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Consenso Europeu de Imagem Cardiovascular em Doenças de Aorta Torácica, Uniformiza Linguagem e traz a melhor Contribuição de cada Modalidade

Multimodality Imaging in Thoracic Aortic Diseases: a Clinical Consensus Statement fromthe European Association of Cardio-vascular Imaging and the European Society of Cardiology working

KEY POINTS

1. Transthoracic echo (TTE) permits adequate assessment of several aortic segments, particularly the aortic root and proximal ascending aorta. However, computed tomography (CT) provides rapid, accurate, and reproducible assessment of the entire aorta. In addition, cardiovascular magnetic ressonance (CMR) offers morphologic, functional, and tissue characterization information without radiation exposure. Positron emission tomography (PET) is used to diagnose inflammatory or infectious disease of the aorta.

2. Maximum aortic diameter should be measured at end-diastole using the leading-to-leading edge convention on echocardiography and the inner-to-inner edge convention on CT/CMR using transverse planes with double obliquity.

3. Because the true central axis of the aorta can be sometimes difficult to find when using TTE, assessment of the aortic diameter by CT/CMR is always mandatory before taking any decision for intervention.

4. Factors influencing the aorta size in the normal population include age, gender, ethnicity, BSA, and particularly, height. In routine clinical practice, a diameter of the aorta >40 mm in male and >34 mm in female adults or an indexed diameter/BSA > 22 mm/m2 usually indicate aorta dilation.

5. When aortic root or ascending aorta dilation is initially diagnosed by TTE, a multiplanar CT/CMR scan is recommended to confirm TTE measurements, to rule out aortic asymmetry, and to have a baseline reference in the follow-up. When a baseline aorta diameter is >45 mm, a second exam is recommended at 6 months to confirm stability of aorta dilation, with serial exams performed on a yearly basis thereafter.

6. A genuine change in ascending aorta diameter, not related to measurement variability, can be only considered when larger than 2 mm. Any increase ≥3 mm by TTE should be always validated by CT/CMR and compared with baseline data.

7. TTE is currently largely performed in patients witchest pain in the emergency room and maybe useful to rule out alternative diagnoses or to detect an aortic intimal flap, particularly in the aortic root or abdominal aorta. Visualization of the intimal flap has improved with a diagnostic accuracy of 75–85%. Special attention should be made during the TTE exam to aortic root dilatation, aortic regurgitation, and/or pericardial effusion, since these findings should raise the suspicion of AAS.

8. Transoesofageal echo (TOE) is a reference technique in the diagnosis and assessment of thoracic AAS but, in this setting, requires adequate sedation to avoid reactive systemic arterial hypertension. When a diagnosis is definitively established using other imaging techniques, TOE should be performed preoperatively, in the operating theatre under general anaesthesia for complementary information including entry tear location and size, the mechanism underlying associated aortic regurgitation, and other associated features.

9. CT is the imaging technique of choice in the evaluation of AAS because of its accuracy, fast evaluation of the entire aorta and branches, and widespread availability. CT is veryuseful in the assessment of visceral organ involvement and for planning optimal therapy. The best imaging strategy for appropriately diagnosing AAS and its complications is a combination of a bedside TTE and CT.

10. Intramural hematoma (INMH) s diagnosed on the basis of a crescentic or circular wall thickness >5 mmm, in the clinical context of AAS. Non-contrast CT is very useful showing a high-attenuation thickening of the aortic wall. Differential diagnosis should be made with severe atherosclerosis, total thrombosis of the FL or aortitis. In doubtful cases, CMR is the technique of choice. The dynamic evolution of IMH in the acute and subacute phase requires close imaging surveillance by CT/CMR.

11. The term penetrating aortic ulcer (PAU) or ulcer-like projection relate to an imaging morphologic concept that includes several entities of very different origin and prognosis and that requires diagnostic distinction from a PAU. CT is the preferred imaging modality to depict it and differentiate these entities.

12. After an acute aortic syndrome (AAS), follow-up by CT or CMR is indicated depending on availability and patient characteristics at 1–3, 6, 12 months, and annually thereafter. Imaging signs of poor outcome after AD include the following: a persistent patent FL in the descending thoracic aorta, maximum aorta diameter ≥45 mm, large entry tear (diameter >10 mm) in the proximal descending aorta, and a CMR FL pattern of high systolic antegrade flow with significant diastolic retrograde flow.

