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Cardiomyoplasty

Ketua Haris*

Editorial Office, Journal of Coronary Heart Diseases, Belgium

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Editorial

Skeletal Muscle Cardiac Assist (SMCA) is gaining popularity as a viable surgical therapeutic option for end-stage heart failure. The muscle is wrapped around the heart and then triggered by electrical stimulation to increase cardiac contraction in one type, cardiomyoplasty. The hemodynamic effect of cardiomyoplasty has been the subject of a great deal of experimental and clinical research over the past decade. Over the last decade, a lot of experimental and clinical research has been done on the hemodynamic effects of cardiomyoplasty. Chronic heart failure is a condition defined by left ventricular dysfunction, poor quality of life, and a significantly reduced life expectancy. Patients with new-onset heart failure following an acute myocardial infarction had considerably poorer survival rates, with just a small percentage living for five years. Total artificial hearts and mechanical assist devices have been used successfully as a bridge to transplantation, but the associated infective and thromboembolic problems make them unsuitable for long-term usage. Even patients with terminal congestive heart failure have a surplus of skeletal muscle, so the thought of using it as a source of energy to supplement failing hearts is tempting. These muscles have the ability to generate huge forces and have their own energy supply. They also offer a power supply that is devoid of cables, pneumatic tubes, and complex electromechanical components. Autografting also produces no immune response and has a low risk of infection. Because it is a large, non-essential muscle with a prominent axial neurovascular bundle and is located close to the heart, the latissimus dorsi muscle is widely seen to be the best candidate for cardiac assistance. A major decrease in muscle mass and power is related with the fast-to-slow transition. However, if provided correctly to the cardiovascular system, the residual power is predicted to be more than ample for cardiac assistance. Another unfavourable consequence of muscle change is a significant decrease in contractile speed. Type I fibres are slow to contract and relax, and they can't match the heart's natural dynamics. Alternative stimulation strategies used in experimental animals recently changed type II B fibres into intermediate type II A fibres, which are rapid but not fatigue-prone. In cardiomyoplasty, such approaches have yet to be used. The improvement in symptoms following cardiomyoplasty could be attributable to the procedure's placebo effect as well as an overall improvement in patient care. However, a rigorous quality of life assessment of patients before and after cardiomyoplasty found that the procedure considerably reduced the degree of physical and social activity limitation. For patients with end-stage heart failure, SMCA is a promising treatment option. Cardiomyoplasty was first used to provide dynamic support; nevertheless, it appears that in many patients, the comparatively "passive" role of preventing ventricular hypertrophy may be beneficial in and of itself. More study is needed to improve current surgical procedures and retain the transplanted muscle's structural and functional integrity.

Meanwhile, the technique should be reserved for patients with NYHA class III heart failure who are not candidates for conventional surgical procedures or cardiac transplantation.

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***Address for Correspondence:** Haris K, Editorial Office, Journal of Coronary Heart Diseases, Belgium, E-mail: healthcare@healthcareres.org*

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