CABG on pump versus off pump

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Retrospective observational analysis of a coronary artery bypass grafting surgery patient cohort: Off-pump versus on-pump

Mar, 12/20/2022 - 11:00

Ann Med Surg (Lond). 2022 Nov 9;84:104812. doi: 10.1016/j.amsu.2022.104812. eCollection 2022 Dec.

ABSTRACT

OBJECTIVES: To determine whether surgical technique has an effect on prognosis in coronary artery bypass grafting (CABG).

DESIGN: Retrospective observational.

SETTING: Single center.

PARTICIPANTS: All the off-pump (OPCABG) and on-pump (ONCABG) patients at Turku University Central Hospital in 2018.

INTERVENTIONS: None.

MEASUREMENTS AND MAIN RESULTS: After propensity score matching, perioperative, 1-year and 3-year mortality did not differ between the groups. The ONCABG patients received more allogenic red blood cells (1.3 vs. 0.6 units, $p = 0.020$), autologous red blood cells (564 vs. 285 ml, $p < 0.001$) and crystalloids (3388 vs. 2808 ml, $p < 0.001$), and had higher postoperative values of troponin T (581 vs. 222, $p = 0.001$) and lactate (1.69 vs. 1.23, $p < 0.001$) than the OPCABG patients.

CONCLUSIONS: The both techniques seem equally safe. However, there may be some benefits to avoiding using a heart-lung machine, such as lower infused fluid volumes. Myocardial damage may also be milder and postoperative hemodynamics more balanced in OPCABG patients, based on lower levels of troponin T and lactate.

PMID:36536727 | PMC:PMC9758289 | DOI:10.1016/j.amsu.2022.104812

Categorías: Cirugía coronario

Off-Pump Bilateral Skeletonized Internal Thoracic Artery Grafting in Octogenarians

Jue, 12/08/2022 - 11:00

Circ J. 2022 Dec 6. doi: 10.1253/circj.CJ-22-0443. Online ahead of print.

ABSTRACT

BACKGROUND: We compared postoperative outcomes in octogenarians who underwent off-pump isolated coronary artery bypass grafting for multivessel disease using either skeletonized bilateral or single internal thoracic artery (ITA).Methods and Results: Among 1,532 patients who underwent isolated coronary artery bypass grafting between 2002 and 2021, 173 octogenarians were analyzed retrospectively. After inverse probability of treatment weighting, we found no statistically significant difference regarding patients' preoperative characteristics. No patient experienced deep sternal wound infection. More patients in the single than bilateral ITA group died within 30 days after surgery (5.0% vs. 0%, respectively; P=0.003). The mean follow-up duration was 4.2 years. At 5 years, the freedom from overall death following bilateral versus single ITA grafting was 78.2% and 53.7%, respectively (log-rank test, P=0.003), and freedom from major adverse cardiac and cerebrovascular events (MACCE) was 67.9% and 44.8% respectively (log-rank test, P=0.002). In multivariable Cox models, bilateral ITA grafting was significantly associated with a lower risk of overall death (hazard ratio [HR] 0.555; 95% confidence interval [CI] 0.342-0.903; P=0.018) and MACCE (HR 0.586; 95% CI 0.376-0.913; P=0.018).

CONCLUSIONS: Compared with single ITA grafting, off-pump skeletonized bilateral ITA grafting is associated with lower rates of overall death and MACCE in octogenarians undergoing CABG and does not increase the risk of deep sternal wound infection.

PMID:36476828 | DOI:10.1253/circj.CJ-22-0443

Categorías: Cirugía coronario

Off-pump versus on-pump coronary artery bypass graft surgery outcomes in patients with severe left ventricle dysfunction: inverse probability weighted study

Vie, 11/18/2022 - 11:00

BMC Cardiovasc Disord. 2022 Nov 17;22(1):488. doi: 10.1186/s12872-022-02895-0.

ABSTRACT

OBJECTIVE: In this study we aimed to compare on-pump and off-pump coronary artery bypass grafting (CABG) outcomes in patients presented with low left ventricular ejection fraction (EF) as a high-risk group of patients.

