OPTIONS IN AORTIC ARCH RECONSTRUCTION:
CONVENTIONAL vs. FROZEN ELEPHANT TRUNK

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- No disclosure
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SURGERY should be considered
- maximal diameter ≥ 55mm
- symptoms
- signs of local compression

DECISION-MAKING about the procedure
(weigh perioperative risk)
- partial or total arch replacement
- hybrid approach - FET
- arch vessel transposition and TEVAR
Specific strategies lowered the inherent risk of aortic arch surgery - ANEURYSM / DISSECTION

- continuous antegrade cerebral perfusion
- assessment of transcranial oxigen saturation
- innovative arch prostheses
- moderate (25º-28ºC) rather than deep hypothermia
- the possibility of extensive repair of the aorta (ascending / arch / descending)

FET PROCEDURE
"...complex thoracic aortic pathology requires simplified solutions, or at least, as simple as possible..."
STRATEGY - AORTIC ARCH OPERATION

Proximal Arch - Ascending disease

TOTAL ARCH - ARCH DISEASE

Distal Arch - Descending disease
RECONSTRUCTION OF THE ARCH

- location and/or extension of the disease
- diagnosis: aneurysm or dissection
- type of prosthesis available for use in your country
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Aortic Arch Replacement With a Trifurcated Graft

David Spielvogel, MD, Christian D. Etz, MD, Daniel Silovitz, MS, Steven L. Lansman, MD, PhD, and Randall B. Griep, MD

Section of Cardiothoracic Surgery, New York College of Medicine, Westchester Medical Center, Valhalla, and Department of Cardiothoracic Surgery, Mount Sinai School of Medicine, New York, New York

Total aortic arch replacement: current approach using the trifurcated graft technique

Scott A. LeMaire1,2, Scott A. Weldon1,2, Joseph S. Coselli1,2

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A study of brain protection during total arch replacement comparing antegrade cerebral perfusion versus hypothermic circulatory arrest, with or without retrograde cerebral perfusion: Analysis based on the Japan Adult Cardiovascular Surgery Database

Yutaka Okita, MD,a Hiroaki Miyata, PhD,b Noboru Motomura, MD,c and Shinichi Takamoto, MD,d The Japan Cardiovascular Surgery Database Organization

1 Thorac Cardiovasc Surg 2015;63:565-71

8169 patients
7038 - antegrade cer perfusion
Hospital Mortality - 6% vs 7,1%
CVA - 6,7% vs 8,6%
Hemodialysis - 3,9% vs 3,8%

150 patients
Hospital Mortality - 4,6%
CVA - 4%
Hemodialysis - 4,6%

55 patients
Hospital Mortality - 2%
CVA - 5%
Hemodialysis - 5%

STS/EACTS Latin America Cardiovascular Surgery Conference 2017
Frozen elephant trunk with total arch replacement for type A aortic dissections: Does acuity affect operative mortality?

Wei-Guo Ma, MD, a,b,c Jun Zheng, MD, a,b Wei Zhang, MD, a Kai Sun, MD, PhD, b Bulat A. Ziganshin, MD, c Long-Fei Wang, MD, a Rui-Dong Qi, MD, a,b Yong-Min Liu, MD, a,b Jun-Ming Zhu, MD, a,b Qian Chang, MD, b John A. Elefteriades, MD, c and Li-Zhong Sun, MD, a,b

J Thorac Cardiovasc Surg 2014;148:963-72

Long-term outcomes of frozen elephant trunk for type A aortic dissection in patients with Marfan syndrome

Wei-Guo Ma, MD, PhD, a,b,c Wei Zhang, MD, a Jun-Ming Zhu, MD, a,b Bulat A. Ziganshin, MD, c Ai-Hua Zhi, MD, b Jun Zheng, MD, PhD, a,b Yong-Min Liu, MD, a,b John A. Elefteriades, MD, c and Li-Zhong Sun, MD, a,b


803 patients
Hospital Mortality - 6.5%
CVA - 2%
Paraplegia - 2.4%
Hemodialysis - 3.4%

106 patients
Hospital Mortality - 6.6%
CVA - 0.9%
Paraplegia - 0.9%
Hemodialysis - 3.8%
Total aortic arch replacement with a novel 4-branched frozen elephant trunk prosthesis: Single-center results of the first 100 patients

Malakh Shrestha, MBBS, Tim Kaufeld, MD, Erik Beckmann, MD, Felix Fleissner, MD, Julia Unminger, MD, Firas Abd Alhadi, MD, Dietmar Boethig, MD, Heike Krueger, RN, Axel Haveirich, MD, and Andreas Martens, MD

Impact of clinical factors and surgical techniques on early outcome of patients treated with frozen elephant trunk technique by using EVITA open stent-graft: results of a multicentre study

