

Comparison of Indication and Results for Treatment of Aortic Arch Lesions with Branched Endografts, Fenestrated Endografts, Parallel Stent-Grafts, Hybrid Repairs, or Open Repairs

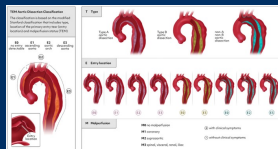


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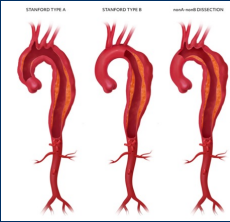
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- National Center for Cardiovascular Diseases
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Introduction

The new guidelines of the European Society of Cardiothoracic Surgeons (EACTS) and the Society of Thoracic Surgeons (STS) recognize for the first time that the aorta is an "independent organ."



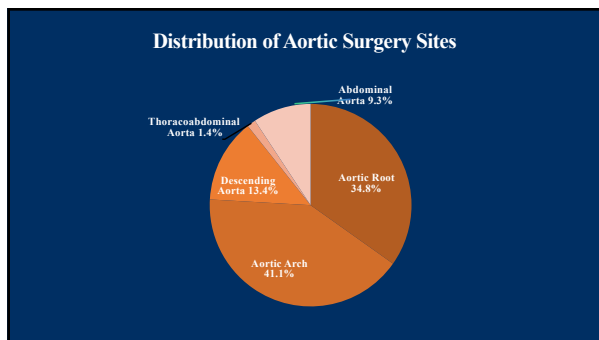
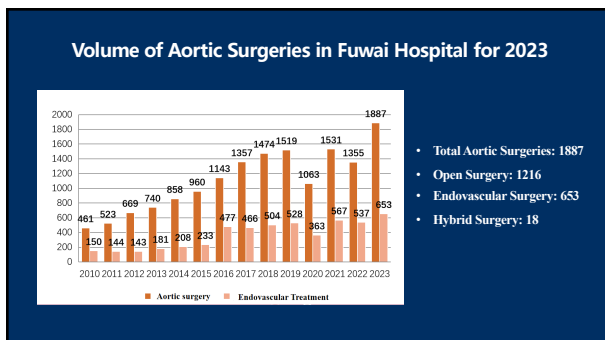
Type, entry, malperfusion classification for acute aortic dissection.
TEM: type, entry, malperfusion.



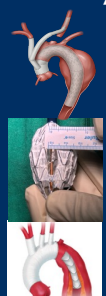
Type classification of aortic dissections.

EACTS/STS Guidelines for diagnosing and treating acute and chronic aortic syndromes of the aorta, version 2.0 | Cardiothorax Surg. 2024

November 04, 08:00 | RE: Management of acute aortic dissection | Lecture 2019




"HENDO" for Arch



- Hybrid repair -**
 - Debranching + TEVAR
 - Ascending aorta replacement (CPB) + TEVAR
 - Total arch replacement (DHCA) + TEVAR
 - Extra-anatomic bypass + TEVAR
- Endovascular repair-**
 - Fenestrated stent-graft
 - Chimney technique
 - Branched stent-graft
- Open arch repair -**
 - Hemi / Total Arch replacement
 - Total Arch Replacement + Frozen Elephant Trunk

Chinese Expert Consensus on Hybrid Technique on Treating Thoracic Aortic Pathologies Involving the Aortic Arch



- 2020, Chinese Expert Consensus of National Society of Vascular Surgery on hybrid technique for aortic arch diseases were published under the lead of Fuwai hospital, participated by more than 30 experts from 20 hospitals.
- Begin in 2019, four forums, revised in the next year
 - Changsha, Hybrid Consensus forum
 - Zhengzhou, Zhongyuan Vascular Forum
 - Tianjin, Chinese Vascular Congress
 - Wuhan, Finalization and press conference

Hybrid Arch Repair

I: Debranching + TEVAR
 II: Ascending aorta replacement (CPB) + TEVAR
 III: Total arch replacement (DHCA) +TEVAR
 IV: Extra-anatomic bypass for partial arch + TEVAR

Type I Type II Type III Type IVa Type IVb

Cheng Zhu, etc. Chinese Expert Consensus on Hybrid Technique for the Treatment of Aortic Arch Pathology

Clinical Case and Technical Analysis

61/F
 TBAD, ARSA,
 HTN

Preoperative CT:
 3D reconstruction

Clinical Case and Technical Analysis

1. Main body: Castor 322610-2002515 mm;
2. Expose ARSA and RCCA, cut off ARSA, ligate and suture the proximal end;
3. Matches ARSA and RCCA.

Before Stenting After Stenting Bypass Completion Angiography

Clinical Case and Technical Analysis

Pre-operation Post-operation

Endo Techniques for Aortic Arch

Chimney Technique Fenestrated Technique-in vitro Fenestrated Technique-in situ Branched Stent

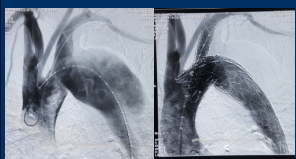
Chimney technique --- How to treat the endoleak?

