LIVE PROCEDURE – A TAILORED APPROACH FOR ISCHEMIC HEART FAILURE

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Abstract:

Ischemic cardiomyopathy is the most common cause of heart failure (HF). In patients with left ventricular (LV) dilatation, low ejection fraction (EF), and transmural scar, Less Invasive Ventricular Enhancement (LIVE procedure) is a therapeutic option. LIVE is a unique procedure to exclude scarred myocardium, reduce volumes and reshape the LV, while improving HF symptoms. The procedure is design to address antero-septal and apical scar – segments typically supplied by the left anterior descending (LAD) artery but can be tailored to the unique characteristics of individual scar morphology, allowing multiple configurations of anchor deployment. We herein report two cases that highlight this therapy's scope of applicability.

First patient:

Is a 39-year-old gentleman with a 2-year-old previous mid anterolateral wall myocardial infarct (MI), which resulted in a dyskinetic scar in those segments. Despite guideline-directed medial therapy (GDMT), he was consistently in NYHA class III. His cardiac MRI showed a severely dilated heart with a left ventricular end-systolic volume index (LVESVI) of 162 mL/m2 and an EF of 22%. The scar was purely antero-lateral, with no septal component. His coronary angiography showed proximal LAD and first diagonal branch occlusion, with a very dominant right coronary artery perfusing the septum and apex. As such, he underwent successful LIVE procedure using four Revivent TC™ (BioVentrix™, San Ramon, CA, USA) surgically applied anchors, producing a linear plication and exclusion of the antero-lateral wall (Figure 1). LVESVI reduced to 94 mL/m2 (-42%) and

EF to 25% (+9%) in the followup cardiac MRI. Post-operative course was uneventful and12 months after the procedure, he is in NYHA class I.

Second patient:

is a 62-year-old male who suffered a previous osteal LAD artery infarct. This has resulted in extreme LV remodeling, with a LVESVI of 162 mL/m2 and EF of 18% as assessed by cardiac CT, due to a large highly transmural scar. Despite GDMT, he was in NYHA class III. As there was an important septal scar component, he underwent hybrid LIVE procedure with Revivent TC™ system (RV-LV). Five anchor pairs were used, including one internal anchor, one Antonius stitch (external RV-LV) and three LV-LV anchor pairs (Figure 2). Post-operative course was straightforward and he was discharged on post-operative day #6. Follow-up CT scan showed a LVESVI of 60 mL/m2 (-63%), EF of 44% (+151%) and full scar exclusion.

Summary:

Hybrid LV reshaping and volume reduction is a safe and effective option in patients with symptomatic HF after MI. The procedure is highly customizable and adaptable to each patient's scar morphology. As such, this therapy is a true bespoke approach in ischemic HF and an important add-on to optimized medical therapy, as it addresses its structural component – LV scar.

Figure 1 – Linear plication of the antero-lateral wall scar with 4 Revivent TC™ anchor pairs

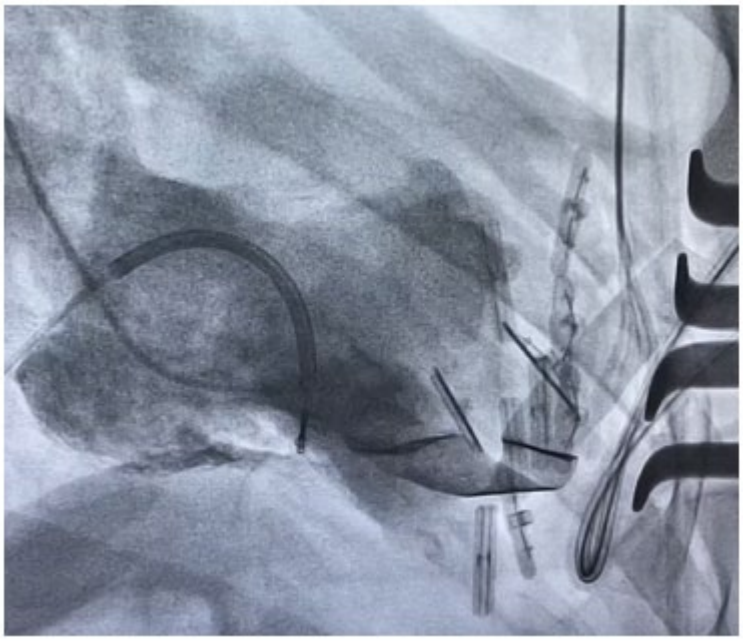

Figure 2 – 5 Revivent TC™ anchor pairs applied in this patient, allowing full scar exclusion