13. CMR is useful for monitoring the evolution of intramural bleeding and to detect new asymptomatic intramural re-bleeding episodes. Chronic and stable PAU requires close follow-up with serial imaging studies (by CT or CMR) to detect disease progression.

14. In aorta coarctation, CT or CMR is recommended at the time of initial evaluation to determine the site and degree of obstruction and to assess all aorta segments and the extent of collateral circulation. Patients with mild degrees of coarctation who do not require intervention should undergo periodic TTE (every 1–2 years) and CT or MRI (every 3–5 years) to monitor disease progression.

15. Although the suprasternal window by TTE may allow identification of atherosclerotic plaques in the aortic arch, TOE permits the visualization of most thoracic aorta segments and the accurate measurement complex mobile plaques and is therefore the reference imaging modality. The severity and location of the most severe atherosclerotic plaques should be reported. CT and PET are both also useful imaging modalities to detect atherosclerotic burden and disease activity respectively in the thoracic aorta.

16. Circumferential thickening of the aortic wall on CT or CMR is a marker of aortitis. 18F-FDG PET provides an assessment of inflammation that can help establish an early diagnosis of aortitis allowmonitoring of disease progression and treatment and evaluation of vascular complications and relapse.

CONCLUSION

Multimodality imaging plays a pivotal role in the diagnosis and Management of thoracic aortic diseases. Since maximum aortic diameter is a cornerstone parameter to define evolution, prognosis and timing of intervention, the use of the recommended conventions to measure it is required to improve accuracy and reproducibility among imaging techniques. During follow-up, direct comparison of images is importante to assess and detect progression of disease and evolutive changes.

Measurement by echocardiography using the leading-to-leading convention and by CT/CMR using the inner-to-inner convention at enddiastole should be always adopted.

In AAS, the combination of CT with TTE is the preferred and most efficient imaging strategy, while CT and CMR are the recommended ones for follow-up.

Each imaging technique has strengths a nd limitations that should be considered before indication of a test in different clinical scenarios to answer the right clinical questions and provide essential or complementary information to apply the best care to patients with a potentially life threatening condition in the acute and chronic thoracic aortic diseases.

Table 1 Comparison of diagnostic accuracy and pros and cons of the different imaging modalities in acute aortic syndrome

	TTE	TOE	CT	CMR
Diagnostic accuracy				
Ascending aorta dissection	++	+++	+++	+++
Aortic arch dissection	+	++	+++	+++
Descending aorta dissection	+	+++	+++	+++
Intramural haematoma	+	+++	+++	+++
Penetretating aortic ulcer	+	++	+++	+++
Aortic valve morphology and function	+++	+++	++	+++
Dynamic visualization of flap	+	+++	++	++
Aortic lumen dimensions	++	+++	+++	+++
Thrombosis of the false lumen	+	+++	+++	+++
LV, RV functional data	+++	+++	+	+++
Non-invasive haemodynamic data	+++	++	—	+
Coronary anatomy involvement	+	++	+++	++
Involvement of aortic branches	+	++	+++	+++
Pros and cons				
Ease of use	+++	++	+++	+
Portability	+++	+++	—	—
Time requirement	+	++	++	+++
Radiation	—	—	+++	—
Nephrotoxicity	—	—	++	+
Need for sedation	—	+++	—	—

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doi: 10.1016/j.jtcvs.2022.05.028

Sub-análise do Estudo COMPASS Avalia Falência Precoce de Enxerto, em Pacientes Submetidos a Revascularização Miocárdica

Conduit Selection and Early Graft Failure in Coronary Artery Bypass Surgery: A Post Hoc Analysis of the Cardiovascular Outcomes for People Using Anticoagulation Strategies (COMPASS) Coronary Artery Bypass Grafting Study

OBJECTIVES

Relative rates of early graft failure and conduit selection in coronary artery bypass grafting (CABG) surgery remain controversial. Therefore, we sought to determine the incidence and determinants of graft failure of the left internal mammary artery (LIMA), radial artery, saphenous vein, and right internal mammary artery (RIMA) 1 year after CABG surgery.

