SUPPLEMENTAL MATERIAL

Data S1.

Supplemental Results: Results of the sensitivity analyses

On subgroup analysis by duration of follow-up, for studies with mean duration of follow-up ≥5 years, the pooled IRR of graft occlusion for the conduits (vs CON-SV) were: RA (IRR 0.45, 95% CI 0.22-0.93), NT-SV (IRR 0.70, 95% CI 0.31-1.55), RITA (IRR 0.94, 95%CI 0.41-2.14), and GEA (IRR 0.96, 95% CI 0.41-2.23). For studies with mean duration of follow-up <5 years, the pooled IRR of graft occlusion for the conduits (vs CON-SV) were: RA (IRR 0.50, 95% CI 0.34-0.72), NT-SV (IRR 0.41, 95% CI 0.26-0.65), and RITA (IRR 0.77, 95%CI 0.37-1.58). There were not enough studies reporting data for the GEA **(Figure S3).**

On subgroup analysis by extent of target vessel stenosis, for studies with target vessel stenosis ≥70%, the pooled IRR of graft occlusion for the conduits (vs CON-SV) were: RA (IRR 0.43, 95% CI 0.28-0.67), NT-SV (IRR 0.29, 95% CI 0.13-0.64), RITA (IRR 0.36, 95%CI 0.09-1.37), and GEA (IRR 1.30, 95% CI 0.36-4.68). There were not enough studies reporting data for target vessel stenosis <70% **(Figure S4).**

On subgroup analysis by proportion of patients with angiographic follow-up, for studies with angiographic follow-up in ≥50% patients, the pooled IRR of graft occlusion for the conduits (vs CON-SV) were: RA (IRR 0.45, 95% CI 0.24-0.83), NT-SV (IRR 0.48, 95% CI 0.19-1.21), and RITA (IRR 0.55, 95%CI 0.20-1.51). There were not enough studies reporting data for the GEA and with angiographic follow-up in <50% patients **(Figure S5).**

Table S1. Search Strategy.

Ovid MEDLINE (ALL - 1946 to November 08, 2019)
Searched on 11/11/2019
Limited to English language RCTs

Line#	Search
1	Radial Artery/
2	(radial arter* or arteria radialis or radialis artery).tw.
3	Saphenous Vein/
4	(Saphenous or SVG or saphena vein or saphenous venos system or vena saphena).tw.
5	Internal Mammary-Coronary Artery Anastomosis/
6	(Right Internal Mammary Artery or RIMA or Coronary Internal Mammary Artery or arteria mammaria interna or arteria thoracica interna or right internal thoracic artery or mammary internal artery).tw.
7	(cardiac muscle revascularisation or cardiac muscle revascularization or coronary revascularisation or coronary revascularization or heart muscle revascularisation or heart myocardium revascularisation or heart revascularisation or heart revascularization or internal mammary arterial anastomosis or internal mammary arterial implantation or internal mammary artery anastomosis or internal mammary artery graft or internal mammary artery implant or internal mammary artery implantation or internal mammary-coronary artery anastomosis or myocardial revascularisation or myocardial revascularization or myocardium revascularisation or myocardium revascularization or transmyocardial laser revascularisation or transmyocardial laser revascularization or vineberg operation).tw.
8	Gastroepiploic Artery/
9	(gastroepiploic artery or gastroepiploic arteries or gastroepiploic blood vessel or arteria gastroepiploica).tw.
10	or/1-9
11	"randomized controlled trial".pt.
12	(randomized controlled trial or randomised controlled trial or randomized trial or randomised trial or single blind* or double blind* or triple blind*).ti,ab.
13	11 or 12
14	(animals not humans).sh.
15	(comment or editorial or meta-analysis or practice-guideline or review or letter).pt. or meta-analysis.ti.
16	(random sampl* or random digit* or random effect* or random survey or random regression).ti,ab. not "randomized controlled trial".pt.
17	13 not (14 or 15 or 16)
18	10 and 17
19	limit 18 to english language

Table S2. Assessment of risk of bias using the Cochrane Collaboration's tool for assessing risk of bias.

	RANDOM SEQUENCE GENERATION	ALLOCATION CONCEALMENT	BLINDING OF PARTICIPANTS	BLINDING OF OUTCOME ASSESSMENT	INCOMPLETE OUTCOME DATA	SELECTIVE REPORTING	OTHER SOURCES OF BIAS
Collins 2008 (RVSP)[7]	+	+	+	+	+	-	?
Deb 2012 (RAPS)*[8]	+	-	-	+	+	-	?
Deb 2019[9]	+	+	+	+	+	+	?
Dreifaldt 2019*[10]	+	-	-	+	+	+	?
Gaudino 2005[11]	+	?	-	+	+	+	?
Glineur 2011[12]	+	+	-	+	?	+	?
Goldman 2011[13]	+	?	?	+	+	?	?
Buxton 2020 (RAPCO)[14]	+	?	-	+	+	+	?
Kim 2018 SAVE RITA[15]	+	-	+	+	+	+	?
Muneretto 2004[16]	+	-	?	+	+	+	?
Pettersen 2017[17]	+	?	?	+	?	?	?
Samano 2015[18]	+	-	+	+	+	+	?
Santos 2002[19]	+	-	-	+	+	+	?
Song 2012[20]	+	+	?	+	+	+	?
	+	Low Risk					
	?	Uncertain					
	-	High Risk					

*For Deb 2012 and Dreifaldt 2019, every patient received both study grafts. However, the endpoint assessors were blinded.

Table S3. Inclusion and exclusion criteria of the included trials.

Study/Year	Key inclusion/exclusion criteria	Cohort description
Collins/2008[7]	Inclusion: ages 40-70 years, undergoing primary isolated CABG. Exclusion: LVEF <25%, positive Allen's test, history of Raynauds syndrome or vasculitis, bilateral varicose veins, or any condition that may have affected the safety of follow up angiography.	RA vs CON-SV
Deb/2012[8]	Inclusion: Patients with a dominant circumflex coronary artery were eligible if they had sequential high-grade lesions in the circumflex and graftable obtuse marginal and posterior descending arteries. Exclusion: Patients with a history of vasculitis, Raynaud's syndrome, bilateral varicose vein stripping or varicose veins were excluded from the study. a)renal insufficiency (creatinine greater than 180 umol/L) b)severe peripheral vascular disease precluding femoral access c)coagulopathy or obligatory uninterrupted use of anticoagulants d)known allergy to radiographic contrast media d)women of childbearing potential e)co-morbid illness which precludes the use of follow-up angiography f)geographically inaccessible for follow-up angiography. Patients who developed any of the preoperative exclusion criteria following surgery were excluded from late angiography	RA vs CON-SV
Deb/2019[9]	Inclusion: >18 years old, undergoing non-emergent isolated on- or off-pump CABG with an LVEF >20%, required at least one SV as part of the revascularization strategy, and had a creatinine clearance at least 20 mL/min or higher. Exclusion: Patients were excluded if the SV was unusable due to previous vein stripping or poor quality on preoperative duplex or vein mapping, if the patient had a contraindication to CT angiography, was pregnant or a female of child-bearing age, allergy to fish oil/fish production and non-medicinal ingredients of the study product, already taking fish oil supplements regularly, had a congenital or acquired coagulation disorder, or considered excessive risk of wound infection according the clinical judgement of the site surgical investigators.	CON-SV vs. NT-SV
Dreifaldt/2019[10]	Inclusion: Patients with three-vessel CAD. Exclusion: age >65 years, LVEF <40%, serum creatinine level >120 µmol/L, use of anticoagulants, coagulopathy, allergy to contrast medium, positive Allens test result or an abnormal result of a Doppler study of the arms, a history of vasculitis or Raynaud's syndrome, bilateral varicose veins, or previous vein stripping.	RA vs NT-SV
Gaudino/2005[11]	Inclusion: patients undergoing primary elective CABG, had undergone previous percutaneous coronary angioplasty with successful stent implantation in any coronary vessel >1.2 mm in diameter at least 1 month before surgery with preoperative angiographic demonstration of failed or patent intracoronary stent, and angiographic evidence of triple vessel coronary disease with a disease (proximal stenosis ≥70%) graftable (≥1mm in diameter) obtuse marginal artery, LVEF >50%, and no preoperative evidence or history of lateral or posterolateral myocardial infarction. Exclusion: Patients who underwent stent implantation <1 month before surgery were excluded, in the presumption that stent failure in such limited time frame could be technically related.	RITA vs RA vs CON-SV
Glineur/2011[12]	Inclusion: patients that were <75 years old with a life expectancy >5 years, undergoing elective isolated CABG with angiographic evidence of severe (>70% by visual estimate) coronary obstruction on the RCA territory with a perioperative lumen diameter of the RGEA >1.5 mm. Exclusion: a history of upper abdominal surgery, history of upper gastrointestinal bleeding or active gastric/duodenal ulcer, BMI >35, diabetes with a HbA1c >7.5, FEV1<60% predicted, redo surgery, cirrhosis, or other configuration than graft to posterior descending artery or posterior lateral artery.	RA vs RGEA
Goldman/2011[13]	Inclusion: patients were undergoing elective first-time CABG without concomitant valve procedure. Exclusion: requirement for only a single vessel bypass where the left internal mammary artery would be used for that graft; previous vein stripping and ligation of saphenous veins with no venous conduit available for bypass; Raynaud's symptoms; creatinine above 2.0 mg/dL or requiring hemodialysis; positive Allen test; cardiogenic shock, or unable to give consent; allergic to contrast material; undergoing repeat CABG; less than full use of both arms; currently pregnant; neurologic or musculoskeletal disease affecting the arm; refusal to participate; requirement for any concomitant valve operation in the mitral, aortic or pulmonary position; isolated tricuspid annuloplasty was acceptable but tricuspid valve replacement excluded the patient from consideration; concomitant Dor or Maze procedure; in another research study; or no suitable radial target (there is no non-LAD vessel with a >70% stenosis).	RA vs CON-SV
Buxton/2020[14]	Group 1 included patients age <70 years (or <60 years and diabetic) with multi vessel CAD requiring at least two grafts. Group 2 included patients age >70 (or >60 years and diabetic) with multi vessel CAD requiring at least two grafts). Patients were excluded at the surgeons discretion, if they had an unusable conduit, experienced an acute myocardial infarction in <7 days, had an associated major illness, were undergoing off-pump surgery, had an unsuitable coronary target, LVEF <35%, FEV1<1L, renal failure, language barrier, or resided overseas.	Group 1: RA vs RITA Group 2: RA vs CON-SV
Kim/2018[15]	Inclusion: patients aged 40-70 years undergoing off-pump CABG for multivessel CAG using a Y-composite graft based on the in situ left internal thoracic artery. Exclusion: ineligible Y-composite graft revascularization, an unavailable RITA or SV, LVEF ≤25%, chronic renal failure requiring renal replacement therapy, previous cardiac surgery, emergency operation, or a medical history such as malignant disease that might limit the possibility of midterm follow-up	RITA only

