

Healthy Heart

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Honorary Editor :
Dr. Dhiren Shah



From the Desk of Hon. Editor:

Dear Friends,
Greetings from Cardiac Surgery Department of CIMS Hospital. The year 2016 has been a landmark year for CVTS department of CIMS Hospital as we performed the First Heart Transplant of Gujarat open in upto avenues in the treatment of Heart Failure in Gujarat. I had cherished that dream of starting the Heart Transplant program at CIMS since the last few years and ultimately we have discharged the first heart transplant patient successfully.

But we all know that CAD and hence CABG still occupies lion's share in our practice and which cannot be ignored. There have been a few important and landmark studies and papers which have been published in 2016. I feel that topics that I have tried to cover in this issue are the puzzling questions that we have to understand, digest and then explain it to the patients and relatives. CABG in females is always a challenge for surgeon, and their long term results have always been discouraging. Similarly, what is better for multi vessel disease with diabetes and how many arterial grafts and which arterial grafts are better, has always been a debatable topics and studied extensively with conflicting results.

Hope that this few important articles will help to throw some light on the issues and help in guiding us to make better, ethical and prudent decision for our patient.

- Dr. Dhiren Shah

Cardiac Surgery Year 2016 -

Cardiac Intervention –Coronary artery Bypass surgery (CABG)

1..Does a similar procedure result in similar survival for women and men undergoing isolated coronary artery bypass grafting? Tamer Attia, MD, MSc,a Colleen G. Koch, MD, MS, MBA,b Penny L. Houghtaling, MS,d Eugene H. Blackstone, MD,a,d Ellen Mayer Sabik, MD,c and Joseph F. Sabik III, Mda

Are men from Mars and women from Venus?

The best-selling book Men Are From Mars and Women From Venus stimulated discussion concerning the emotional and physical differences between the sexes. This gender issue is at the core of the findings being raised by our colleagues from the Cleveland Clinic. The analysis is both provocative and a robust retrospective review of 57,943 adults, of whom 19% were women, undergoing coronary artery surgery between 1972 and 2011. The conclusion is that women exhibit decreased survival after Coronary Artery Bypass Graft (CABG) surgery. The authors used an extensive database, long-term follow-up, and intensive statistical evaluations of both groups to reach the final conclusion that women have worse short- and long-term outcomes after CABG than men.

The analysis continues its evaluation of revascularization strategies by decade

and by type of operation, with similar findings that Bilateral Internal Thoracic Artery (BITA) grafting, a procedure known to have survival benefit in men, was not exhibited in women. Although BITA grafting was associated with better survival than Single Internal Thoracic Artery (SITA) grafting, it was less effective in women—11% lower late mortality (hazard ratio, 0.89; 95% confidence interval, 0.77-1.022) versus 27% lower in men (hazard ratio, 0.73; 95% confidence interval, 0.69-0.77). In this analysis, incomplete revascularization was more common in men than women (26% vs 22%; $P < .0001$), but women received fewer BITA grafts (4.8% vs 12%; $P < .0001$) and fewer arterial grafts (68% vs 70%; $P < .0001$). Overall, women had lower survival than men after CABG (65% and 31% at 10 and 20 years, respectively, vs 74% and 41%; $P \leq .0001$), even after risk adjustment. Incomplete revascularization was associated equally ($P > .9$) with lower survival in both sexes, whereas the use of a SITA graft was associated with equally ($P = .3$) or better ($P = .01$) survival in women than men.

As with all studies over long periods of time, the real answer—if there is one—is in the shadows as opposed to the spotlight. As documented by this and other studies, women usually live longer

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than men and the cohort of women entering the arena of coronary artery disease after menopause do so at an older age and are more obese with more comorbidities (eg, hypertension, hyperlipidemia, increased incidence of myocardial infarction, decreased left ventricular function, diabetes, later clinical presentation with increased atheromatous burden, and stroke). The current study reveals a clear survival disadvantage for women, including hospital mortality and 5- to 10- year survival. This discrepancy is present for all CABG strategies and more probably represents yet-undefined physiologic risk factors differences, not gender differences, in these 2 groups. Despite the study's limitations, including use of all-cause mortality; substandard use of SITA and/or BITA; little information about postdischarge cholesterol levels, diabetes incidence, or blood pressure control; and no thoughts about methods to improve the observational differences, the authors raise the banner for the continued need for increased use of arterial revascularization with the eventual hope that the Arterial Revascularization Trial will reinforce the survival benefits manifested by that strategy.