METHODS

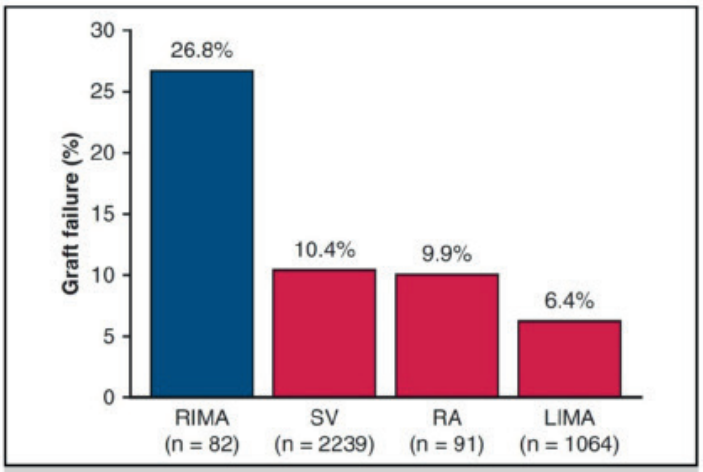
A post hoc analysis of the Cardiovascular Outcomes for People Using Anticoagulation Strategies (COMPASS) CABG study, involving patients from 83 centers in 22 countries. We completed an analysis of 3480 grafts from 1068 patients who underwent CABG surgery with complete computed tomography angiography data. The primary outcome was graft failure as diagnosed by computed tomography angiography 1 year after surgery.

RESULTS

Graft failure occurred in 6.4% (68/1068) for LIMA, 9.9% (9/91) for radial artery, 10.4% (232/2239) for saphenous vein, and 26.8% (22/82) for RIMA grafts. The RIMA had a greater rate of graft failure (26.8%) than radial artery (9.9%) and veins (10.4%) (adjusted odds ratio, 2.69; 95% confidence interval, 1.30-5.57; P=0.008 and adjusted odds ratio, 2.07; 95% confidence interval, 1.33-3.21; P=0.001, respectively).

CONCLUSIONS

In this international trial dataset, LIMA and radial artery performed as expected, whereas vein grafts performed better. However, high rates of RIMA failure are worrisome and highlight the need for a thorough evaluation of the patency and safety of the RIMA in CABG surgery.



Incidence of graft failure by conduit 1 year after CABG surgery.

PERSPECTIVE

In this post hoc analysis from an international trial conducted in 83 academic centers in 22 countries, LIMA and radial artery grafts performed as expected, whereas vein grafts performed better than usually reported in the past. However, high rates of RIMA failure are worrisome and highlight the need for a large trial to systematically evaluate the patency and safety of the RIMA in CABG surgery.

JAMA Netw Open. 2022 Jun 1;5(6):e2217686.
doi: 10.1001/jamanetworkopen.2022.17686

Estudo Multicêntrico Compara Custos da Retirada Convencional vs. Endoscópica de Veia Safena, em Cirurgia de Revascularização Miocárdica

Costs of Endoscopic vs Open Vein Harvesting for Coronary Artery Bypass Grafting: A Secondary Analysis of the REGROUP Trial

OBJECTIVE

To compare health care costs and utilization between participants randomized to receive endoscopic vein harvesting (EVH) or open vein harvesting (OVH) during a coronary artery bypass grafting (CABG) procedure.

DESIGN

This secondary economic analysis was conducted alongside the 16-site Randomized Endo-Vein Graft Prospective (REGROUP) clinical trial funded by the Department of Veterans Affairs (VA) Cooperative Studies Program. Adults scheduled for urgent or elective bypass involving a vein graft were eligible. The first participant was enrolled in September 2013, with most sites completing enrollment by March 2014. The last participant was enrolled in April 2017. A total of 1150 participants were randomized, with 574 participants receiving OVH and 576 receiving EVH. For this secondary analysis, cost and utilization data were extracted through September 30, 2020. Participants were linked to administrative data in the VA Corporate Data Warehouse and activity-based cost data starting with the index procedure.

MAIN OUTCOMES

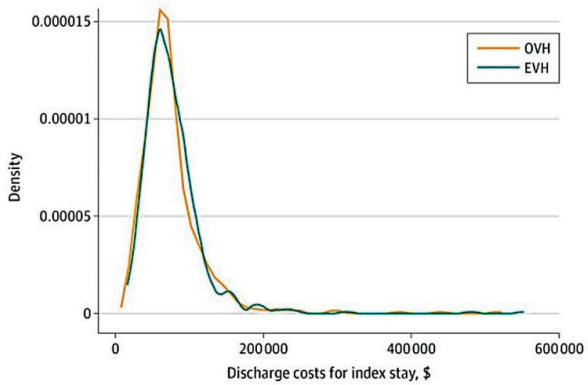
Discharge costs for the index procedure as well as follow-up costs (including intended and unintended events; mean [SD] follow-up time, 33.0 [19.9] months) were analyzed, with results from different statistical models compared to test for robustness (ie, lack of variation across models). All costs represented care provided or paid by the VA, standardized to 2020 US dollars.

