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MD FRCSCTS

Cardiothoracic Surgery

Series of Review

Surgical Treatment for Ischemic Heart Failure; STICH: **It is** a prospective, randomised study in 2800 patients with:

a) Coronary artery disease amenable to revascularization.
b) Left ventricular ejection fraction of <35%.
c) Dominant LV akinesia or dyskinesia of the anterior left ventricular wall amenable to surgical ventricular restoration.

It showed that patients with ischemic cardiomyopathy who had coronary artery bypass grafting (CABG) + medical therapy resulted in higher mortality at 30 days, but with a significant improvement in long-term mortality (out to 10 years) compared with medical therapy alone. ***(STICH.BETTER.LONG.TERM.MORTALITY).*** It showed no survival or functional

Dynamic cardiomyoplasty

Mobilize the latissimus dorsi muscle with its neurovascular pedicle and then through a small left thoracotomy, wrap it around both ventricles with a pacemaker connected to an electrical neurotransmitter to stimulate the muscle to contract in synchrony with systole. With time, pacing of the skeletal muscle will transform it to slow twitch muscle, which is less fatigable. ***(Skeletal.Fast)(Cardiac.SlowTwich)***

Dynamic cardiomyoplasty augments the muscular pump function increasing the stroke volume, girdling of the ventricles making it as an external constraint device and reduces the dilation and wall stress and aborting the remodelling of heart failure, reducing the worsening ventricular systolic and diastolic function.

The Cardiomyoplasty-Skeletal Muscle Assist Randomised Trial (CSMART): It is a prospective, randomised controlled trial which compares the dynamic cardiomyoplasty to the medical therapy alone. It was terminated early due to poor recruitment of 100 patients who showed no survival benefit after 12 months with dynamic cardiomyoplasty.

MUSTIC=Multisite Stimulation in Cardiomyopathies

It is a prospective, randomised controlled study in 48 patients with:

a) severe heart failure (NYHA III or IV).

b) b) a left ventricular ejection fraction of<35%.

c) Normal sinus rhyrhm with QRS of > 150msec.

Those Patients got transvenous atrio-biventricular pacemakers. It compared the response to 3-month periods with or without pacing in the same patients. It concluded that biventricular pacing gave improved quality of life and exercise tolerance (improved by 23%), and reduced the hospitalisations. ***(MUSTIC.PACE)***

(REMATCH TRIAL); **The Randomized Evaluation of Mechanical Assistance for the Treatment of Congestive Heart Failure; determines the use of the left ventricular assist device (LVAD) as a permanent circulatory support in transplant non legible patients** *(Destination Therapy).* **The primary end point was 1 month deaths. The secondary end points are serious adverse effects, hospitalization, quality of life and functional status. About 99% of the LVAD patients had a serious event.** *(REMATCH.DESTINATION)*

NB: FDA approved the HeartMate VE (1998), and Thoratec HeartMate XVE (2001).

In REMATCH, pulsatile-flow LVAD (HeartMate XVE) was compared to optimal medical therapy (OMT). The primary endpoint was all-cause mortality. It included patients with HF with (NYHA class IV, LVEF ≤25%) ineligible for cardiac transplantation were randomized to receive an LVAD (n=68) or continue OMT (n=61). LVAD use was associated with a *48% reduction in mortality as compared with OMT* . The survival at 1 year in the LVAD group was 52% as compared to 25% in OMT and at 2 years (23% and 8%). The incidence of serious adverse events was higher in the LVAD group than in the OMT group.

(REMATCH.VAD)(REMATCH52.20)(REMATCH23.8)

MADIT = Multicenter Automatic Defibrillator Implantation Trial.

MADIT is a prospective, randomised controlled study in 196 patients with:

a) **previous myocardial infarction.**
b) **a left ventricular ejection fraction of <35%.**
c) **asymptomatic unsustained ventricular tachycardia or an inducible, non-suppressible ventricular arrhythmia on electrophysiologic study.**

They were randomised to an implanted defibrillator or conventional medical therapy with anti-arrhythmic drugs . *(MADIT.ICD)*

There is an overall 27% reduction in mortality in patients in the ICD group compared to standard medical therapy. **ICD leads to improved survival in patients with a previous myocardial infarction, low ejection fraction and at high risk for ventricular tachyarrhythmia.**

(MADIT.ICD) (MADIT.27%.Reduction.in.Mortality)

Intra-Aortic Balloon Pump(IABP)

- ***It is indicated in adults with low Cardiac output not responding to good filling, HR and moderate inotropic support.***
- ***It increases the cardiac Output by 40% and decreases the RA pressure by 20%.***
- ***The best survival is achieved if inserted preoperatively.***
- ***It improves the inhospital mortality with no effect on the long mortality or morbidity.***
- ***The commonest complication is Limb Ischaemia. (18%).***
- **We use Helium in IABP as its low density leads to a little turbulent flow and the balloon can inflate quickly and deflate slowly. It is also relatively benign and eliminated quickly if there is a leak or rupture in the balloon.**


THANK YOU!