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DECELLULARISATION OF HEART VALVES

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Heart failure is the end stage of heart disease and occurs when all compensatory mechanisms due to underlying heart disease are not maintaining the cardiac output. Valvular heart disease, ischemic heart disease, hypertensive heart disease and cardiomyopathy in the elderly and congenital heart disease in the children are well established factors of heart failure. A.C inhibitors, Diuretics, Beta-blocker, vasodilators and lanoxin are mainstay of medical treatment. Cardiac transplantation with immune suppressants therapy is widely accepted procedure for end stage cardiac failure that is with severe functional limitations and refractory to treatment modalities. But cardiac transplantation is not accessible for majority of the patients.

Because of higher cost and lack of sufficient technical expertisation and non-availability of number of centers alternative strategy is considered to solve the end stage heart failure with stem cell therapy. Live organ equivalent which is biocompatible is still in the experimental stage. Tissue engineering of heart valves are used with success. Decellularisation of heart valves and recellurisation of tissue engineered valves have shown promising results. Whole cardiac extracellular matrix as a scaffold and seedling of pluripotent stem cells derived cardiomyocytes after antigen removal by protein Solubilisation, sarcomeric disassembly preserved mechanical and structural properties have a role in tissue engineering and stem cell therapy. Cardiac extra matrix scaffold with stem cell recellurisation may be the answer in the future as an alternative to cardiac transplantation.