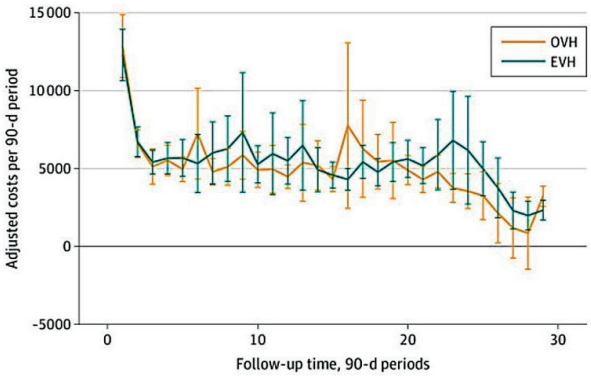
RESULTS

Among 1150 participants, the mean (SD) age was 66.4 (6.9) years; most participants (1144 [99.5%] were male. With regard to race and ethnicity, 6 participants (0.5%) self-reported as American Indian or Alaska Native, 10 (0.9%) as Asian or Pacific Islander, 91 (7.9%) as Black, 62 (5.4%) as Hispanic, 974 (84.7%) as non-Hispanic White, and 6 (0.5%) as other race and/or ethnicity; data were missing for 1 participant (0.1%). The unadjusted mean (SD) costs for the index CABG procedure were $76 607 ($43 883) among patients who received EVH and $75 368 ($45 900) among those who received OVH, including facility costs, insurance costs, and physician-related costs (commonly referred to as provider costs in Centers for Medicare and Medicaid and insurance data). No significant differences were found in follow-up costs; per 90-day follow-up period, EVH was associated with a mean (SE) added cost of $302 ($225) per patient. The results were highly robust to the statistical model.

CONCLUSIONS

In this study, EVH was not associated with a reduction in costs for the index CABG procedure or follow-up care. Therefore, the choice to provide EVH may be based on surgeon and patient preferences.





Circulation. 2022 Oct 25;146(17):1323-1325.
doi: 10.1161/CIRCULATIONAHA.122.062343

Ensaio Randomizado demonstra desempenho tardio semelhante de Enxertos de Artéria Radial e Veia Safena, na Cirurgia de Revascularização Miocárdica

Long-Term Mortality Follow-Up of Radial Artery Versus Saphenous Vein in Coronary Artery Bypass Grafting: A Multicenter, Randomized Trial

OBJECTIVE

There is debate about whether radial artery grafts are better conduits than saphenous vein grafts for patients undergoing coronary artery bypass grafting (CABG). Our previous study (Goldman et al. JAMA. 2011;305:167-74) showed no differences at 1 week and 1 year after CABG in graft patency or in secondary outcomes, including mortality. This current study evaluates long-term mortality among these patients and constitutes the follow-up study of the largest trial comparing radial and saphenous vein grafts to date.