Sergey Leontiev, Konstantinos Tsagakis, Davide Pacini, Roberto Di Bartolomeo, Friedrich W. Mohr, Gabriel Weiss, Martin Grabenwoeger, Jorge G. Mascaro, Mauro Iafrancesco, Ulrich F. Franke, Nora Göbel, Thanos Sioris, Kazimierz Widenka, Carlos A. Mestres, and Heinz Jakob

Aortic diameter remodelling after the frozen elephant trunk technique in aortic dissection: results from an international multicentre registry

Mauro Iafrancesco, Nora Göbel, Jorge Mascaro, Ulrich F.W. Franke, Davide Pacini, Roberto Di Bartolomeo, Gabriel Weiss, Martin Grabenwöger, Sergey A. Leontiev, Friedrich-Wilhelm Mohr, Thanos Sioris, Heinz Jakob and Konstantinos Tsagakis, on behalf of the International Evita Open Registry Group

100 patients
Hospital Mortality - 7%
CVA - 9%
Paraplegia - 7%
Hemodialysis - 8%

509 patients
Hospital Mortality - 15.9%
CVA - 7.7%
Paraplegia - 7.5%
Hemodialysis - 4.1%

383 patients
Hospital Mortality - 16.5%
CVA - 2.2%
Paraplegia - 3.6%
Hemodialysis - 19.1%
ACUTE TYPE A AORTIC DISSECTION - NEW PARADIGM ???

A Meta-Analysis of Total Arch Replacement With Frozen Elephant Trunk in Acute Type A Aortic Dissection

Hisato Takagi¹, and Takuya Umemoto², for the ALICE² Group

Abstract
Objectives: To assess the safety and efficacy, we performed a meta-analysis of total arch replacement with frozen elephant trunk in exclusive acute type A (neither chronic nor type B) aortic dissection. Methods: Databases including MEDLINE and EMBASE were searched through March 2013 using Web-based search engines (PubMed and OVID). Eligible studies were case series of frozen elephant trunk enrolling patients with acute type A (neither chronic nor type B) aortic dissection reporting at least early (in-hospital or 30-day) all-cause mortality. Study-specific estimates were combined in both fixed- and random-effects models. Results: Fifteen studies enrolling 279 patients were identified and included. Pooled analyses demonstrated the cardiopulmonary bypass time of 201.9 (95% confidence interval [CI], 186.1-231.1) minutes, aortic cross-clamp time of 123.3 (95% CI, 112.1-135.5) minutes, and aortic occlusion time of 94.3 (95% CI, 37.4-61.6) minutes. Early mortality (95% CI, 7.0-12.7%) and 30-day mortality (95% CI, 9.5-13.4%) were 10.1% and 20.6%, respectively. In-hospital mortality (95% CI, 7.0-12.7%) and 30-day mortality (95% CI, 9.5-13.4%) were 10.1% and 20.6%, respectively. There was no significant difference in inhospital mortality by type A (12% vs. 14%). Conclusions: Presenting symptoms and physical findings of AAD have not changed significantly. Use of chest CT increased for type A. More patients in both groups were managed with interventional procedures; surgery in type A and intervention in type B may decrease in overall hospital mortality was seen for type A but not for type B. For Call Centre: 1800-222-260 (1800-222-260) 2019 by the American College of Cardiology Foundation.
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ACUTE TYPE A AORTIC DISSECTION - NEW PARADIGM ???

Hemiarthrosis versus total aortic arch replacement in acute type A aortic dissection: a systematic review and meta-analysis
Shin Suo Pos, Thomas Thiersch, Deborah Harrington, Mouni Koudsi, Anng On, Mark Field
Thames Cardiothoracic Centre, The Royal Free Hospital, London, UK
Correspondence to: Mark Field, Thames Cardiothoracic Centre, The Royal Free Hospital, London, UK. E-mail: mfield@rfhtf.nhs.uk

Background: Hemiarthrosis as an aortic repair, with or without a lesion in the aortic arch, recently emerged as a surgical option and has become more common among centers. A prospective management is crucial to achieve optimal surgical outcomes yet the optimal surgical approach is not yet established. The present systematic review and meta-analysis is the first systematic data collection comparing hemiarthroses vs total aortic arch replacement with aortic type A aortic dissection.

Methods: A systematic review of the literature using six databases. Eligible studies include comparative studies reporting hemiarthrosis versus total aortic arch replacement on short, medium, and long-term outcomes. A meta-analysis was performed on eligible studies reporting observational data to quantify the effects of hemiarthrosis on mortality and nonoperative risk compared to total aortic arch replacement.