The Skirt Technique

Newly designed chimney graft for prevention of endoleak

Longuetto™ stent, has passed green channel of China

First In Human Amplication of Longuette™



THE ANNALS OF THORACIC SURGERY

Ann Thorac Surg. 2020 Apr;95(0003-4075):2030319-4. doi: 10.1016/j.athoracsur.2020.03.016. Online ahead of print.

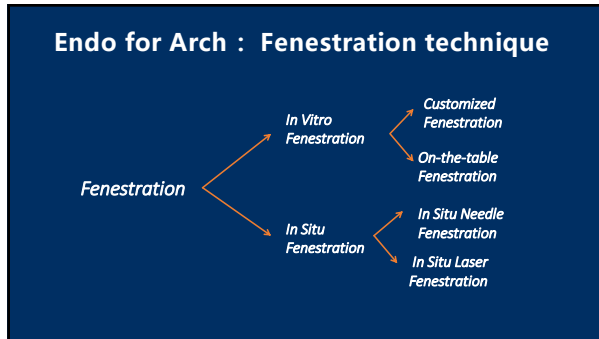
First-in-man Implantation of Gutter-Free Design Chimney Stent-Graft for Aortic Arch Pathology

Kun Fang¹, Chang Shu², Mingqai Luo¹, Ming Li¹, Xin Li³, Hao He⁴, Tao Fan⁵, Jawei Zhao¹ *

*Corresponding Author
Affiliations: * expand
PMID: 32278750 DOI: 10.1016/j.athoracsur.2020.03.016

2018-5-14, First in human implantation of Longuette Stent in National Center of Cardiovascular Disease, Indonesia

2018-8-21, First in human implantation of Longuette Stent in Yunnan Fuwai hospital, China.



In Vitro Fenestration

Self-imaging markers guiding physician-modified SG Fenestration




Ankura characteristic
 ✓ support strut
 ✓ "8" & "O" marker

Has been successfully and initially used in 10 countries: China, Russia, Uzbekistan, Belarus, Portugal, Indonesia, Ukraine, Georgia, Egypt, Italy




SF fenestration technique well accepted by doctors is different countries



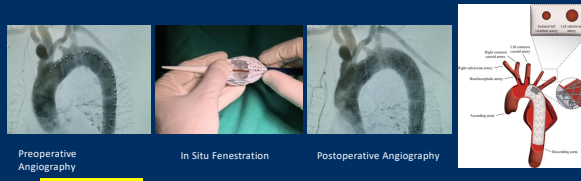
- 1 Portugal
- 2 Indonesia
- 3 Ukraine
- 4 Uzbekistan
- 5 Belarus
- 6 Georgia
- 7 Russia
- 8 Italy
- 9 Thailand
- 10 Egypt

Fenestrated Technique-In Vitro



Pre-operation Post-operation

Outcomes Comparison of Direct Coverage versus Fenestration for Isolated Left Vertebral Artery Management in Zone 2 TEVAR



Preoperative Angiography In Situ Fenestration Postoperative Angiography Surgical schematic diagram


Conclusion:

In Zone 2 TEVAR for patients with ILVA, the fenestration technique significantly reduces the incidence of postoperative ILVA stenosis compared to direct coverage, underscoring the importance of revascularizing the ILVA.


In Situ Fenestration

CSkirt™ Aortic arch branching stent system
Newly designed in situ fenestration system for prevention of endoleak


- ◆ **Ankura™ Plus** main stent
- ◆ **CSkirt™** branch stent
- ◆ **Futhrough™** membrane puncture system



Ankura™ Plus

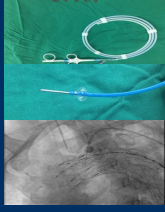


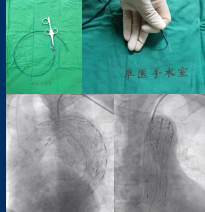
CSkirt™



Futhrough™

In Situ Fenestration




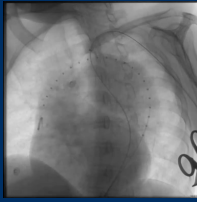


Futhrough™—guide wire induces needle locating against aorta stent.
 Needle wrapped by tender catheter is well compliance in twist branch arteries.