METHODS

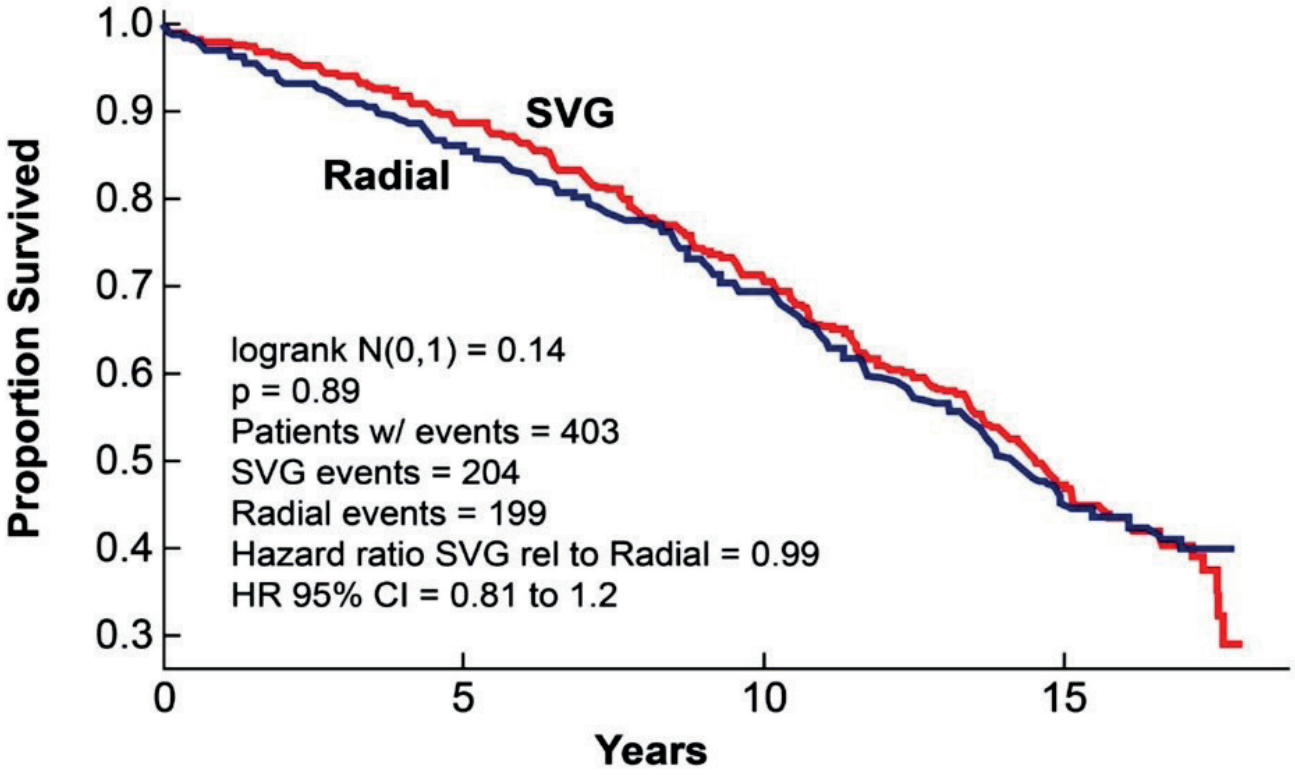
This is the follow-up from a Department of Veterans Affairs multicenter, randomized controlled trial (CSP 474; clinicaltrials.gov identifier: NCT00054847) conducted from February 2003 to February 2009 at 11 Veterans Affairs medical centers in 733 patients (99% men) undergoing first-time elective CABG. The left internal thoracic artery was used to preferentially graft the left anterior descending coronary artery whenever possible; the best remaining recipient vessel was randomized to a radial artery versus saphenous vein graft. Participants received coronary arteriograms at 1 week and 1 year after CABG. Mortality status up to February 2021 was determined from the VA Vital Status file and was 100% complete.

RESULTS

At the time of CABG, 366 patients were randomized to radial artery grafting and 367 patients to saphenous vein grafting. Of those 733 patients, 726 consented to participate in long-term follow-up (up to 17.7 years) for mortality. There was no significant difference in mortality in the saphenous vein and radial artery groups (log-rank test P=.89, hazard ratio 0.99, 95% confidence interval 0.81 to 1.20, median survival 14.6 years for saphenous vein grafting and 14.2 years for radial artery grafting) (Figure). After adjustment for age, Canadian Functional Class, and diabetes, hypertension, and heart failure status, there was no difference in mortality between the 2 graft types.

CONCLUSION

In this multicenter, randomized controlled trial, no difference was observed in long-term mortality in patients receiving radial artery versus saphenous vein grafts.


1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
Proportion Survived
SVG
Radial
logrank N(0,1) = 0.14
p = 0.89
Patients w/ events = 403
SVG events = 204
Radial events = 199
Hazard ratio SVG rel to Radial = 0.99
HR 95% CI = 0.81 to 1.2
0
5
10
15
Years

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doi: 10.1016/j.jtcvs.2020.10.136

Wrapping da Aorta Ascendente: uma Alternativa em Paciente de Alto Risco com Dissecção Aguda tipo A?

Outcomes of Urgent Aortic Wrapping for Acute Type A Aortic Dissection

OBJECTIVE

Standard surgical repair of acute type A aortic dissection is associated with high mortality rates, especially in high-risk patients. In an attempt to improve survival in frail patients, we evaluated the outcomes after ascending aorta wrapping in a high-risk patient cohort.

METHODS

This single-center retrospective cohort study included all consecutive patients treated using ascending aorta wrapping for an acute type A aortic dissection from 2008 to 2019. The primary end points included 30-day mortality, survival during follow-up, and dissection-related mortality. Secondary end points included assessment of aortic remodeling after ascending aorta wrapping. Patients with an aortic anatomy suitable for adjunctive endografting of the ascending aorta were also identified.

