "Thinking outside the operating room?"

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WHAT DOES IT TAKE TO GENERATE EXCELLENT RESULTS IN CARDIAC SURGERY?

Stefanelli and colleagues¹ present outstanding results in this issue of the *Journal* for a controversial surgical technique, surgical ventricular restoration (SVR). How is that possible? The manuscript may appear as a perfect example to illustrate that cardiac surgery requires more than manual dexterity, it requires thinking, in and outside, the operating room (OR).

Cardiac surgery has developed a plethora of reproducible surgical procedures with at times tremendous symptomatic as well as prognostic relevance. Nevertheless, some

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CENTRAL MESSAGE

Success in cardiac surgery today requires more than gifted hands in the operating room. It is an interplay of many details in and outside of the operating room.

strategies remain a matter of debate, such as SVR. The Surgical Treatment for Ischemic Heart Failure (STICH) trial² demonstrated improved survival of coronary artery bypass grafting in ischemic cardiomyopathy compared with medical therapy whereas adding SVR to coronary artery bypass grafting led to no further improvement.³ Consequently, SVR almost disappeared from the ORs worldwide. Nonetheless, with a cardiac survival probability of only 50% to 60% at 10 years, prognosis remains dismal regardless of the specific treatment.²

In contrast, Stefanelli and colleagues¹ achieved an impressive 1.6% 30-day-mortality and cardiac survival of approximately 70% at 10 years (up to 90% for ejection

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fraction >25%). It is difficult to attribute these results directly to SVR because the authors changed their technique several times during the 15-year observation period. Yes, greater-volume reduction appears to result in favorable outcomes, findings consistent with the conclusions from STICH.⁴ However, “thinking” through the results raises questions.

How do we interpret an increase in ejection fraction (from 29% to 38%), when SVR reduces end-diastolic volume and mitral repair reduces stroke volume? Is the effect only SVR-related? Two-thirds of patients had significant functional mitral regurgitation, which further limits prognosis irrespective of surgical treatment.⁵ Crossclamp time is related to mortality⁶ and the authors’ clamp times were not short (99 ± 29 minutes). Bypass grafting may improve survival,⁷ especially if arterial grafts are used.⁸ Intra-aortic balloon pump and levosimendan were used perioperatively, but their efficacy has yet to be shown in controlled trials. In addition, cardiac surgical outcomes have improved over the last decade in many areas without relevant changes in surgical technique.⁹

Interestingly, the authors present 100% follow-up over 15 years for this retrospective analysis. They describe standardized protocols established for yearly cardiologic clinic visits and report an astounding 100% freedom of rehospitalization for heart failure at 10 years. They further describe that optimal medical therapy was started soon after surgery and was maintained in all patients. Medical therapy for heart failure significantly improved in recent years.¹⁰

Think. How much of all this is SVR-related and how much depends on many other little details? Stefanelli and colleagues¹ appear to have thought ahead, and not only inside the OR. Although they worked to perfect their SVR technique, they did not stop in the OR. They established mechanism for optimal medical care of their patients

thereafter. At times, where surgical patients even in randomized trials receive poor medical therapy,¹¹ we should all think about the authors’ results and thank them for their lesson in comprehensive cardiac surgery.

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