The Role of Coronary Artery Bypass Grafting in the Treatment of Ischemic Cardiomyopathy/Heart Failure

George Tolis, Jr. M.D.
Massachusetts General Hospital
Boston, MA
Coronary Artery Disease

- 15.5 million patients in U.S. alone
- Successful treatment (medical/surgical) has dramatically increased the number of patients living with “chronic” CAD
- Still 538,000 deaths annually
- The major long term manifestations of CAD – left ventricular dysfunction and heart failure – will affect 8 million patients by 2030
Ischemic Cardiomyopathy

- Ejection Fraction of 35% or less
- Presence of Coronary Artery Disease
- Lack of other medical conditions that may explain loss of ejection fraction (alcoholic cardiomyopathy, amyloid disease, viral cardiomyopathy etc.)
Ischemic Cardiomyopathy (ctd)

- 5.8 million patients in the US and 15 million patients in Europe have heart failure
- Total annual costs associated with this disorder in the US is $40 billion
- Shift in cause of heart failure from Valvular Disease to Ischemic
- This may be due to improved survival of patients after acute MI.
Ischemic Cardiomyopathy (ctd)

- Over the past 40 years, the odds of previous MI as a cause for HF increased by 26% per decade in men and 48% per decade in women
- Hypertension as cause of HF: 13% in men, 25% in women
- Valvular disease as cause of HF: 24% in men, 17% in women
- Over the past 20 years, CAD has been the cause of HF in 65% of patients
- Observed Mortality: 62.5% in 9.8 year follow-up
What do we know about treatment of heart failure and its results?

- There are no randomized trials comparing PCI vs. medical therapy (or CABG) for patients with ischemic cardiomyopathy
- There is no evidence of PCI having any benefit (survival or quality of life) for patients with ischemic cardiomyopathy
- What is the closest evidence available?
The BARI 2D Trial
The BARI 2D trial (ctd)

- 2368 patients with CAD and type 2 DM (excluded NYHA 3-4), mean EF 57%, only 17% had EF <50%
- PCI or CABG vs medical therapy
- 5 years: No survival difference between revascularization group (88.3%) and medical therapy group (88.2%), p=0.89
  – However...
- The rate of major cardiovascular events was significantly lower in the CABG group (22.4%) than in the medical treatment group (30.5%), p=0.002
Everolimus-Eluting Stents or Bypass Surgery for Left Main Coronary Artery Disease

CONCLUSIONS

In patients with left main coronary artery disease and low or intermediate SYNTAX scores by site assessment, PCI with everolimus-eluting stents was noninferior to CABG with respect to the rate of the composite end point of death, stroke, or myocardial infarction at 3 years. (Funded by Abbott Vascular; EXCEL ClinicalTrials.gov number, NCT01205776.)
EXCEL CM (ctd)

- The previously published clinical outcomes of EXCEL (N Engl J Med. 2016 Dec 8;375[23]:2223-35) were based upon a median 3 years of follow-up. Dr. Baron presented updated outcomes in which all study participants had completed the full 3 years of follow-up. The results were little changed: The primary composite endpoint of all-cause mortality, stroke, or MI occurred in 15.2% of the group treated with the everolimus-eluting Xience stent and was closely similar at 14.7% of the CABG patients, while the 12.5% repeat revascularization rate in the PCI arm was significantly greater than the 7.4% rate with CABG.
Coronary-Artery Bypass Surgery in Patients with Left Ventricular Dysfunction

Eric J. Velazquez, M.D., Kerry L. Lee, Ph.D., Marek A. Deja, M.D., Ph.D.,
Anil Jain, M.D., George Sopko, M.D., M.P.H., Andrey Marchenko, M.D., Ph.D.,
Imtiaz S. Ali, M.D., Gerald Pohost, M.D., Sinisa Gradinac, M.D., Ph.D.,
William T. Abraham, M.D., Michael Yii, M.S., F.R.C.S., F.R.A.C.S.,
Dorairaj Prabhakaran, M.D., D.M., Hanna Szwed, M.D., Paolo Ferrazzi, M.D.,
Mark C. Petrie, M.D., Christopher M. O’Connor, M.D.,
Pradit Panchavinnin, M.D., Lilin She, Ph.D., Robert O. Bonow, M.D.,
Gena Roush Rankin, M.P.H., R.D., Robert H. Jones, M.D.,
and Jean-Lucien Rouleau, M.D., for the STICH Investigators*
STICH (ctd)

- 1212 patients with CAD and EF <= 35%
- 610 CABG plus medical therapy
- 602 medical therapy alone
- Primary outcome studied was death from any cause
- Secondary outcomes included death or hospitalization from/for cardiovascular disease
- Median follow-up 4.6 years
In this randomized trial, there was no significant difference between medical therapy alone and medical therapy plus CABG with respect to the primary end point of death from any cause. Patients assigned to CABG, as compared with those assigned to medical therapy alone, had lower rates of death from cardiovascular causes and of death from any cause or hospitalization for cardiovascular causes. (Funded by the National Heart, Lung, and Blood Institute and Abbott Laboratories; STICH ClinicalTrials.gov number, NCT00023595.)
Coronary-Artery Bypass Surgery in Patients with Ischemic Cardiomyopathy

Eric J. Velazquez, M.D., Kerry L. Lee, Ph.D., Robert H. Jones, M.D., Hussein R. Al-Khalidi, Ph.D., James A. Hill, M.D., Julio A. Panza, M.D., Robert E. Michler, M.D., Robert O. Bonow, M.D., Torsten Doenst, M.D., Mark C. Petrie, M.D., Jae K. Oh, M.D., Lilin She, Ph.D., Vanessa L. Moore, A.A.S., Patrice Desvigne-Nickens, M.D., George Sopko, M.D., M.P.H., and Jean L. Rouleau, M.D., for the STICHES Investigators*

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STICHES Results

- Death from cardiovascular cause: 247/610 (40.5%) CABG, 297/602 (49.3%) medical management (p=0.02)
- Death from any cause: 467 (76.6%) CABG, 524 (87.0%) medical (p<0.001)
- Protective effect of CABG for death from other causes?
CONCLUSIONS

In a cohort of patients with ischemic cardiomyopathy, the rates of death from any cause, death from cardiovascular causes, and death from any cause or hospitalization for cardiovascular causes were significantly lower over 10 years among patients who underwent CABG in addition to receiving medical therapy than among those who received medical therapy alone. (Funded by the National Institutes of Health; STICH [and STICHES] ClinicalTrials.gov number, NCT00023595.)
Conclusions

• CABG provides a clear survival advantage when compared to medical therapy (and percutaneous interventions)

• Concomitant procedures (mitral valve, ventricular restoration etc) can be carried out at the time of CABG; their role in survival benefit is questionable

• Ischemic cardiomyopathy should be an indication rather than a deterrent for CABG
ΕΥΧΑΡΙΣΤΩ ΓΙΑ ΤΗΝ ΠΡΟΣΚΛΗΣΗ !