RESULTS

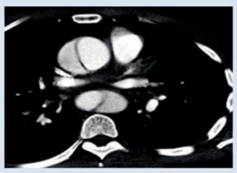
Thirty-five consecutive patients who underwent ascending aorta wrapping were included. Their median age was 77 years (range, 46-96 years). The 30-day all-cause mortality rate was 9%. Major complications occurred in 7 patients (21%), including early reinterventions in 11 (31%). Median follow-up was 36 months (range, 2.4-106.6; interquartile range, 72). The actuarial survival at 36 months was 82%. The dissection-related mortality was 11.4%. The median aortic growth of the nonwrapped descending thoracic aorta was 3.4 mm. Computed tomography scan analysis depicted that 88% of survivors were theoretical candidates for an additional endovascular procedure to exclude the primary entry tear.

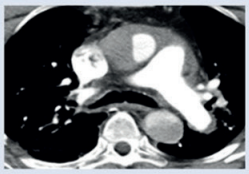
CONCLUSION

Aortic wrapping is associated with favorable early outcomes and a low rate of aortic events during follow-up. This therapeutic option should be considered for patients considered too fragile for standard surgical repair.

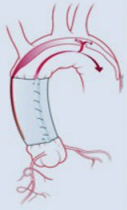
Outcomes of urgente wrapping for ATAAD

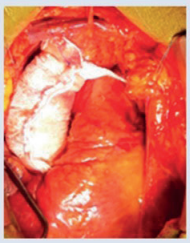
Acute type A aortic dissections are associated with high mortality rates, especially in high-risk patients





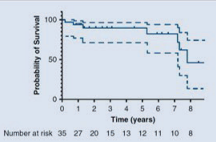
Single-center retrospective cohort study included 35 patients treated with Aortic Wrapping



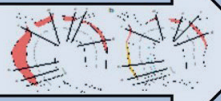


Clinical outcomes:

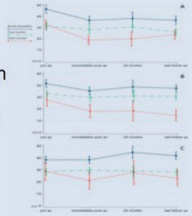
30-day mortality rate: **9%.**
Survival rate at 36 months: **82%.**
Dissection-related mortality: **9%**



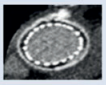
Radiological outcomes:



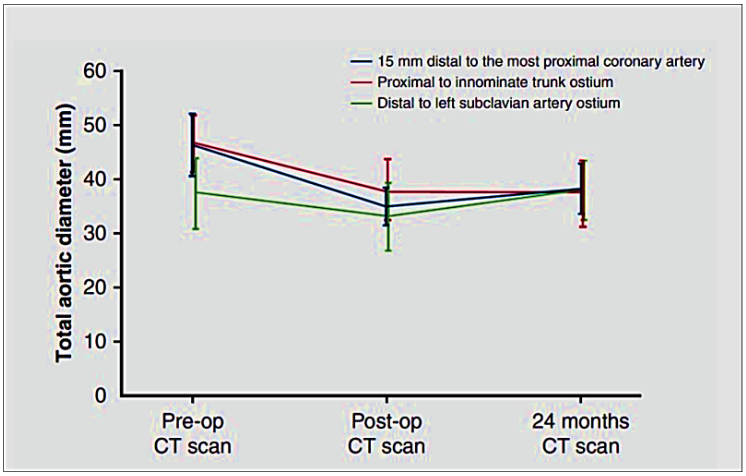
Median aortic growth of non-wrapped descending thoracic aorta was **3.4 mm**



Theoretical additional endovascular procedure:



88% of survivors were theoretical candidates for an additional endovascular procedure to exclude the primary entry tear



PERSPECTIVE

Elderly and fragile patients with acute ATAAD are not often considered for open surgery with CPB; medical treatment alone is associated with a high early mortality rate. Standard surgical treatment of this group of frail patients has reported high mortality rates. Our study demonstrates that urgent AW reduces perioperative morbidity and mortality rates in this high-risk population.

Circulation. 2023 Feb 7;147(6):454-464.
doi: 10.1161/CIRCULATIONAHA.122.062949

Membrana de Oxigenação Extracorpórea (ECMO) como Estratégia Inicial no Choque Cardiogênico: Resultados do ECMO-CS Trial

Extracorporeal Membrane Oxygenation in the Therapy of Cardiogenic Shock: Results of the ECMO-CS Randomized Clinical Trial

BACKGROUND

Veno-arterial extracorporeal membrane oxygenation (VA-ECMO) is increasingly being used for circulatory support in patients with cardiogenic shock, although the evidence supporting its use in this context remains insufficient. The ECMO-CS trial (Extracorporeal Membrane Oxygenation in the Therapy of Cardiogenic Shock) aimed to compare immediate implementation of VA-ECMO versus an initially conservative therapy (allowing downstream use of VA-ECMO) in patients with rapidly deteriorating or severe cardiogenic shock.