Results: Twenty comparative studies and the meta-analysis included 28,523 patients included in the final analysis. Pooled analysis showed that hemiarthrosis had a lower risk of postoperative mortality (RR 0.47, 95% confidence interval CI: 0.38–0.58, P < 0.01). Pooled analysis showed that hemiarthrosis had a lower risk of postoperative mortality (RR 0.47, 95% CI: 0.38–0.58, P < 0.01). Hemiarthrosis was associated with improved mean aortic size reduction (ω 0.32 vs 0.26). Hemiarthrosis was associated with improved mean aortic size reduction (ω 0.32 vs 0.26).

Conclusions: Within the system of publications long for high evidence aortic surgery and aortic arch replacement data yet, there may be no difference in mortality to compare between the two repairs. This analysis allows surgeons to discuss the benefits of these repairs during informed total aortic arch surgery to share for publication, revealing excellent outcomes are achievable. The conclusion is longer in recent observational data yet this analysis accuracy should reveal a consensus approach for all aortic arch procedures, with a focus on a strategy for aortic arch surgery and aortic arch disease.

Keywords: Hemiarthrosis, total aortic arch replacement, acute type A aortic dissection, meta-analysis

Proximal aortic repair versus extensive aortic repair in the treatment of acute type A aortic dissection: a meta-analysis
Yan Yan*, Li Xu*, Hao Zhang*, Zhi Yan Xu*, Xue Yan Ding*, Shu Wei Wang*, Xiang Xue* and Meng Wei Tan*

State of the Art Surgical Management of Acute Type A Aortic Dissection

Review

State of the Art Surgical Management of Acute Type A Aortic Dissection

The 2015 Canadian multidisciplinary guidelines on Thoracic Aortic Intervention suggest that an extended distal arch technique be considered for patients with ATAAD and one of the following characteristics [1, 5]:

a. Primary intimal tear in the descending aorta
b. Significant aneurysmal disease of the arch
Concomitant descending thoracic aortic aneurysm
d. Distal malperfusion
ey. Young patients
f. Patients with known connective tissue disorders

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Aortic Disease 30ª death ranking State of Sao Paulo, 18,042 deaths (98-06)

<table>
<thead>
<tr>
<th>causes</th>
<th>AMI</th>
<th>Pneumonia</th>
<th>CVA</th>
<th>Gunshot</th>
<th>DM</th>
<th>Heart Failure</th>
<th>Cardiomyopathy</th>
<th>Car Accident</th>
<th>Breast CA</th>
<th>Prostate CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranking</td>
<td>1°</td>
<td>2°</td>
<td>3°</td>
<td>5°</td>
<td>6°</td>
<td>8°</td>
<td>12°</td>
<td>14°</td>
<td>18°</td>
<td>23°</td>
</tr>
<tr>
<td>nº de óbitos</td>
<td>177,484</td>
<td>111,427</td>
<td>80,952</td>
<td>76,691</td>
<td>75,428</td>
<td>64,479</td>
<td>40,251</td>
<td>35,962</td>
<td>28,496</td>
<td>26,941</td>
</tr>
</tbody>
</table>

- TAD 9.465 deaths (Jan 1998 to Dez 2007)
  - confirmed diagnosis after death - 8.167 patients (86,3%)
  - 6.721 acute dissection (ICD I71.0) 71%
  - 2.744 thoracic aortic aneurysm (ICD I71.1; I71.2; I71.5; I71.6) 29%
- TAD 6.109 hospitalizations SUS
- TAD 3.572 aortic surgeries (58,5% total patients)

HOSPITAL MORTALITY 1.298 pacientes (21,2%)
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São Paulo - over 20 million people city!
OPTIONS IN AORTIC ARCH RECONSTRUCTION: CONVENTIONAL vs. FROZEN ELEPHANT TRUNK

Clinical Hospital - 1944
Over 2,000 beds
Over 15,000 employees

Heart Institute - 1977 - 503 beds
Over 2,000 open cardiovascular surgeries / year

Sao Paulo Medical School - 1912

Clinical Hospital - 1944
Over 2,000 beds
Over 15,000 employees

Heart Institute - 1977 - 503 beds
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ANNUAL AORTIC PROCEDURES

MORTALITY

PROCEDURES

Ascending
Descending
FET or ET
TAAA
ARCH
AAA
Others

Total de operações = 1387
TOTAL = 61 PATIENTS ——————— HOSPITAL MORTALITY = 10 PATIENTS (16.4%)

- 7% (4 pat) - Acute type A dissection
- 69% (42 pat) - Chronic type A/B dissection
- 24% (15 pat) - Aneurysm

30% reoperations
36% associated procedures [7% RM + 17% TVAo + 13% composite mechanical graft (Bentall/Cabrol)]

- Second-stage intervention
  - Endovascular TEVAR - 5 patients
  - Open thoracoabdominal repair - 4 patients (1 death)

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Thank you!

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