METHODS: In this registry-based study from 2014 and 2016, all patients with severe left ventricular dysfunction (EF less than 35%) were included and followed until 2020. The median follow-up period was 47.83 [38.41, 55.19] months. Off pump CABG (OPCABG) was compared with on-pump CABG (ONCABG) in terms of mid-term non-fatal cardiovascular events (CVEs) and all-cause mortality. Propensity score method (with inverse probability weighting technique) was used to compare these two groups.

RESULTS: From 14,237 patients who underwent isolated CABG, 2055 patients with EF ≤ 35% were included; 1705 in ONCABG and 350 patients in OPCABG groups. Although OPCABG was associated with lower risk of 30-days mortality (Odds Ratio [OR]: 0.021; Confidence Interval [CI] 95% [0.01, 0.05], P < 0.001); there was no significant difference between OPCABG and ONCABG in term of mid-term mortality and non-fatal CVEs ((Hazard ratio [HR]: 0.822; 95%CI [0.605, 1.112], p = 0.208) and (HR: 1.246; 95%CI [0.805, 1.929], p = 0.324), respectively). Patients with more than three traditional coronary artery disease risk factors, had more favorable outcomes (in terms of mid-term mortality) if underwent OPCABG (HR: 0.420; 95%CI [0.178, 0.992], p = 0.048).

CONCLUSION: OPCABG was associated with lower risk of 30-days mortality; however, mid-term outcomes were comparable in both OPCABG and ONCABG techniques.

PMID:36397021 | PMC:PMC9673356 | DOI:10.1186/s12872-022-02895-0

Categorías: Cirugía coronario

Urgent robotic hybrid coronary revascularization in patient with high STS score. A case report

Mar, 11/15/2022 - 11:00

J Card Surg. 2022 Nov 15. doi: 10.1111/jocs.17201. Online ahead of print.

ABSTRACT

INTRODUCTION: Robotic-assisted coronary artery bypass grafting (CABG) outcomes in patients with a high society of thoracic surgery (STS) score in urgent settings remain hindered.

PRESENTATION OF CASE: A high-risk female patient presented with dyspnea and low ejection fraction (EF = 15%) and was diagnosed with pulmonary edema post myocardial infarction. She was medically stabilized with intraaortic balloon pump and the heart-team decided to intervene with off-pump robotic hybrid coronary revascularization (HCR). The patient had the planned with left internal mammary artery (LITA) anastomosis to the left anterior descending artery (LAD) and the postoperative recovery was uneventful and patients discharged after few days at home.

DISCUSSION: CABG has proven to be superior to percutaneous coronary intervention (PCI) even when guided by fractional flow rate and using the last generation stents according to fractional flow reserve versus angiography for multivessel evaluation 3 clinical trial. In moderate SYNTAX score patients that have been historically (SYNTAX trial) treated with multivessels PCI, robotic CABG has been shown to offer the advantage of LITA-LAD in combination with stent for non-LAD territory.

CONCLUSION: High-risk, fragile patients, with low EF and high STS score that undergo urgent CABG can benefit from heart-team collaboration, and HCR is an important tool in the armamentarium.

PMID:36378875 | DOI:10.1111/jocs.17201

Categorías: Cirugía coronario

On- versus off-pump CABG in octogenarians: A propensity-matched analysis from the UK National Database

Mié, 11/02/2022 - 10:00

J Card Surg. 2022 Nov 2. doi: 10.1111/jocs.17068. Online ahead of print.

ABSTRACT

INTRODUCTION: Coronary artery bypass grafting (CABG) remains a good revascularization strategy in octogenarians with excellent clinical outcomes and quality of life postoperatively. However, the benefits of off-pump over on-pump CABG in the elderly population are still controversial. We investigated this issue in the UK National Audit database.