Muneretto/2004[16]	Inclusion: Patients aged >70 years and scheduled for on-pump isolated myocardial revascularization. Exclusion: age less than 70 years of age, single-vessel disease, emergency operations, concomitant procedures other than coronary surgery, LVEF <20%, Euroscore greater than 10, and the presence of a positive Allen's test.	RA vs CON-SV
Pettersen/2017[17]	Inclusion: patients undergoing isolated first-time non-emergent CABG requiring cardiopulmonary bypass with an LVEF >35% with at least one saphenous vein graft required as part of the revascularization strategy. Exclusion: any acute or chronic inflammatory diseases, patient with a history of malignancy, pregnancy, or previous cardiac surgery, serum creatinine >120 umol/L, coagulopathy, insulin dependent diabetes, smoking during last 6 months, leg not suitable for no-touch vein harvesting as judged by the operator, need for nitrates on operation day, and patients not on statins.	CON-SV vs NT-SV
Samano/2015[18]	Exclusion: were unstable angina, insulin-dependent diabetes mellitus, serum creatinine >120 umol/L, preventive use of anticoagulants, coagulopathy, combined procedure, redo CABG, and severe peripheral vascular disease.	CON-SV vs NT-SV
Santos/2002[19]	Exclusion: (a) age over 70 years; (b) severe obesity; (c) previous abdominal operation; (d) positive Allen test; (e) redo operation; (f) additional procedure; (g) severely depressed left ventricular function; (h) contraindications for use of calcium-channel blockers; (i) contraindication for postoperative angiography.	RA vs RGEA
Song/2012[20]	Inclusion: age ≥70 years and primary isolated OPCAB. Exclusion criteria were single-vessel disease, emergent surgery, a positive Allen test, or acute or chronic renal failure.	RA vs NT-SV

CON-SV: conventionally-harvested saphenous vein; CABG: coronary artery bypass grafting; CAD: coronary artery disease; CT: computed tomography; FEV1: forced expiratory volume in 1 second; GEA: gastroepiploic artery; LAD: left anterior descending artery; LVEF: left ventricular ejection fraction; NT-SV: no-touch saphenous vein; OPCAB: off-pump coronary artery bypass grafting; RA: radial artery; RITA: right internal thoracic artery.

Table S4. Demographics of the included patients.

Author / Year	Age (Mean±SD)	Sex (Female) N (%)	Hypertension N (%)	Diabetes N (%)	Dyslipidemia N (%)
Collins 2008[7]	RA: 58.0 ± 6.0 CON-SV: 58.0 ± 8.0	RA: 3.0 CON-SV: 5.0	RA: 58.0 CON-SV: 50.0	RA: 19.0 CON-SV: 14.0	RA: 69.0 CON-SV: 84.0
Deb 2012[8]	RA: 60.4 ± 8.0 CON-SV: 60.4 ± 8.0	RA: 15.2 CON-SV: 15.2	RA: 45.0 CON-SV: 45.0	RA: 30.9 CON-SV: 30.9	RA: 70.3
Deb 2019[9]	CON-SV: 64.0 ± 8.2 NT-SV: 65.5 ± 9.0	CON-SV: 8.1 NT-SV: 16.5	CON-SV: 83.7 NT-SV: 75.6	CON-SV: 34.1 NT-SV: 34.6	NR
Dreifaldt 2019[10]	Overall: 59.0	Overall: 12.0	Overall: 50.0	Overall: 18.0	Overall: 89.0
Gaudino 2005 Control[11]	Overall: 63.0 ± 8.0	Overall: 29.0	Overall: 21.0	Overall: 22.0	Overall: 35.0
Gaudino 2005 Study[11]	Overall: 65.0± 9.0	Overall: 25.0	Overall: 18.0	Overall: 40.0	Overall: 38.0
Glineur 2011[12]	CON-SV: 63.1 ± 7.7 RITA: 62.9 ± 8.3 GEA: 61.9 ± 8.3	CON-SV: 6.0 RITA: 5.0 GEA: 12.0	CON-SV: 76.0 RITA: 28.0 GEA: 82.0	CON-SV: 24.0 RITA: 11.0 GEA: 27.0	CON-SV: 71.0 RITA: 27.0 GEA: 82.0
Goldman 2011[13]	RA: 61.0 ± 8.0 CON-SV: 62.0± 8.0	RA: 0.0 CON-SV: 1.0	RA: 79.0 CON-SV: 79.0	RA: 42.0 CON-SV: 42.0	NR
Buxton 2020 (Group 1)[14]	RA: 59.6 RITA: 59.1	RA: 10.0 RITA: 5.0	RA: 51.0 RITA: 51.0	RA: 9.0 RITA: 7.0	NR
Buxton 2020 (Group 2)[14]	RA: 73.4 CON-SV: 72.9	RA: 20.0 CON-SV: 14.0	RA: 47.0 CON-SV: 61.0	RA: 29.0 CON-SV: 39.0	NR
Kim 2018[15]	RITA: 63.5	RITA: 19.1	RITA: 67.3	RITA: 46.4	RITA: 34.8
Muneretto 2004[16]	RA: 77.3 ± 3.0 CON-SV: 76.9 ± 2.0	RA: 43.7 CON-SV: 46.2	NR	RA: 48.7 CON-SV: 45.0	NR
Pettersen 2017[17]	CON-SV: 65.0 ± 6.9 NT-SV: 63.4 ± 7.1	CON-SV: 18.0 NT-SV: 7.0	NR	CON-SV: 4.0 NT-SV: 2.0	NR
Samano 2015[18]	CON-SV: 71.4 NT-SV: 77.6	CON-SV: 14.8 NT-SV: 7.4	CON-SV: 67.0 NT-SV: 56.0	CON-SV: 30.0 NT-SV: 37.0	CON-SV: 93.0 NT-SV: 96.0
Santos 2002[19]	RA: 55.7 ± 7.9 GEA: 56.1 ± 7.7	RA: 16.7 GEA: 13.3	RA: 70.0 GEA: 80.0	RA: 26.7 GEA: 20.0	NR
Song 2012[20]	RA: 72.7 ± 3.5 NT-SV: 74.6 ± 3.8	RA: 51.4 NT-SV: 44	RA: 65.7 NT-SV: 84.0	RA: 42.9 NT-SV: 52.0	RA: 48.6 NT-SV: 44.0

CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; NT-SV: no-touch saphenous vein; NR: not reported; RA: radial artery; RITA: right internal thoracic artery.

Table S5. Procedure-related variables by trial.