At present we don't know what we don't know. If men are truly from Mars and different from the women of Venus, it behooves all practitioners to aggressively monitor and treat women after menopause for the potential—if not inevitable—onset of cardiovascular problems, hypertension, hyperlipidemia, diabetes, and stroke. If it is true that women who present for CABG have more significant comorbidities than their male counterparts, then only through appropriate risk reduction, not type of operation, will the differences in hospital mortality and long-term survival be improved or hopefully equalized. Furthermore, the extension of similar therapies; for example, BITA or all-arterial grafting, and improved long-term risk modification in both men and women may improve the inequality but not eliminate the differences until we know that both men and women come from the same planet.

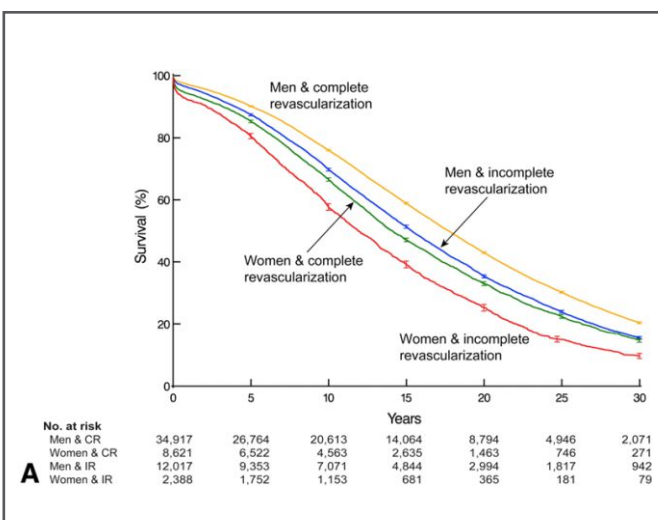
2. How long and what does it take for physical and emotional recovery after heart surgery?

Little is known about physical and mental recovery after open surgery. Because aortic valve replacement is currently one of the most frequent cardiac surgical procedures and a significant number of patients are of old age, this is a subject of significant interest to the surgical fraternity. In fact, we have come to learn that success of surgery is much more than just survival and absence of significant morbidity, and quality of life (QoL) after surgery is becoming a most important consideration.

In Journal of Cardiothoracic and Vascular Surgery (JTCVS), Petersen and colleagues, from Hamburg, Germany, analyze the course of physical and mental recovery directly after conventional Aortic Valve Surgery (AVS) in 60 patients followed up for 6 months, using several well-established measurement instruments applied preoperatively and sequentially at intervals of 4 weeks after AVS. They found that after a significant worsening of both parameters in the first week after surgery, there was a progressive recovery, the most pronounced seen within the first 6 weeks postoperatively. At 6 months, all parameters were significantly improved compared with preoperative values and significantly better or equal compared with published healthy norms.

Of note, mental QoL improved immediately after surgery, whereas physical QoL took a little longer, reaching its peak at 6 months after surgery. This underscores the immensely important perioperative role of health professionals in stimulating the patients' psychologic and physical well-being. But because the recovery process continues at home, the family also has an essential role to play, and it is absolutely vital to recruit the next of kin while the patient is still in the hospital. At the moment of discharge, patients and their close family members must be clearly informed of what to do and how to do it. Support, encouragement, companionship, meaningful family activities, and conversation go a long way in speeding up emotional recovery and helping patients return to their highest levels of independent functioning.

Success means much more than just technically perfect surgery and excellent perioperative care. Postoperative recovery is a dynamic process, and



continued posthospital support is of utmost importance if the main surgical goal of complete physical and mental recovery and good QoL is to be reached.