METHOD: We retrospectively analyzed all octogenarians undergoing nonemergency, isolated CABG from 1996 to 2019. Propensity score matching (PSM) was conducted to adjust for imbalance in the baseline characteristics between the off-pump and on-pump groups. Primary outcome was in-hospital mortality and postoperative cerebrovascular accidents. Secondary outcomes were bleeding requiring reoperation, deep sternal wound infection, and postoperative dialysis.

RESULT: A total of 6436 patients were included for analysis. No differences were observed between off- and on-pump group in-hospital mortality (4% vs. 3.8%, p = .89), return to theater rate (5.4% vs. 6.2%, p = .16) and incidence of deep sternal wound infection (1.1% vs. 1.6%, p = .34). However,

octogenarian undergoing off-pump CABG were less likely to experience postoperative transient ischemic attack (TIA)/stroke (1.4% vs. 2.3%, p = .004) but more likely to require renal dialysis (4.8% vs. 3.5%, p = .03).

CONCLUSION: The data show similar in-hospital mortality in octogenarians regardless of the revascularization technique used. Off-pump when compared with on-pump CABG is associated with a lower incidence in postoperative neurological events but a higher need for renal dialysis.

PMID:36321671 | DOI:10.1111/jocs.17068

Categorías: Cirugía coronario

Graft flow evaluation with intraoperative transit-time flow measurement in off-pump versus on-pump coronary artery bypass grafting

Lun, 10/24/2022 - 10:00

JTCVS Tech. 2022 May 17;15:95-106. doi: 10.1016/j.xjtc.2022.05.002. eCollection 2022 Oct.

ABSTRACT

OBJECTIVE: We aimed to compare transit-time flow measurement (TTFM) parameters for on-pump (ONCAB) and off-pump (OPCAB) coronary artery bypass procedures.

METHODS: The database of the Registry for Quality AssESsmenT with Ultrasound Imaging and TTFM in Cardiac Bypass Surgery (REQUEST) study was retrospectively reviewed. Only single grafts were included (ie, no sequential or Y/T grafts). Primary end points were mean graft flow (MGF), pulsatility index (PI), diastolic fraction (DF), and backflow (BF). Unadjusted and propensity score-matching comparisons were performed.

RESULTS: Of 1016 patients in the REQUEST registry, 846 had at least 1 graft for which TTFM was performed. Of these, 512 patients (60.6%) underwent ONCAB and 334 (39.4%) OPCAB procedures. Mean arterial pressure (MAP) during measurements was higher in the OPCAB group. After propensity score-matching, 312 well balanced pairs were left. In these matched patients, MGF was higher for the ONCAB versus the OPCAB group (32 vs 28 mL/min, respectively, for all grafts [$P < .001$]; 30 vs 27 mL/min for arterial grafts [$P = .002$]; and 35 vs 31 mL/min for venous grafts [$P = .006$], respectively). PI was lower in the ONCAB group (2.1 vs 2.3, for all grafts; $P < .001$). Diastolic fraction was slightly lower in the ONCAB group (65% vs 67.5%; $P < .001$). The backflow was also lower in the ONCAB group (0.6 vs 1.3; $P < .001$) with trends similar to MGF and PI for venous and arterial grafts. There were 21 (3.3%) revisions in the OPCAB group and 14 (2.1%) in the ONCAB group ($P = .198$).

CONCLUSIONS: ONCAB surgery was associated with higher MGF and lower PI values, especially in venous grafts. Different TTFM cutoff values for ONCAB versus OPCAB surgery might be considered.

PMID:36276694 | PMC:PMC9579515 | DOI:10.1016/j.xjtc.2022.05.002

Categorías: Cirugía coronario

Stroke and mortality rates after off-pump vs. pump-assisted/no-clamp coronary artery bypass grafting

Mié, 09/28/2022 - 10:00

J Cardiovasc Surg (Torino). 2022 Dec;63(6):742-748. doi: 10.23736/S0021-9509.22.12337-2. Epub 2022 Sep 28.