Author / Year	Graft to circumflex coronary system (%)	Proximal anastomosis to ascending aorta (%)	Off-pump coronary artery bypass surgery (%)
Collins 2008[7]	NR	RA: 100 CON-SV: 100	RA: 0 CON-SV: 0
Deb 2012[8]	RA: 50 CON_SV: 50	RA: 98.4 CON-SV: 99.6	NR
Deb 2019[9]	NR	NR	NR
Dreifaldt 2019[10]	RA: 63 NT-SV:62	NR	RA: 0 NT-SV: 0
Gaudino 2005 Control[11]	RA: 100 CON-SV: 100 RITA: 100	RA: 100 CON-SV: 100 RITA: 100	RA: 0 CON-SV: 0 RITA: 0
Gaudino 2005 Study[11]	RA: 100 CON-SV: 100 RITA: 100	RA: 100 CON-SV: 100 RITA: 100	RA: 0 CON-SV: 0 RITA: 0
Glineur 2011[12]	CON-SV: 0 RITA: 0 GEA: 0	CON-SV: 100 RITA: 0 GEA: 100	NR
Goldman 2011[13]	RA: 55 CON-SV: 59	RA: 100 CON-SV: 100	RA: 11 CON-SV: 13
Buxton 2020 (Group 1)[14]	RA: 62 RITA: 67	RA: 100 RITA: 100	RA: 0 RITA: 0
Buxton 2020 (Group 2)[14]	RA: 68 CON-SV: 60	RA: 100 RITA: 100	RA: 0 CON-SV: 0
Kim 2018[15]	NR	RITA: 0	RITA: 100
Muneretto 2004[16]	RA: 50 CON-SV: 52	RA: 0 CON-SV: 0	RA: 0 CON-SV: 0
Pettersen 2017[17]	NR	CON-SV: 100 NT-SV: 100	CON-SV: 0 NT-SV: 0
Samano 2015[18]	CON-SV: 62 NT-SV: 78	CON-SV: 100 NT-SV: 100	NR
Santos 2002[19]	RA: 55 GEA: 55	RA: 0 GEA: 0	RA: 0 GEA: 0
Song 2012[20]	NR	RA: 0 NT-SV: 0	RA: 100 NT-SV: 100

CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; NT-SV: no-touch saphenous vein; NR: not reported; RA: radial artery; RITA: right internal thoracic artery.

Table S6. Angiography-related variables by trial.

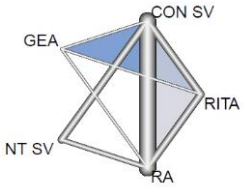
Study/Year	Definition of Graft Occlusion	No. of patients who underwent angiography	Method of Angiography	Severity of coronary blockage
Collins/2008[7]	Absence of visible opacification of the study graft despite aortogram. Additional secondary angiographic visual grading of the grafts was defined as P1= perfect patency; P2= compromised flow states (stenosis at the anastomoses or in the body of the graft) <50%; P3= compromised flow states >50%; P4= severe diffuse graft narrowing (string sign); and P5= total occlusion	103	Catheter-based angiography	>70%
Deb/2012[8]	Lack of TIMI flow 3	269	- Catheter-based angiography in 87% of patients - CT angiography in 13% of patients	>70%
Deb/2019[9]	1. Primary outcome: complete occlusion at 1 year 2. Secondary outcomes: Significant (50-99%) stenosis, and a composite of significant stenosis or complete occlusion	212	CT angiography	>50
Dreifaldt/2019[10]	No opacification of graft on CTA	99	CT angiography	>50%
Gaudino/2005[11]	4 subgroups of patency: 1. Perfectly patent 2. Patent with irregularity 3. Stringed 4. Occluded	120	Catheter-based angiography	>50%
Glineur/2011[12]	Graft functionality was scored as 0 for an occluded graft, 1 when the flow from the native coronary artery was dominant, 2 when flow supply from the native coronary and the graft was balanced, 3 when the native coronary was fully opacified by the graft, and 4 when the native coronary was fully opacified by the graft only (occluded or sub-occluded coronary native vessel). A graft was considered “not functional” with patency scores of 0 to 2 and “functional” with patency scores of 3 or 4.	210	Catheter-based angiography	>70%
Goldman/2011[13]	Opacification of distal target by injection of the graft	535	Catheter-based angiography	>70%
Buxton/2020[14]	1. Total occlusion 2. Stenosis >80% 3. “String sign” (indicating the absence of functional flow in an arterial graft despite anatomic patency)	415	CT or catheter-based angiography	>70%

Kim/2018[15]	Fitzgibbon classification: Grades A (excellent graft) and B (fair) were considered patent. Grade O anastomosis, which included stenosis of 75% or more of the grafted coronary artery or a totally occluded graft, was considered occluded.	91 (RITA)	-CT angiography in 53.2% of patients -MDCT in 46.8% of patients	NR
Muneretto/2004[16]	Fitzgibbon classification: Grade A (unimpaired graft run-off); Grade B (reduced graft caliber, <50% of the grafted coronary artery), and Grade C (occluded graft)	136	NR	>70% for RA grafts >60% for ITA grafts
Pettersen/2017[17]	NR	44	Catheter-based angiography	NR
Samano/2015[18]	A graft was judged as occluded when the graft was not opacified by contrast media. A graft-stenosis was judged insignificant when the narrowing of the lumen diameter was >50% relative to the adjacent parts of the vessel.	54	CT angiography	NR
Santos/2002[19]	1. Functioning: good flow, good diameter, filling of the target coronary artery 2. Non-functioning: severe and diffuse spasm and narrowed graft (string sign) or occluded without filling of the target coronary artery	58	Catheter-based angiography	>75% stenosis
Song/2012[20]	NR	190	CT angiography	NR

CTA: Computed tomography angiography; LITA: left internal thoracic artery; MDCT: Multidetector computed tomography; NR: not reported; RA: radial artery; RITA: right internal thoracic artery; TIMI: Thrombolysis in Myocardial Infarction; SVG: saphenous vein graft

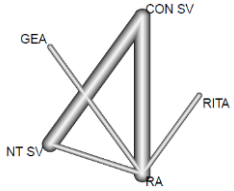
Table S7. Networks plot of eligible comparisons of treatment modalities and league tables for the network meta-analysis showing incidence rate ratio (IRR) and 95% confidence intervals (CI) for A) graft occlusion and B) late mortality among the different treatment groups in random effect models. In the network plots, the width of the lines indicate the number of studies comparing every pair of treatment. In the network plots, colored polygons indicate the presence of multi-arm (3 or more) trials, whereas line shading and thickness are inversely proportional to standard errors of the fixed effect estimate stemming from direct between-arm comparisons. The league tables are to be read vertically. CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.

A) Graft occlusion



RA				
0.54 [0.33; 0.90]	RITA			
1.03 [0.64; 1.64]	1.90 [1.02; 3.51]	NT SV		
0.57 [0.32; 1.01]	1.04 [0.59; 1.84]	0.55 [0.28; 1.07]	GEA	
0.54 [0.35; 0.82]	1.02 [0.63; 1.65]	0.55 [0.39; 0.78]	0.98 [0.57; 1.68]	CON SV

B) Late mortality



RA				
0.56 [0.32; 0.96]	RITA			
0.90 [0.44; 1.83]	1.62 [0.66; 3.95]	NT SV		
2.00 [0.19; 20.86]	3.59 [0.32; 39.86]	2.22 [0.19; 25.65]	GEA	
0.82 [0.58; 1.16]	1.47 [0.77; 2.80]	0.91 [0.49; 1.70]	0.41 [0.04; 4.38]	CON SV

Table S8. Summary of the primary outcome of graft occlusion in the different pairwise comparisons. For each pairwise comparison, the second group is the reference arm. CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.

Outcomes	Studies	Patients	Incidence rate ratio (95% CI)	I^2	Heterogeneity P value	Overall effect P value
Graft occlusion						
• RA vs CON-SV	7	1671	0.47 (95% CI 0.27 – 0.81)	47.9	0.07	0.007
• RITA vs CON-SV	3	198	0.74 (95% CI 0.23 – 2.38)	46.1	0.16	0.61
• NT-SV vs CON-SV	3	307	0.57 (95% CI 0.39 – 0.83)	0.0	0.75	0.003
• GEA vs CON-SV	-	-	-	-	-	-
• RA vs RITA	3	474	0.64 (95% CI 0.36 – 1.17)	0.0	0.87	0.15
• RA vs NT-SV	2	358	1.05 (95% CI 0.37 – 2.92)	46.1	0.17	0.93

Table S9. Assessment of inconsistency based on separate indirect from direct evidence (SIDE) using back-calculation method (All p-values were insignificant reflecting no significant disagreement (no inconsistency) between the direct and indirect estimate in our included outcomes).CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.