3. Why coronary artery bypass grafting remains the standard of care for patients with complex, multivessel coronary artery disease

In the article by Mack and colleagues in JTCVS, 1 the authors review the Synergy Between Percutaneous Coronary Intervention With Taxus and Cardiac Surgery (SYNTAX) trial to demonstrate why CABG and not Percutaneous Coronary Intervention (PCI) is the best revascularization strategy for patients with complex coronary artery disease (CAD). They focus on several findings from SYNTAX. First, Myocardial Infarctions (MIs) are more prevalent in patients undergoing PCI, leading to a 10-fold higher incidence of cardiac death due to MI. Second, incomplete revascularization is greater in patients undergoing PCI. Third, incomplete revascularization is an independent predictor of major adverse cardiac and cerebrovascular events after PCI, but not after CABG. These observations drive the finding that by 5 years, CABG is superior

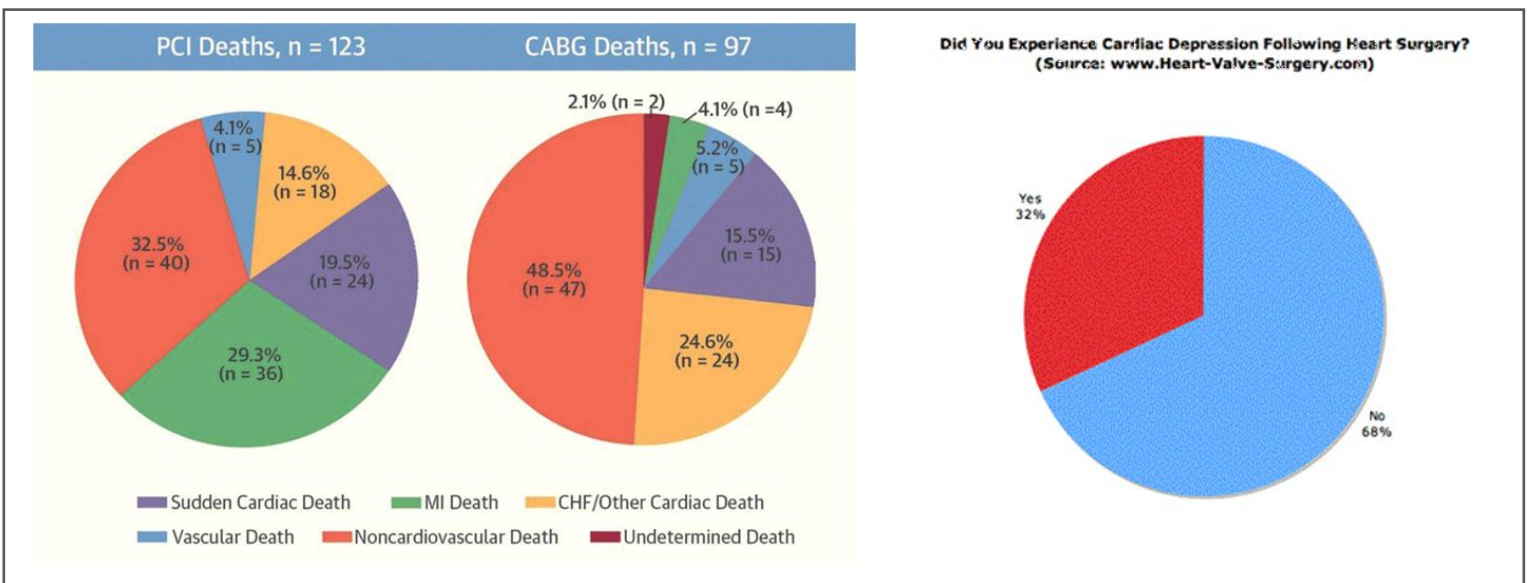
to PCI due to both less repeat revascularization and a lower incidence of death, stroke, and MI.

