Randomized comparison of single versus bilateral internal mammary artery grafting in 3102 patients: effects on major cardiovascular outcomes after five years follow up.

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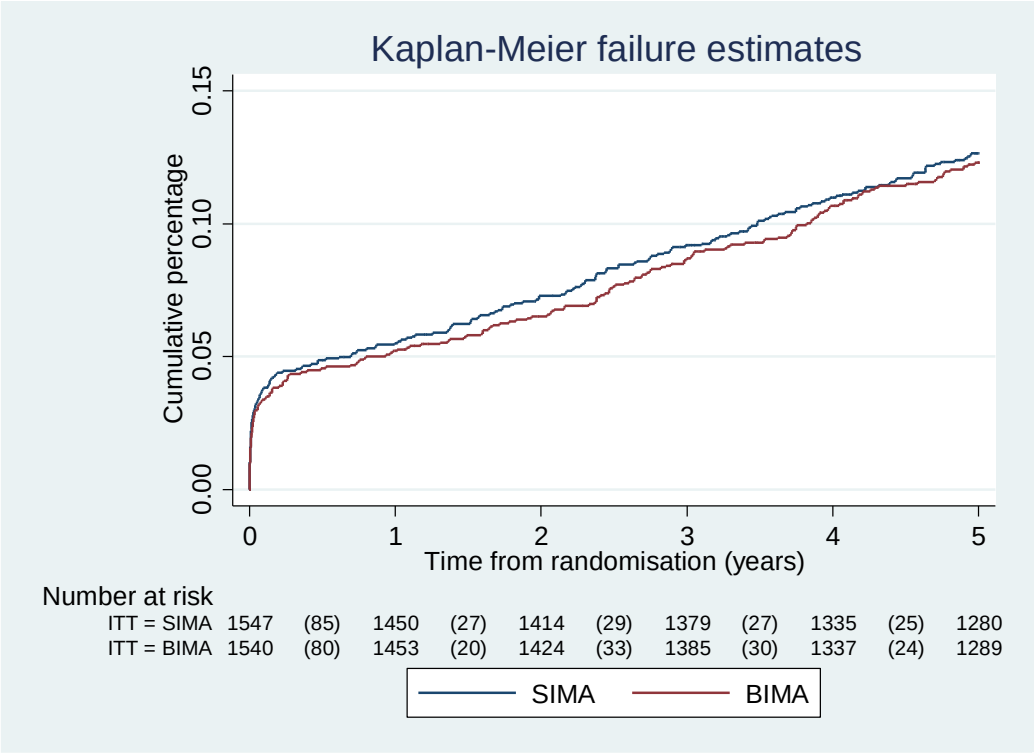
Introduction: For most patients with multivessel coronary artery disease surgical revascularization provides effective long term health improvements. There is growing evidence that complete arterial revascularization using a bilateral internal mammary artery (BIMA) approach may improve long term outcomes compared to a single internal mammary artery (SIMA) plus vein grafts.
Methods: Accordingly the Arterial Revascularisation Trial (ART) randomized patients scheduled for coronary artery bypass grafting on clinical criteria to SIMA (1554) or BIMA (1448) in 28 cardiac surgical centres in 7 countries. The primary outcome was death from any cause. Secondary outcomes included the composite of death, MI, stroke, and additional safety outcomes.
Results: Mean age was 64 years, 24% women, 15% current smokers, 24% diabetes, 42% prior MI, 8% non-Caucasian and 65% NYHA II and III. Forty one percent of procedures were performed off pump with no imbalance between the two groups and 81% received 3 or more grafts. At 5 years follow up the death rate in the SIMA group was 8.4% compared to 8.7% in BIMA (HR 1.04 95%CI 0.82-1.33; p=0.7) and for the composite of death, MI, Stroke 12.7% versus 12.2% (HR 0.97 95%CI 0.79-1.18 – see Figure). Adjustment for age, gender and diabetes yielded essentially the same results.



Major bleeds were documented in 2.6% SIMA and 3.1% BIMA (p=0.4), need for repeat revascularization 6.6% and 6.5% (p=0.9), sternal wound infection 1.9% and 3.5% (p=0.005) and reconstruction 0.6% and 1.9% (p=0.002) respectively.

Conclusions: At five years follow-up BIMA surgery provides similar clinical outcomes to SIMA with some early excess of sternal wound complications. Follow up to ten years is ongoing to determine if BIMA provides longer term benefits as vein graft failure becomes more common after 5 years.