Graft occlusion

comparison	k	prop	nma	95%-CI	direct	95%-CI	indir.	95%-CI	RoR	95%-CI	z	p-value
GEA:CON SV	1	0.77	0.98	[0.57; 1.68]	1.01	[0.55; 1.87]	0.87	[0.28; 2.67]	1.17	[0.32; 4.21]	0.24	0.8109
RA :CON SV	7	0.74	0.54	[0.35; 0.82]	0.57	[0.35; 0.93]	0.46	[0.20; 1.04]	1.25	[0.48; 3.24]	0.45	0.6520
NT SV:CON SV	3	0.69	0.55	[0.39; 0.78]	0.53	[0.35; 0.80]	0.62	[0.33; 1.14]	0.86	[0.41; 1.80]	-0.41	0.6847
RITA :CON SV	3	0.69	1.02	[0.63; 1.65]	1.06	[0.59; 1.89]	0.95	[0.40; 2.26]	1.11	[0.39; 3.16]	0.20	0.8402
GEA:NT SV	0	0	1.82	[0.93; 3.53]	.	.	1.82	[0.93; 3.53]	.	.	.	.
GEA:RA	1	0.20	1.77	[0.99; 3.15]	3.00	[0.82; 11.01]	1.55	[0.81; 2.96]	1.93	[0.45; 8.25]	0.89	0.3730
GEA:RITA	1	0.81	0.96	[0.54; 1.68]	0.76	[0.41; 1.43]	2.47	[0.68; 8.96]	0.31	[0.07; 1.29]	-1.61	0.1080
NT SV :RA	2	0.41	0.97	[0.61; 1.56]	0.86	[0.41; 1.78]	1.07	[0.58; 1.97]	0.80	[0.31; 2.09]	-0.45	0.6520
NT SV :RITA	0	0	0.53	[0.28; 0.98]	.	.	0.53	[0.28; 0.98]	.	.	.	.
RA:RITA	3	0.46	0.54	[0.33; 0.90]	0.64	[0.31; 1.35]	0.47	[0.24; 0.93]	1.37	[0.50; 3.78]	0.62	0.5383

Late mortality

comparison	k	prop	nma	95%-CI	direct	95%-CI	indir.	95%-CI	RoR	95%-CI	z	p-value
GEA:CON SV	0	0	0.41	[0.04; 4.38]	.	.	0.41	[0.04; 4.38]	.	.	.	.
NT SV :CON SV	3	0.96	0.91	[0.49; 1.70]	0.86	[0.45; 1.62]	3.82	[0.15; 94.38]	0.22	[0.01; 5.89]	-0.90	0.3700
RA:CON SV	3	0.99	0.82	[0.58; 1.16]	0.83	[0.59; 1.18]	0.19	[0.01; 4.82]	4.46	[0.17; 117.23]	0.90	0.3700
RITA :CON SV	0	0	1.47	[0.77; 2.80]	.	.	1.47	[0.77; 2.80]	.	.	.	.
GEA:NT SV	0	0	0.45	[0.04; 5.23]	.	.	0.45	[0.04; 5.23]	.	.	.	.
GEA:RA	1	1.00	0.50	[0.05; 5.21]	0.50	[0.05; 5.21]	.	.	.	.	.	.
GEA:RITA	0	0	0.28	[0.03; 3.09]	.	.	0.28	[0.03; 3.09]	.	.	.	.
NT SV :RA	1	0.05	1.11	[0.55; 2.25]	4.59	[0.19; 111.18]	1.03	[0.50; 2.13]	4.46	[0.17; 117.23]	0.90	0.3700
NT SV :RITA	0	0	0.62	[0.25; 1.50]	.	.	0.62	[0.25; 1.50]	.	.	.	.
RA:RITA	1	1.00	0.56	[0.32; 0.96]	0.56	[0.32; 0.96]	.	.	.	.	.	.

Legend:

comparison - Treatment comparison

k - Number of studies providing direct evidence

prop - Direct evidence proportion

nma - Estimated treatment effect (IRR) in network meta-analysis

direct - Estimated treatment effect (IRR) derived from direct evidence

indir. - Estimated treatment effect (IRR) derived from indirect evidence

RoR - Ratio of Ratios (direct versus indirect)

z - z-value of test for disagreement (direct versus indirect)

p-value - p-value of test for disagreement (direct versus indirect)

Table S10. Quantifying heterogeneity/inconsistency, tests of heterogeneity (within designs) and inconsistency (between designs) and design-specific decomposition of within-designs Q statistic. CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.

Outcome	Quantifying heterogeneity / inconsistency	Tests of heterogeneity (within designs) and inconsistency (between designs)
Graft occlusion	tau^2 = 0.0643; I^2 = 26.3%	Q statistics to assess homogeneity / consistency Q df p-value Total 18.99 14 0.1652 Within designs 13.15 9 0.1558 Between designs 5.84 5 0.3222 Design-specific decomposition of within-designs Q statistic Design Q df p-value CON SV :NT SV 0.56 2 0.7547 CON SV :RA 9.85 4 0.0430 NT SV :RA 1.86 1 0.1730 CON SV :RA:RITA 0.88 2 0.6427 Between-designs Q statistic after detaching of single designs Detached design Q df p-value CON SV :NT SV 5.62 4 0.2292 CON SV :RA 5.78 4 0.2164 GEA:RA 4.76 4 0.3132 NT SV :RA 5.62 4 0.2292 RA:RITA 5.21 4 0.2661 CON SV :GEA:RITA 2.57 3 0.4621 CON SV :RA:RITA 2.00 3 0.5717 Q statistic to assess consistency under the assumption of a full design-by-treatment interaction random effects model Q df p-value tau.within tau2.within Between designs 4.17 5 0.5256 0.3011 0.0906
Late mortality	tau^2 = 0; I^2 = 0%	Q statistics to assess homogeneity / consistency Q df p-value Total 3.14 5 0.6781 Within designs 2.34 4 0.6737 Between designs 0.80 1 0.3700 Design-specific decomposition of within-designs Q statistic Design Q df p-value CON SV :NT SV 1.40 2 0.4960 CON SV :RA 0.94 2 0.6261 Between-designs Q statistic after detaching of single designs

		Detached design Q df p-value CON SV :NT SV 0.00 0 -- CON SV :RA 0.00 0 -- NT SV :RA 0.00 0 -- Q statistic to assess consistency under the assumption of a full design-by-treatment interaction random effects model Q df p-value tau.within tau2.within Between designs 0.80 1 0.3700 0 0

Table S11. Meta-regression for the primary outcome of graft occlusion. All values expressed as beta ± standard deviation, P-value. Positive beta reflects higher incidence rate ratio of the outcome with increased variable value while negative beta reflects lower incidence rate ratio of the outcome with higher variable value.

Graft occlusion	RA vs CON-SV (n=7 studies)	RITA vs CON-SV (n=3 studies)	RA vs RITA (n=3 studies)	NT-SV vs CON-SV (n=3 studies)	RA vs NT-SV (n=2 studies)
Age	-0.04±0.05, P=0.42	-0.83±0.45, P=0.06	0.03±0.23, P=0.89	-	-
Female sex	**-0.04±0.02, P=0.01**	-0.04±0.02, P=0.08	0.002±0.06, P=0.97	0.23±0.31, P=0.45	-
Hypertension	**0.02±0.01, P=0.02**	0.03±0.02, P=0.06	0.002±0.03, P=0.96	-	-
Diabetes Mellitus	0.01±0.02, P=0.79	-0.10±0.06, P=0.07	-0.02±0.06, P=0.81	-0.01±0.02, P=0.81	-
Dyslipidemia	0.01±0.03, P=0.19	0.06±0.03, P=0.07	-	-	-
Target vessel stenosis	0.09±0.07, P=0.18	-	-	-	-
Duration of follow-up	-0.02±0.09, P=0.79	0.004±0.002, P=0.07	0.004±0.19, P=0.98	-0.0001±0.0002, P=0.45	-
Mean follow-up ≥ 5 years	-0.16±0.64, P=0.80	-	0.03±1.09, P=0.98	-0.29±0.39, P=0.45	-
Completeness of angiographic follow-up (%)	-0.03±0.03, P=0.34	-	-0.001±0.05, P=0.98	-	-
Proximal anastomosis on the ascending aorta (%)	0.01±0.01, P=0.33	-0.04±0.02, P=0.07	-	-	-
Graft to circumflex coronary system (%)	-0.01±0.03, P=0.64	-0.01±0.01, P=0.07	-0.001±0.03, P=0.98	-	-
Off-pump coronary artery bypass grafting (%)	**0.09±0.04, P=0.01**	-1.21±0.78, P=0.12	-	-	-

CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.

Figure S1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram.