The fact that more MIs and incomplete revascularizations occur after PCI was not a new finding in SYNTAX. In the Bypass Angioplasty Revascularization Investigation 2 Diabetes (BARI 2D) trial, CABG decreased the composite end point of death, MI, and stroke at 5 years compared with medical therapy, mostly due to a reduction in MIs (10% vs 17.6%; $P = .003$). PCI did not. Recently, the superiority of CABG over PCI in decreasing MIs after revascularization was demonstrated in the Future Revascularization Evaluation in Patients with Diabetes Mellitus: Optimal Management of Multivessel Disease (FREEDOM) trial, a study of CABG versus PCI in diabetic patients with multivessel CAD. At 5 years, MIs occurred in 6.0% of patients undergoing CABG and in 13.9% of those receiving PCI ($P < .001$).

Similarly, more incomplete revascularization has been observed after PCI than after CABG. This difference is directly proportional to CAD complexity, resulting in more Residual Ischemia (RI) in

PCI patients with complex CAD. The relationship between the degree of RI and worse long-term outcomes is well known. In the Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation (COURAGE) Trial, death and MI were directly related to RI, and an analysis of the Acute Catheterization and Urgent Intervention Triage Strategy (ACUITY) Trial demonstrated that as RI (represented by the residual SYNTAX score) increases, so too does the likelihood of cardiac death, all-cause death, MI, and repeat revascularization.

Why is CABG more effective than PCI in treating complex CAD? The answer is likely the inherent differences in the 2 revascularization techniques. Yock and colleagues wrote in their analysis of the BARI 2D trial results that “even if target lesion restenosis were to be completely eliminated, CABG would remain more effective than primary PCI stenting.” Unlike PCI, which treats only the stenosis present at the time of revascularization, CABG treats both the current stenosis and any future stenosis that develops proximal to the distal anastomoses. It is not surprising that Cutlip and colleagues⁸ observed that during the first year after



PCI, repeat revascularization is due to a target lesion event, but after 1 year, it is likely due to a nontarget lesion event. In addition, whether a vessel is totally occluded or the stenosis is complex, performing PCI may be difficult, dangerous, and even impossible, leading to incomplete revascularization and residual ischemia. Performing CABG to these vessels is no more difficult than for an isolated, noncomplex stenosis.

This review of SYNTAX confirms what we already know: CABG is the standard of care for patients with multivessel CAD. The authors should be congratulated for continuing this discussion and advocating for patients with complex CAD to receive the best revascularization therapy.

4. Multiple arterial conduits for bypass grafting: How many are enough?

Recent studies have suggested that patients receiving more than 1 arterial conduit have significantly increased freedom from cardiac death and adverse events, including the incidence of myocardial infarction, recurrent angina, and the need for repeat revascularization. Although improved outcomes have been

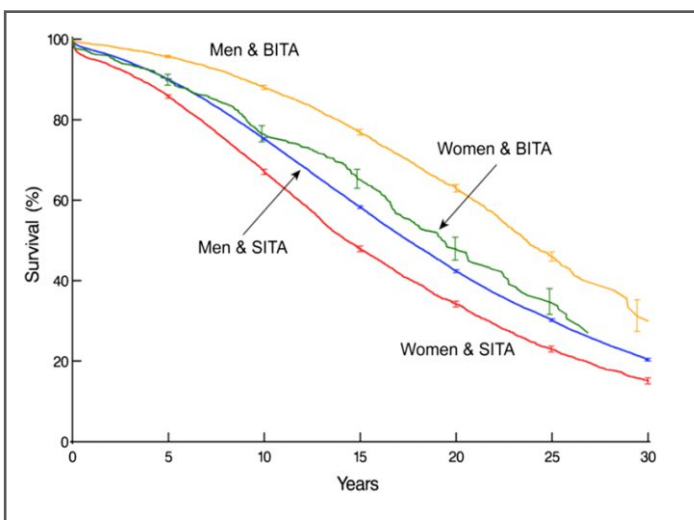
demonstrated in those patients receiving Bilateral Internal Thoracic Arteries (BITAs) versus a single internal thoracic artery and saphenous vein grafts, it has not been conclusively demonstrated that the addition of a third arterial conduit to BITA will confer any additional advantages than can be achieved with BITA + saphenous vein grafts.