ABSTRACT

BACKGROUND: Ascending aorta manipulation during on-pump coronary artery bypass grafting (CABG) surgery can release embolic matter and may cause stroke. Strategies for lowering the stroke rate associated with coronary artery bypass grafting surgery include off-pump surgery without cardiopulmonary bypass and pump-assisted surgery with minimal aortic manipulation (i.e., without aortic cross-clamping). We examined whether one approach is superior to the other in reducing stroke and perioperative mortality rates.

METHODS: We reviewed consecutive elective, urgent, and emergency off-pump/no-bypass and pump-assisted/no-clamp coronary artery bypass grafting procedures performed by a single surgeon at our institution from June 2011 through October 2017.

RESULTS: Of 570 patients analyzed, 395 (69.3%) underwent off-pump/no-bypass surgery, 43 (7.5%) underwent pump-assisted/no-clamp surgery, and 132 (23.2%) transitioned mid-procedure from off-pump/no-bypass to pump-assisted/no-clamp surgery. Patients who were >70 years old, were female, or had diabetes, cardiomegaly, or a history of myocardial infarction or congestive heart failure were more likely to undergo pump-assisted/no-clamp surgery or the combined technique. None of the pump-assisted/no-clamp patients had a stroke, versus 0.3% of the off-pump/no-bypass patients and 0.8% of the combination patients. Stroke and in-hospital mortality rates did not differ by technique.

CONCLUSIONS: A hybrid strategy incorporating off-pump, pump-assisted, and combined off-pump/pump-assisted techniques achieved very low stroke rates in patients undergoing coronary revascularization. Perioperative mortality was similar for all three techniques. Avoiding aortic clamping may be crucial for decreasing CABG-related stroke rates. Off-pump/no-bypass surgery had no significant advantage over the pump-assisted/no-clamp or combined techniques in reducing the stroke rate after coronary artery bypass grafting surgery.

PMID:36168952 | DOI:10.23736/S0021-9509.22.12337-2

Categorías: Cirugía coronario

Are there differences in cardiothoracic surgery performed by trainees versus fully trained surgeons?

Mar, 09/13/2022 - 10:00

J Card Surg. 2022 Nov;37(11):3776-3798. doi: 10.1111/jocs.16925. Epub 2022 Sep 13.

ABSTRACT

OBJECTIVES: We sought to assess the safety of training in cardiothoracic surgery comparing outcomes of cases performed by trainees versus fully trained surgeons.

METHODS: EmBase, Scopus, PubMed, and OVID MEDLINE were searched in August 2021 independently by two authors. A third author arbitrated decisions to resolve disagreements. Inclusion criteria were articles on cardiothoracic surgery reporting on outcomes for trainees. Studies were assessed for appropriateness as per CBEM criteria. Eight hundred and ninety-two results were obtained, 27 represented best evidence (2-meta-analyses, 1-RCT, and 24 retrospective cohort studies).

RESULTS: In all 474,160 operative outcomes were assessed for 434,535 coronary artery bypass grafting (CABG) (431,329 on-pump vs. 3206 off-pump), 3090 AVR, 1740 MVR/repair, 26,433 mixed, 3565 congenital, and 4797 thoracic procedures. In all 398,058 cases were performed by trainees and 75,943 by consultants. One hundred fifty-nine cases were indeterminate. There were no statistically significant differences in the patients' preoperative risk scores. All studies excluded extreme high-risk patients in emergency setting, patients with poor left ventricular function, and reoperation cases that were undertaken by consultants. There were no differences in cardiopulmonary bypass and clamp times for CABG. Times for valve replacement and repair cases were longer for trainees. There

were no differences in the postoperative outcomes including perioperative myocardial infarction, resternotomy for bleeding, stroke, renal failure, intensive therapy unit length of stay, and total length of stay. One study reported no differences on angiographic graft patency at 1 year. There were no differences in in-hospital or midterm mortality out to 5-years.

DISCUSSION: Trainees can perform cardiothoracic surgery in dedicated high-volume units with outcomes comparable to those of fully trained surgeons.

PMID:36098376 | DOI:10.1111/jocs.16925

Categorías: Cirugía coronario