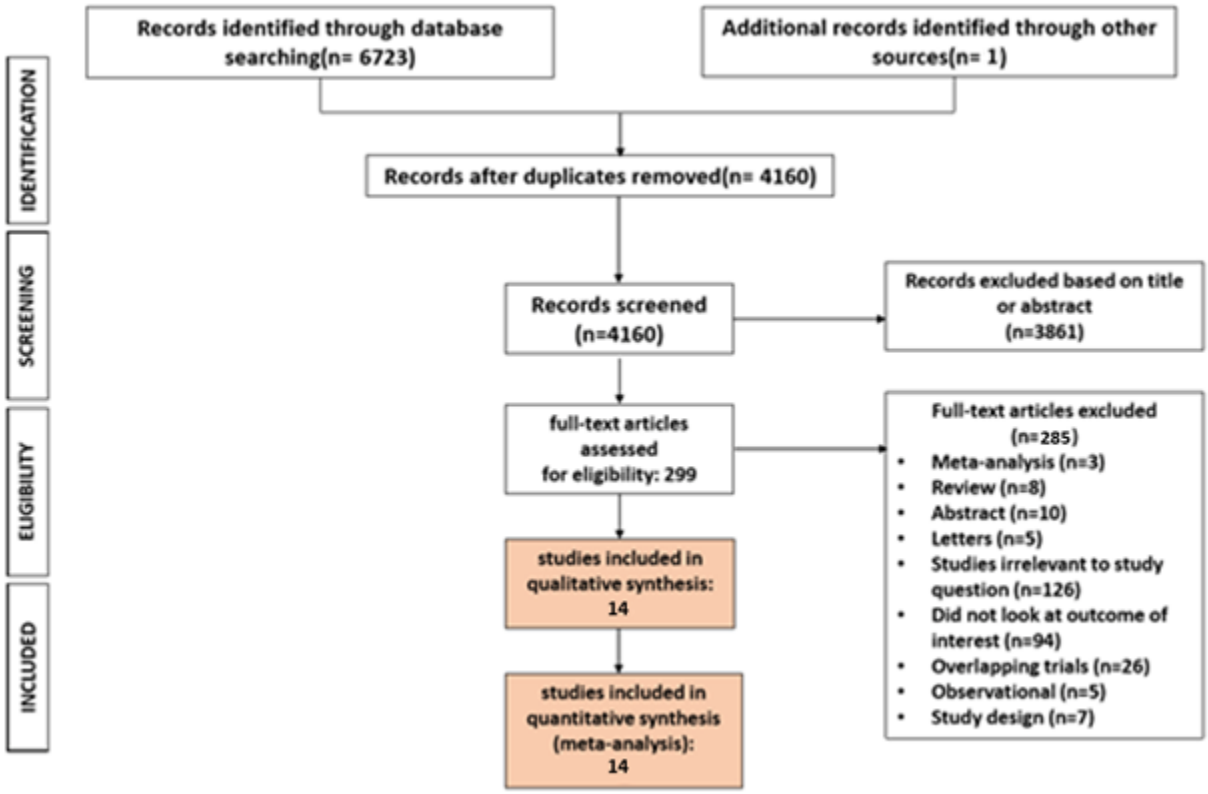


Figure S2. Net heat plot evaluating for inconsistency (i.e. disagreement between direct and indirect evidence) in the network model. The areas of gray squares represent the relative contributions of designs listed in the columns to the network estimate of designs listed in the rows. The colors are associated with changes in inconsistency between direct and indirect evidence in designs listed in the rows after detaching the effect of designs listed in the columns. Yellow colors indicate a decrease (the stronger the intensity of the color, the stronger the change). CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.

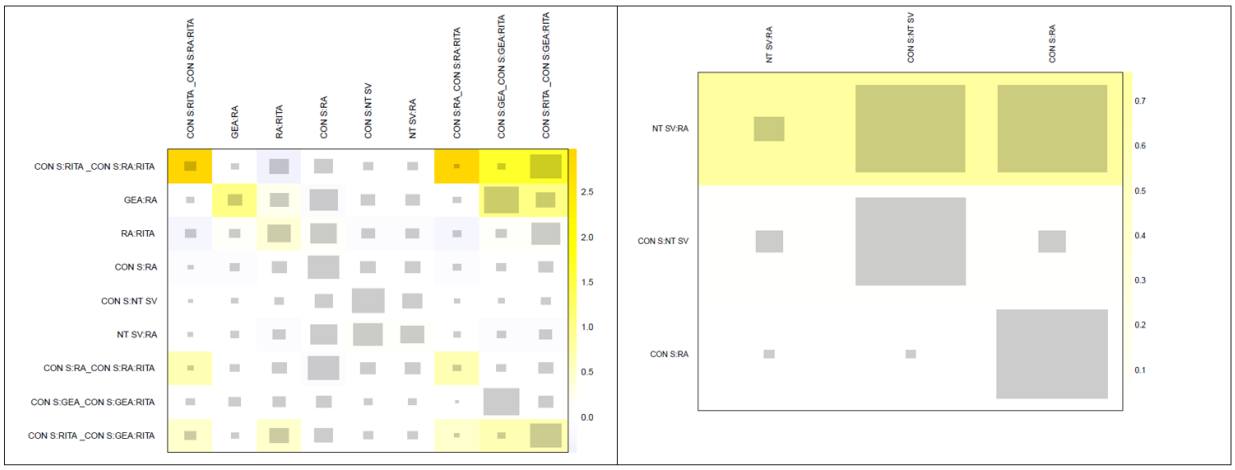


Figure S3A. Forest plot for the pairwise comparison of radial artery (RA) vs conventionally-harvested saphenous vein (CON-SV) for graft occlusion. CI: confidence interval; IRR: incidence rate ratio.

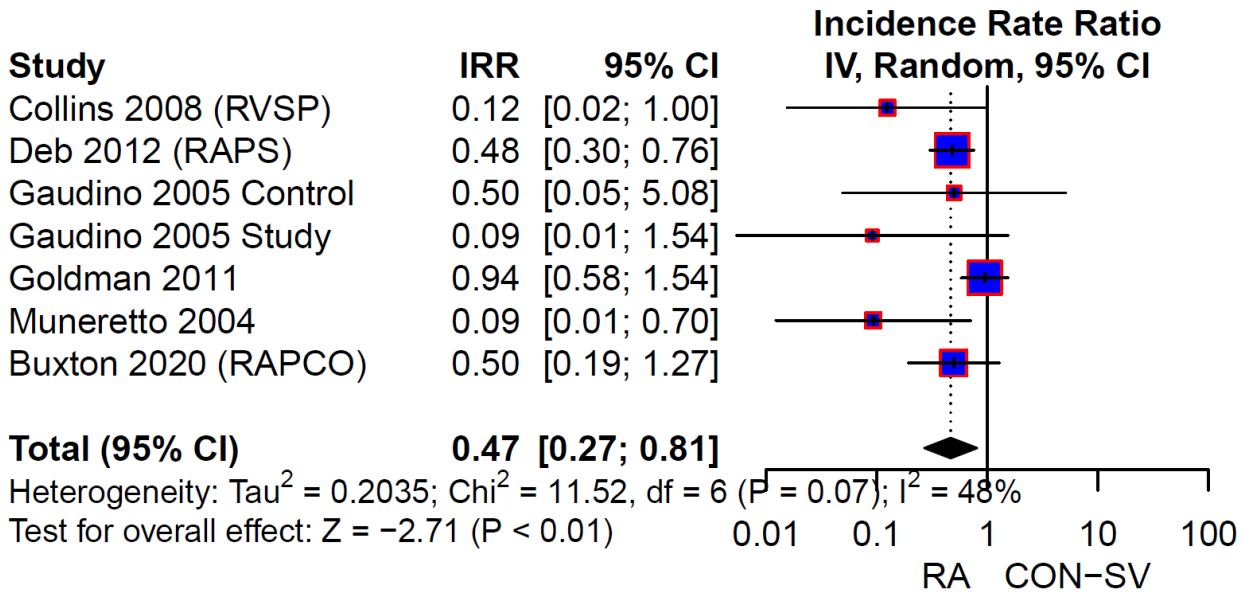


Figure S3B. Forest plot for pairwise comparison of right internal thoracic artery (RITA) vs conventionally-harvested saphenous vein (CON-SV) for graft occlusion. CI: confidence interval; IRR: incidence rate ratio.