In their study, Benedetto and co-workers found that long-term survival was not significantly improved by using the radial artery as the third arterial conduit in those patients already receiving BITA grafts. There are several strengths to this study. The authors used propensity based scores to obtain 2 equally matched patient cohorts. The radial artery was used appropriately, in that it was grafted to only those vessels with greater than 75% proximal stenoses. The mean follow-up was 10 years with a significant number of patients followed for as long as 15 years.

However, there were several limitations. The incidence of diabetes mellitus, smoking, chronic obstructive pulmonary

the use of a third arterial graft. In addition to being “low risk,” this patient cohort was relatively young—65% of patients were aged less than 60 years, and only 6% were aged more than 70 years. Longitudinal analyses such as the present study, which recruited patients over a 19-year period, also must account for changes in surgical techniques and medical therapy. We are not told what the incidence of statins and antiplatelet agents were and whether there were programs instituted for glycemic control or smoking cessation, all of which can influence graft patency and progression of atherosclerotic disease. The long-term cause of death, cardiac versus noncardiac, also is not reported. This is important because previous studies have reported the survival benefits of multiarterial grafting occur only in decreasing cardiovascular deaths and may not prolong overall survival.

Despite the limitations, this study does provide us with important information in determining which patient cohort will benefit from more aggressive arterial grafting. It supports previous studies that have shown that additional arterial grafts in patients already receiving BITA result in no significant improvement in clinical outcomes. Further studies will be necessary to determine whether multiple arterial grafting will improve outcomes in older patients (>70 years), those with multiple comorbidities, patients with reduced ejection fractions (<40%), and those with more diffuse distal disease. Only then can we answer the question involving multiple arterial conduits for bypass grafting: How many are enough?





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MANAGEMENT OF HEART FAILURE PATIENTS - THE NEED OF THE HOUR

April 16, 2017 (Sunday)

Course Directors : Dr. Milan Chag / Dr. Dhiren Shah / Dr. Ajay Naik / Dr. Chintan Sheth
Dr. Tejas V. Patel / Dr. Manan Desai

Venue : CIMS Auditorium

Program Overview:

Heart Failure Treatment is the need of hour. Day by day, heart failure patient's are increasing in daily practice. This program is intended to give case-based overview of treatment of any Heart Failure patients and the treatment modalities available.

Program Highlights:

- OPD based management of Heart Failure – When to refer for hospitalization
- New Drugs on the horizon for Heart Failure
- Devices available for Heart Failure Treatment
- Heart Transplant – It's a reality in India
- Chronic Management for Heart Failure patients
- Latest Trials in Medical Treatment for Heart Failure
- Latest in Surgical Treatment for Heart Failure

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MECHANICAL VENTILATOR SUPPORT COURSE

April 30, 2017 (Sunday)

Course Directors : Dr. Vipul Thakkar / Dr. Bhagyesh Shah / Dr. Amit Prajapati
Venue : CIMS Auditorium

Program Overview:

Mechanical Ventilator support is basic and key life-sustaining system while dealing with very sick patients in ICU, especially for last 2-3 decades. In general, this support is a marker of severity of critical illness. As with any science and technology, constant innovation and advances in the field of Mechanical Ventilator support are happening. In current era of popularity and evidences favouring cardio-pulmonary supports like ECMO, to learn, refresh and update technology, science and care of mechanical ventilator support remains vital. So let's meet to know and refresh our understanding on this modality of support. Best Wishes....!

Program Highlights :

- Respiratory Physiology-What Ventilator dose to body ?
- Classification of Mechanical Ventilation – Basic mode, type of breaths, Goals & Indications
- Initiation of Mechanical Ventilation & Problems
- Ventilation in different case scenario / Disease Specific Ventilation
- Graphics In Mechanical Ventilation
- Trouble-shooting on Mechanical Ventilation How do I deal ?
- ARDS Ventilation - Mechanical Ventilation and beyond
- Monitoring, care of Mechanically Ventilated patient
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- Tracheostomy - When, Care & Complication
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