Balloon expandable puncture needle

In Situ Fenestration-CSkirt™

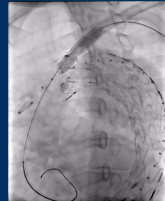




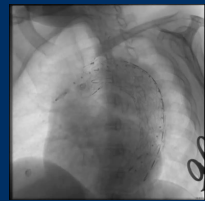
Female, 54 years
 Abrupt chest and back pain for 5 days,
 Diagnosis:
 1. TBAD, distance between intimal tear and LSA <0.5cm
 2. Hypertension

Left brachial artery & femoral artery access, angiography

In Situ Fenestration-CSkirt™



In-situ fenestration, 6mm balloon expansion



Release CSkirt stent graft, exclude lesion totally

Branched Stent-grafts

Strength:

- Conforming to the vessel anatomy
- Standardized operation procedure
- Avoiding 'gutter' endoleaks and migration

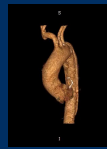
Has been successfully and initially used in different countries: Thailand, Brazil, Spain, Italy etc.







Clinical Case and Technical Analysis

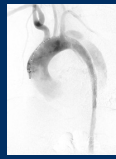
Combination of Branched stent-graft and Chimney for Non A Non B aortic dissection



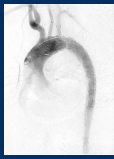
Pre-operation



4 m follow up



Before stenting

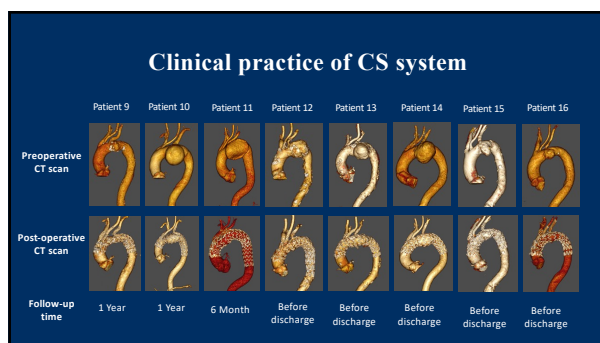
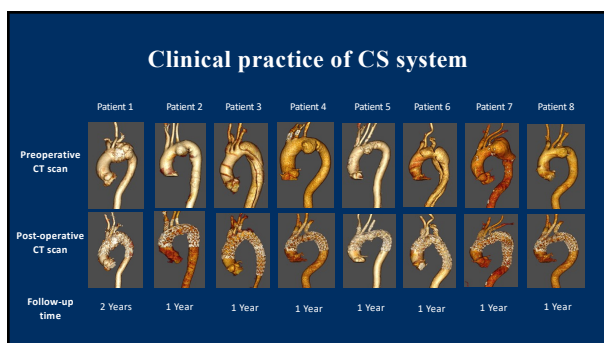
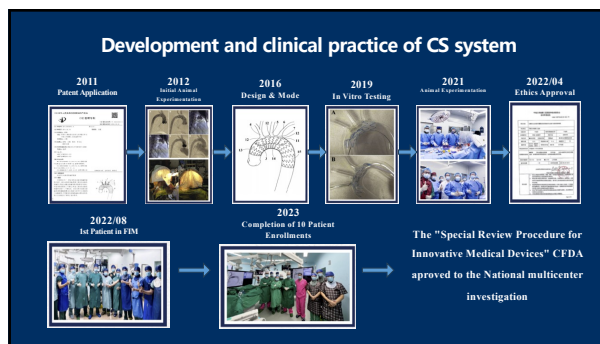
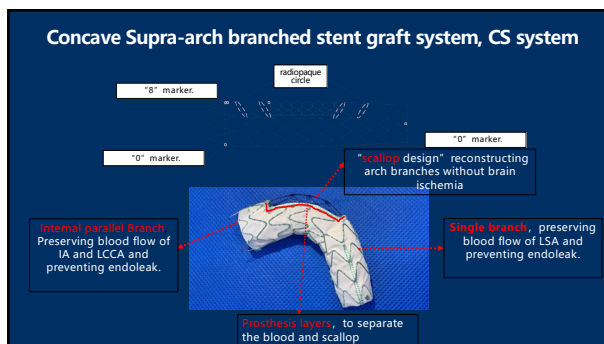


After stenting

Efficacy of Endovascular Repair Using Single Left Common Carotid Artery Stent Combined with Castor Single-Branched Stent-Graft in the Treatment of Regional Diseases of Zone 2 of the Aorta

56/M
 Chimney technique used to protect LCCA

He Fang¹, Chao Tian¹, Dong Chen¹, Minghao Luo¹, Kun Fang¹, Chuan Tian¹, Chang Shu¹ *
 Affiliation: * inquest
 PMID: 38284438 | DOI: 10.1177/1550022122124249



Summary

- The treatment of aortic disease is gradually transitioning from open surgery to hybrid surgery and endovascular repair. Minimally invasive treatment is the trend.
- Open surgery is still the fundamental treatment option for aortic disease and gold standard for complex pathologies.
- Individualized strategy is recommended based on the various characteristics of anatomy and pathology of aortic diseases.
- Be cautious for arch reconstruction and only performed when necessary. Many newly designed non-customized stent-grafts for single, double, and triple supra-arch branches reconstruction are on the way, while more datas are needed on its safety and effectiveness.

Thank you for your attention!