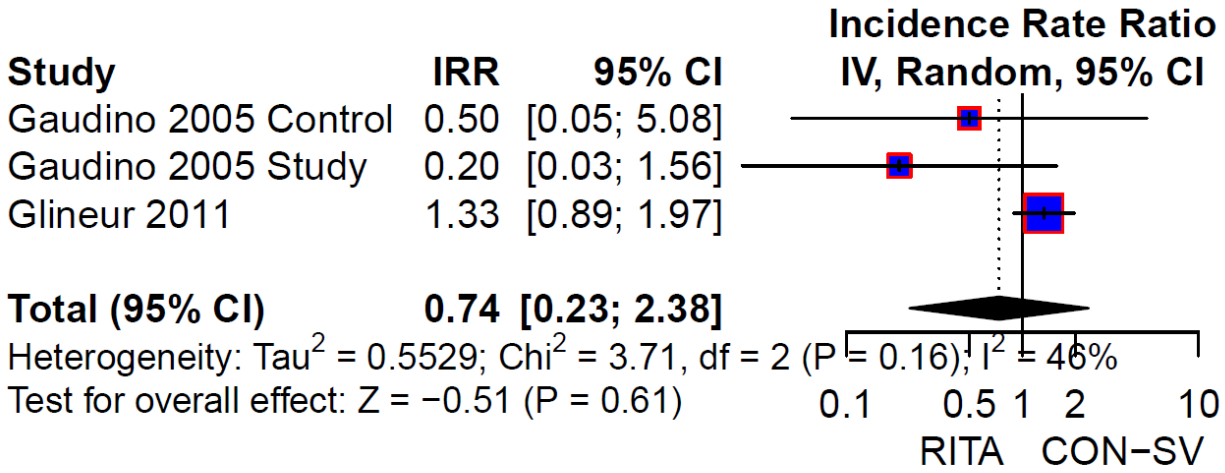


Figure S3C. Forest plot for pairwise comparison of radial artery (RA) vs right internal thoracic artery (RITA) for graft occlusion. CI: confidence interval; IRR: incidence rate ratio.

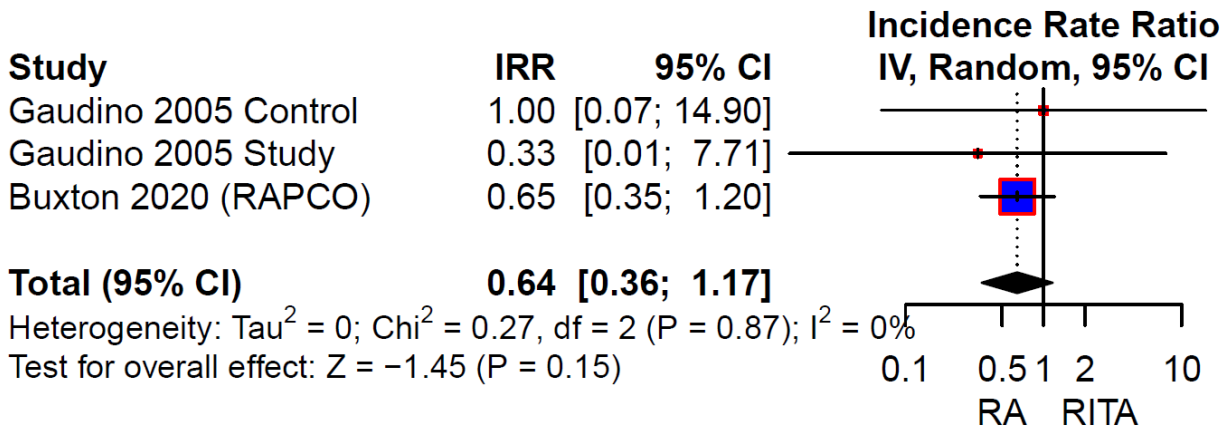


Figure S3D Forest plot for pairwise comparison of no-touch saphenous vein (NT-SV) vs. conventionally-harvested saphenous vein (CON-SV) for graft occlusion. CI: confidence interval; IRR: incidence rate ratio.

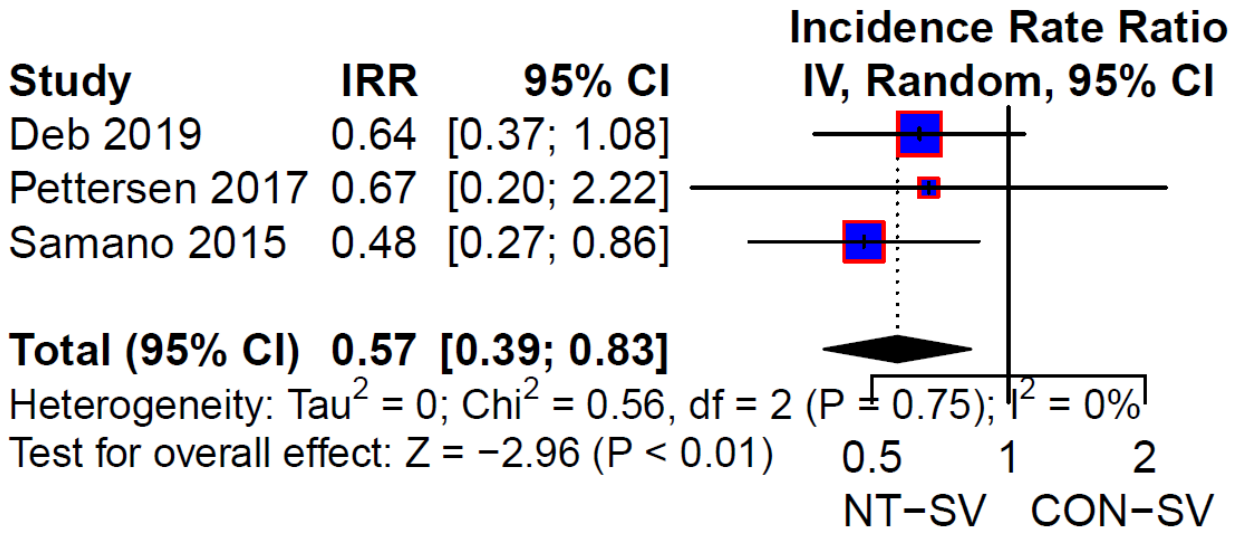


Figure S3E. Forest plot for pairwise comparison of radial artery (RA) vs no-touch saphenous vein (NT-SV) for graft occlusion. CI: confidence interval; IRR: incidence rate ratio.

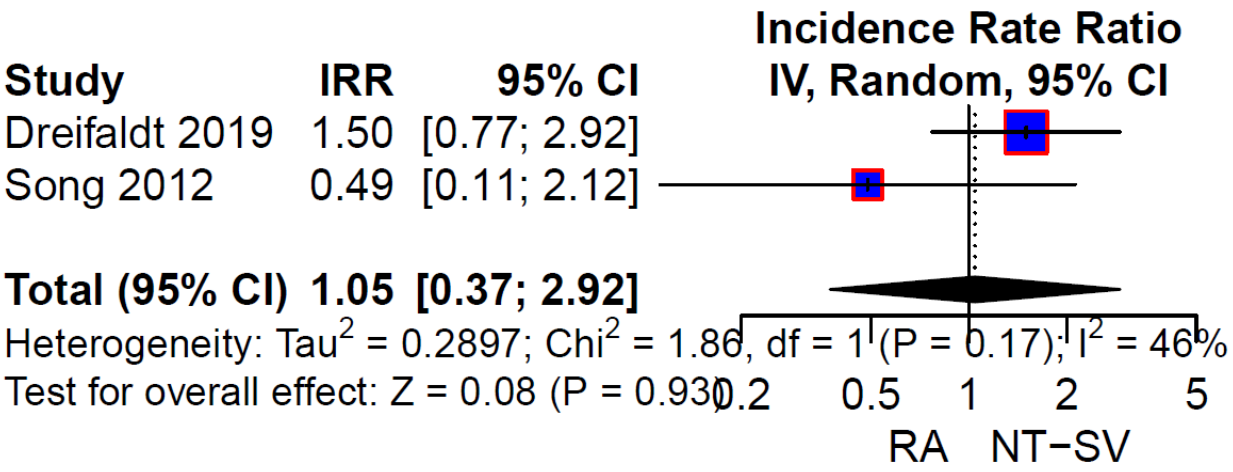
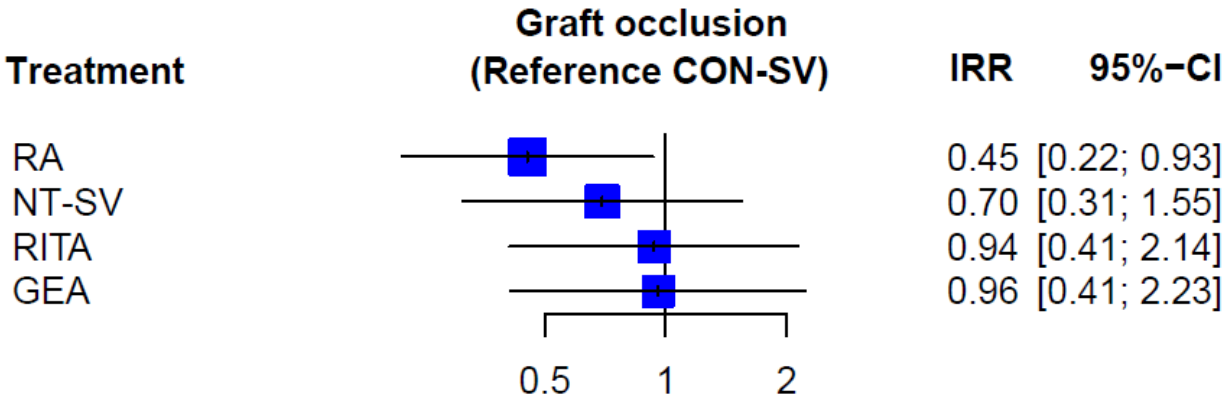


Figure S4. Subgroup analysis for the primary outcome by duration of follow-up. A) Mean duration of follow-up ≥5 years. B) Mean duration of follow-up < 5 years. There were not enough studies reporting data for the gastreopiploic artery (GEA) at mean duration of follow-up <5 years. CI: confidence interval; CON-SV: conventionally-harvested saphenous vein; IRR: incidence rate ratio; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery

A.