METHODS

This multicenter, randomized, investigator-initiated, academic clinical trial included patients with either rapidly deteriorating or severe cardiogenic shock. Patients were randomly assigned to immediate VA-ECMO or no immediate VA-ECMO. Other diagnostic and therapeutic procedures were performed as per current standards of care. In the early conservative group, VA-ECMO could be used downstream in case of worsening hemodynamic status. The primary end point was the composite of death from any cause, resuscitated circulatory arrest, and implementation of another mechanical circulatory support device at 30 days.

RESULTS

A total of 122 patients were randomized; after excluding 5 patients because of the absence of informed consent, 117 subjects were included in the analysis, of whom 58 were randomized to immediate VA-ECMO and 59 to no immediate VA-ECMO. The composite primary end point occurred in 37 (63.8%) and 42 (71.2%) patients in the immediate VA-ECMO and the no early VA-ECMO groups, respectively (hazard ratio, 0.72 [95% CI, 0.46-1.12]; P=0.21). VA-ECMO was used in 23 (39%) of no early VA-ECMO patients. The 30-day incidence of resuscitated cardiac arrest (10.3.% versus 13.6%; risk difference, -3.2 [95% CI, -15.0 to 8.5]), all-cause mortality (50.0% versus 47.5%; risk difference, 2.5 [95% CI, -15.6 to 20.7]), serious adverse events (60.3% versus 61.0%; risk difference, -0.7 [95% CI, -18.4 to 17.0]), sepsis, pneumonia, stroke, leg ischemia, and bleeding was not statistically different between the immediate VA-ECMO and the no immediate VA-ECMO groups.

CONCLUSION

Immediate implementation of VA-ECMO in patients with rapidly deteriorating or severe cardiogenic shock did not improve clinical outcomes compared with an early conservative strategy that permitted downstream use of VA-ECMO in case of worsening hemodynamic status.

The ECMO-CS Trial

	Early Conservative Therapy (n=59)	Immediate Veno-arterial ECMO (n=58)	P value
Primary Endpoints			
Composite outcome (death from any cause, resuscitated circulatory arrest, and implantation of other MCS support device at 30 days)	42 (71.2 %)	37 (63.8%)	0.0393
Other Endpoints			
All-cause mortality	47.5%	50%	0.783

Results: Immediate insertion of ECMO in rapidly deteriorating or severe cardiogenic shock did not improve clinical outcomes.

Eur J Cardiothorac Surg. 2023 Mar 1;63(3):ezad051.
doi: 10.1093/ejcts/ezad051

Em Pacientes com Transposição Corrigida das Grandes Artérias e Obstrução da Via de Saída do VE, qual o Melhor manejo?

Can an Operation Provide Superior outcomes for Corrected Transposition of the Great Arteries with Left Ventricular outflow Tract Obstruction? A Multi-Institutional Study

OBJECTIVES

Our goal was to evaluate the risk-adjusted effects of operative and non-operative repair on long--term outcomes in patients with congenitally corrected transposition of the great arteries and left ventricular outflow tract obstruction (CCTGA/LVOTO).

METHODS

We retrospectively reviewed 391 patients with CCTGA/LVOTO from 2001 to 2020 (operative group, 282; non-operative group, 109) in 3 centres in China. The operative group included 73 patients who underwent anatomical repair and 209 patients who underwent non-anatomical repair. The median follow-up time was 8.5 years. The inverse probability of treatment weighted-adjusted Cox regression and a Kaplan-Meier analysis were used to evaluate long-term outcomes.

RESULTS

Operative repair did not reduce the hazard ratio (HR) of death, tricuspid regurgitation or New York Heart Association functional class III/IV, but a significantly increased HR was observed for pulmonary valve regurgitation [HR, 2.84; 95% confidence interval (CI), 1.10-7.33; P=0.031]. Compared with that in the non-operative group, anatomical repair resulted in significantly increased HRs for death (HR, 2.94; 95% CI, 1.10-7.87; P=0.032) and pulmonary valve regurgitation (HR, 9.71; 95% CI, 3.66-25.77; P<0.001). Subgroup analysis showed that in patients with CCTGA/LVOTO with moderate or worse tricuspid regurgitation (≥ moderate), anatomical repair significantly reduced the HR of death. An inverse probability of treatment weighting-adjusted Kaplan-Meier analysis showed that the survival rates at 5 and 10 days postoperatively were 88.2±4.0% and 79.0±7.9%, respectively, in the anatomical repair group; these rates were significantly lower than the rates in the non-operative group (95.4±2.0% and 91.8±2.8%; P=0.032).

