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Cardiothoracic Surgery

Series of Review

Heart Failure is defined as;

- **SBP<80MMHG with CI <2L/Min./M with adequate filling and LAP and or RAP>20cm H2O.**

1. *Lab. Markers are; BNP (B-type natriuretic peptide) and pro-BNP (N-terminal pro–B-type natriuretic peptide)*
2. *The pathognomonic sign of RSHF is enlarged pulsating tender liver.*
3. *The pathognomonic sign of LSHF is bilateral fine basal crepitations.*

- *4 Drugs used in HF are ARNI, BetaBlockers, MRA and SGLT2.*
- *ARNI angiotensin Receptor/neprilysin blockers(Sacubitril/Valsartan.*
- *Beta Blockers include metoprolol and bisoprolol.*
- *MR : Mineralocorticoid receptor antagonists as spironolactone.*
- *SGLT2: Sodium Glucose Co-transporter 2; Dapaglifozin, Jordiance: 15% deceases in mortality and 25% decrease in HF*

Surgical Lines To Treat Heart Failure

a) Coronary artery bypass grafting (CASS).

b) Mitral valve surgery.

c) Aortic valve replacement.

d) Left ventricular volume reduction (SAVER, RESTORE and STICH).

e) Cardiac resynchronization therapy (MUSTIC);

f) Implantable cardioverter defibrillator (MADIT);

Surgical Lines To Treat Heart Failure; Cont.

- Ventricular assist devices: VAD (REMATCH);
- Dynamic cardiomyoplasty (C-SMART);
- Cardiac transplantation (COCPIT);
- Cellular cardiomyoplasty (MAGIC).
- Intra-aortic balloon pump;
- Ventricular septal myectomy (Morrow operation) for hypertrophic cardiomyopathy.

CASS: Coronary Artery Surgery Study (CASS): a medical treatment is adopted till worsening symptoms mandate surgery does not carry more mortality penalty. In addition, delaying surgery decreases the immediate health care costs and keeps the conduits and virgin mediastinum for future surgery. The decision to do bypass surgery in these patients can be reduced and delayed as per the acceptable current level of symptoms.

Mitral Valve Repair in Patients With Advanced Heart Failure and Severe Functional Mitral Insufficiency Reverses Left Ventricular Remodeling and Improves Symptoms

Surgical anterior ventricular endocardial restoration (SAVER) for dilated ischemic cardiomyopathy. It excludes the apical and septal scar of akinesia and dyskinesia. Simultaneous SAVER and CABG mortality is 4.9%. It increases when if concomitant with mitral valve repair to 8.1%. Postoperatively, the ejection fraction increased from 29.7% to 40.0% and left ventricular end systolic volume decreased from 96 to 62 mL/m. After 3 years, the survival rate was 89.4% ad the Freedom from readmission to hospital for heart failure was at 88.7% and was not related to preoperative volume. SAVER is a safe and effective procedure for treating the remodeled dilated anterior ventricle following anterior myocardial infarction.

The Batista procedure: Resection of the posterolateral left ventricular wall between the anterior and posterior papillary muscles from the apex to 3cm away from the mitral valve annulus with or without mitral valve annuloplasty or replacement. Although it initially improved the survival and symptoms, subsequent studies in ischaemic cardiomyopathic patients failed to show any sustained benefits of this procedure.

- Surgical anterior ventricular endocardial restoration (SAVER) in the dilated remodeled ventricle after anterior myocardial infarction.
- RESTORE. Reconstructive Endoventricular Surgery, returning Torsion Original Radius Elliptical Shape to the LV.
- **SAVER;** the ventricle is reconstructed using patches of autologous or artificial material to close the defect maintaining the desired ventricular volume and contour. It is different from partial left ventriculectomy (Batista procedure), which does not attempt to specifically resect akinetic segments and restore ventricular contour.
- Dor's operation (endoventricular circular patch plasty): ECVPP. (Do.CI)
- COLLEY : Linear Ventricular aneurysmorrhaphy. (Co.linear)

STICH trial

STICH IS (Surgical Treatment for Ischemic Heart Failure); In ischaemic cardiomyopathy HF; Addition of CABG to medical therapy reduces the sudden death and the fatal events. This effect was seen after 2 years. Post CABG death increased, whereas myocardial infarction deaths decreased. Survival was 67% in 5 years. (***STICH.No significant early difference).***

SVR

The left ventricle is opened through the scar tissue, 2cm lateral to the left anterior descending artery followed by subtotal endocardial resection over the septum and posterior wall, and cryotherapy at the limits of the resection for patients with recurrent ventricular arrhythmias. A circumferential endoventricular (Fontan) circular suture is passed 1-2cm outside the limit of healthy muscle and then tied around a balloon mannequin(Menicanti) to reduce the size of the left ventricle to a diastolic volume of 50-60mL/m2. The residual apical defect is closed with a Dacron® patch to produce an elliptical-shaped left ventricle. Lastly, the ventriculotomy is closed with two-layered 2/0 Prolene® buttressed by Teflon® strips.

Dynamic cardiomyoplasty; mobilisation of latissimus dorsi muscle with its neurovascular pedicle. Through a small left thoracotomy, it is wrapped around both ventricles with a pacemaker coupled to a neurotransmitter electrically to stimulate it to contract in synchrony with ventricular systole. With time, pacing of the skeletal muscle will transform it from fast twitch to slow twitch muscle, which is less fatigable. ***(Cardiac.Slow.Skeletal.Fast)***


THANK YOU!