B.

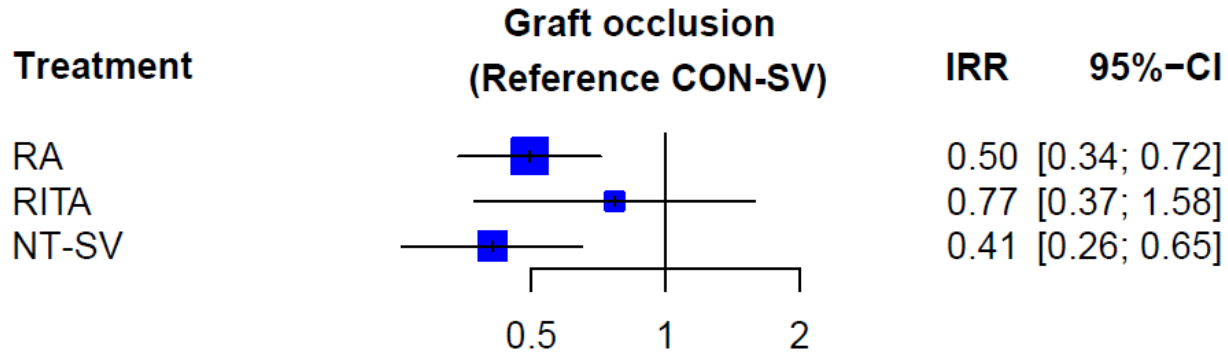


Figure S5. Subgroup analysis for the primary outcome in studies with target vessel stenosis ≥70%. CI: confidence interval; CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; IRR: incidence rate ratio; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery

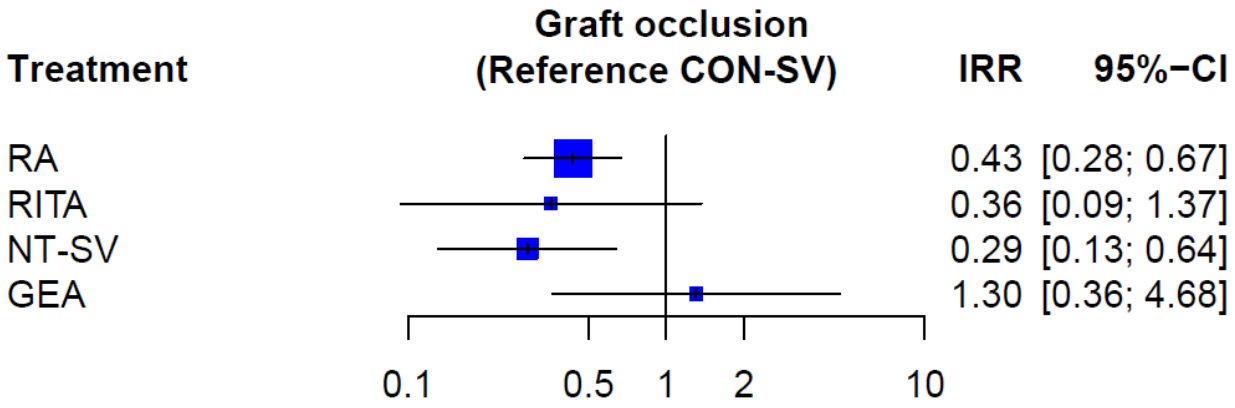


Figure S6. Subgroup analysis for the primary outcome in studies with proportion of angiographic follow-up in ≥50% patients. CI: confidence interval; CON-SV: conventionally-harvested saphenous vein; IRR: incidence rate ratio; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.

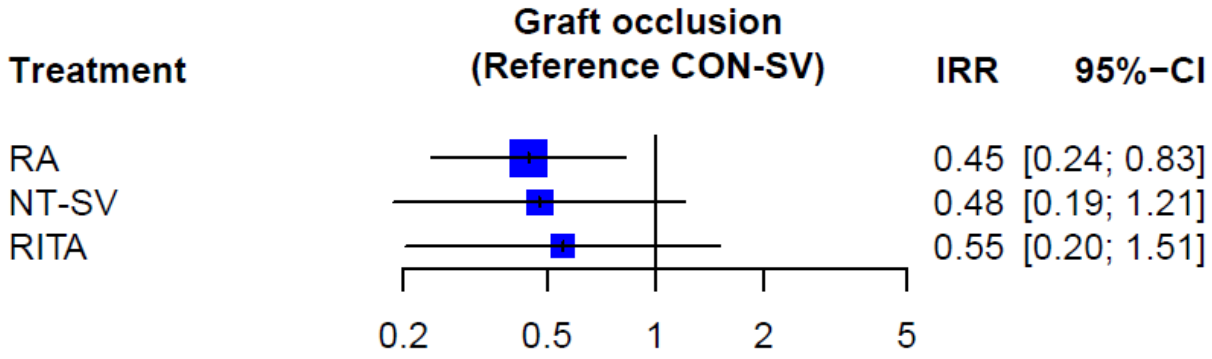


Figure S7. Sensitivity analyses for studies using computed tomography angiography for graft assessment. There were not enough studies reporting data for the right internal thoracic artery and the gastroepiploic artery. CI: confidence interval; CON-SV: conventionally-harvested saphenous vein; IRR: incidence rate ratio; NT-SV: no-touch saphenous vein; RA: radial artery.

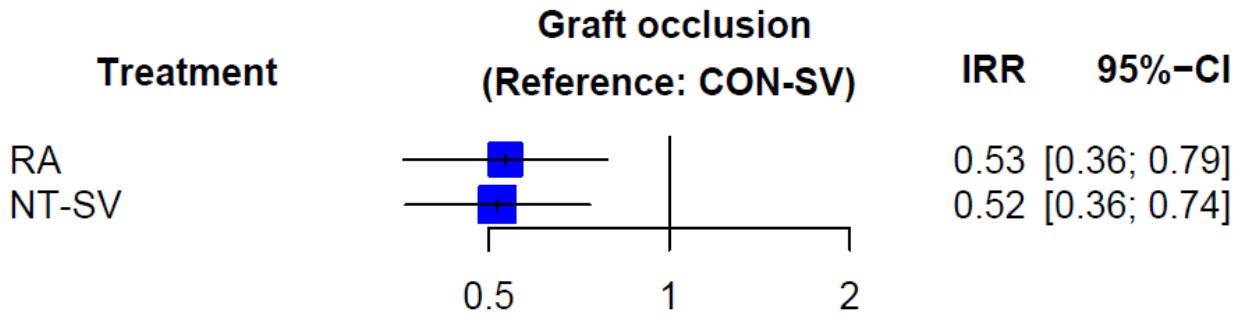


Figure S8. Sensitivity analyses for studies with similar definitions of graft occlusion. There were not enough studies reporting data for the gastroepiploic artery. CI: confidence interval; CON-SV: conventionally-harvested saphenous vein; IRR: incidence rate ratio; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.