CONCLUSIONS

For patients with CCTGA/LVOTO, operative repair does not provide superior long-term outcomes, and anatomical repair results in a higher incidence of death. However, in patients with CCTGA/LVOTO with tricuspid regurgitation ≥ moderate, anatomical repair can reduce the risk of death in the long term.

Key question

Can surgical repair provide superior outcomes for asymptomatic CCTGA/LVOTO?

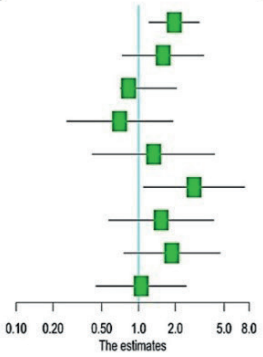
Key finding(s)

Anatomical repair significantly increases the HR of death, but reduces the HR for CCTGA/LVOTO with TVR.

Take-home message

Operation can't provide superior long-term outcomes for CCTGA/LVOTO patients.

Variable	Operation group (282)(%)	No operative group (109)(%)	Adjusted HR (95% CI)	P value
MVR >= mild	98 (34.8)	25 (22.9)	1.96 (1.22, 3.13)	0.005
MVR >= moderate	31 (11.0)	10 (9.2)	1.59 (0.74, 3.42)	0.232
TVR >= moderate	49 (17.4)	25 (22.9)	0.83 (0.71, 2.04)	0.49
TVR >= severe	13 (4.6)	8 (7.3)	0.70 (0.26, 1.91)	0.492
AVR >= mild	14 (5.0)	6 (5.5)	1.33 (0.42, 4.18)	0.623
PVR >= moderate	34 (12.1)	6 (5.5)	2.84 (1.10, 7.33)	0.031
SVEF < 40%	20 (7.1)	6 (5.5)	1.53 (0.57, 4.11)	0.396
NYHA III/IV	34 (12.1)	6 (5.5)	1.87 (0.76, 4.62)	0.173
Deaths	21 (7.5)	8 (7.3)	1.05 (0.45, 2.45)	0.912



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BEST-CLI Trial: em Pacientes com Isquemia Crítica de Membros Inferiores, o Bypass com Veia Safena é Superior ao Tratamento Endovascular

Surgery or Endovascular Therapy for Chronic Limb-Threatening Ischemia

BACKGROUND

Patients with chronic limb-threatening ischemia (CLTI) require revascularization to improve limb perfusion and thereby limit the risk of amputation. It is uncertain whether an initial strategy of endovascular therapy or surgical revascularization for CLTI is superior for improving limb outcomes.

METHODS

In this international, randomized trial, we enrolled 1830 patients with CLTI and infrainguinal peripheral artery disease in two parallel-cohort trials. Patients who had a single segment of great saphenous vein that could be used for surgery were assigned to cohort 1. Patients who needed an alternative bypass conduit were assigned to cohort 2. The primary outcome was a composite of a major adverse limb event - which was defined as amputation above the ankle or a major limb reintervention (a new bypass graft or graft revision, thrombectomy, or thrombolysis) - or death from any cause.

RESULTS

In cohort 1, after a median follow-up of 2.7 years, a primary-outcome event occurred in 302 of 709 patients (42.6%) in the surgical group and in 408 of 711 patients (57.4%) in the endovascular group (hazard ratio, 0.68; 95% confidence interval [CI], 0.59 to 0.79; P<0.001). In cohort 2, a primary-outcome event occurred in 83 of 194 patients (42.8%) in the surgical group and in 95 of 199 patients (47.7%) in the endovascular group (hazard ratio, 0.79; 95% CI, 0.58 to 1.06; P = 0.12) after a median follow-up of 1.6 years. The incidence of adverse events was similar in the two groups in the two cohorts.

CONCLUSIONS

Among patients with CLTI who had an adequate great saphenous vein for surgical revascularization (cohort 1), the incidence of a major adverse limb event or death was significantly lower in the surgical group than in the endovascular group. Among the patients who lacked an adequate saphenous vein conduit (cohort 2), the outcomes in the two groups were similar.

Major Adverse Limb Events or Death