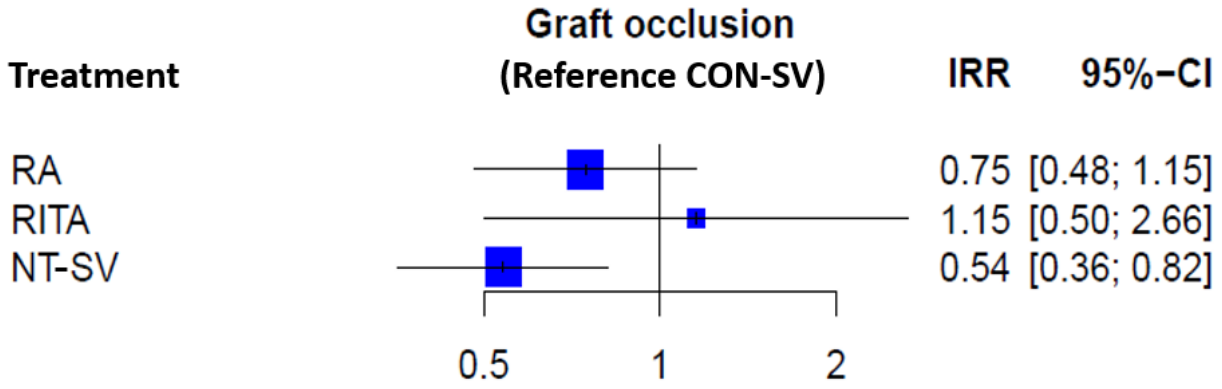


Figure S9. Forest plot for late mortality. CI: confidence interval; CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; IRR: incidence rate ratio; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.

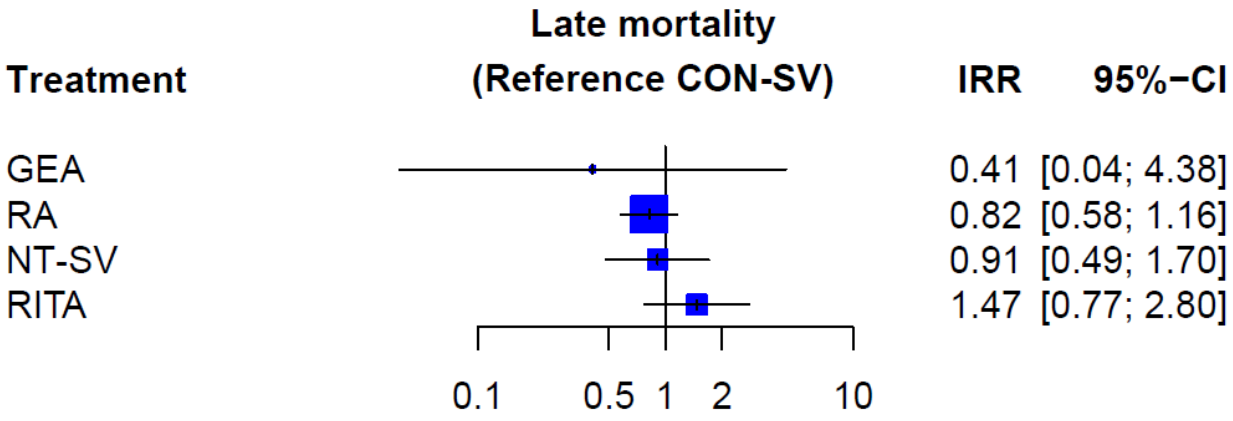


Figure S10. Netgraph of the different comparisons for late mortality. Line edge shading and thickness are inversely proportional to standard errors of the fixed effect estimate stemming from direct between-arm comparisons. CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.

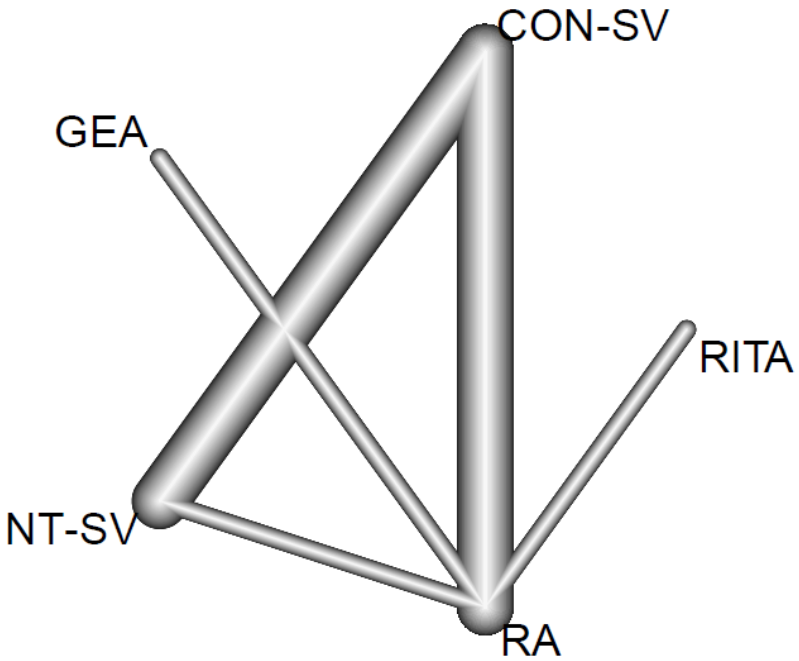


Figure S11. Leave-one-out analysis for graft occlusion in A.) right internal thoracic artery (RITA) versus conventionally-harvested saphenous vein (CON-SV); B.) radial artery (RA) vs RITA; C.) RA vs CON-SV; D.) no-touch saphenous vein (NT-SV) vs CON-SV; E.) RA vs NT-SV. CI: confidence interval; IRR: incidence rate ratio.

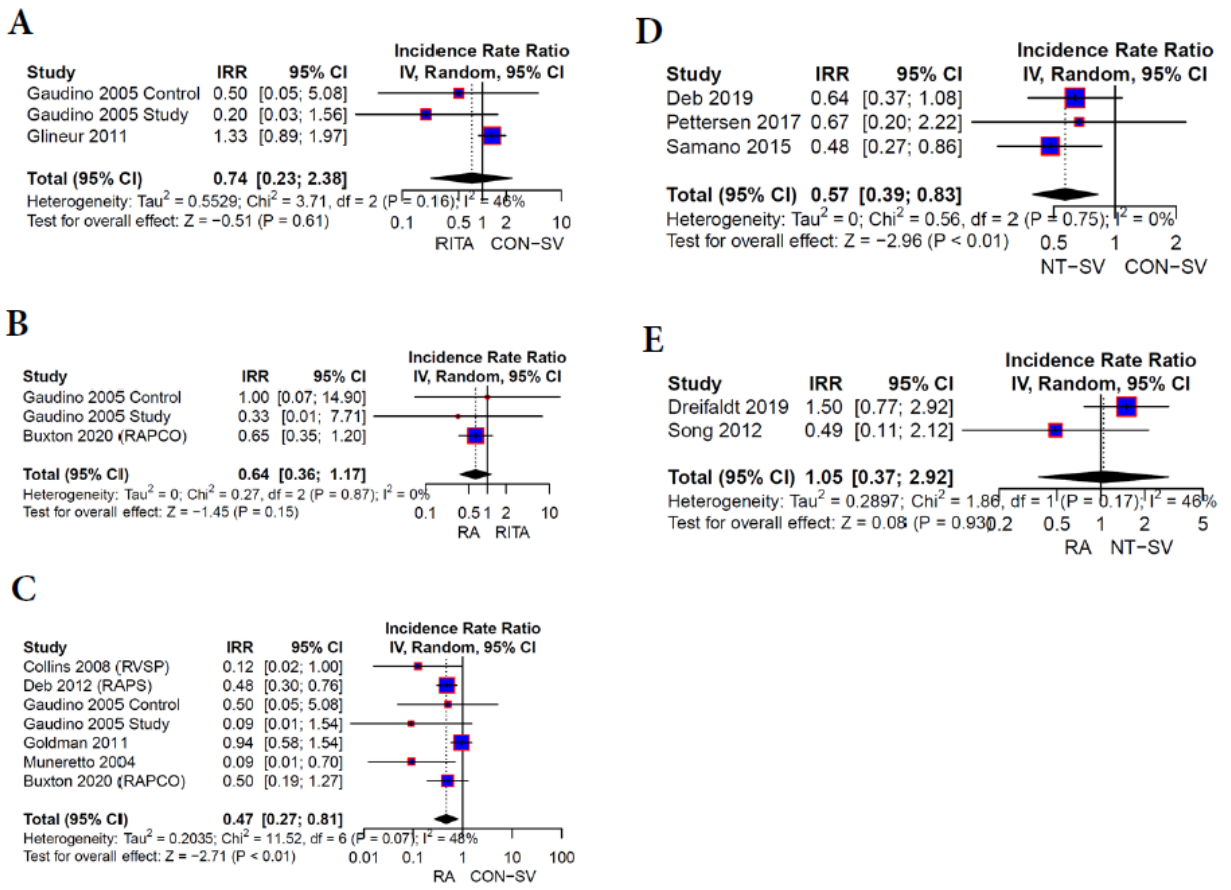


Figure S12. Funnel plot for all studies. CON-SV: conventionally-harvested saphenous vein; GEA: gastroepiploic artery; NT-SV: no-touch saphenous vein; RA: radial artery; RITA: right internal thoracic artery.