

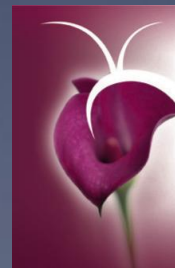


EVAR in the Aortic Arch

Tilo Kölbel

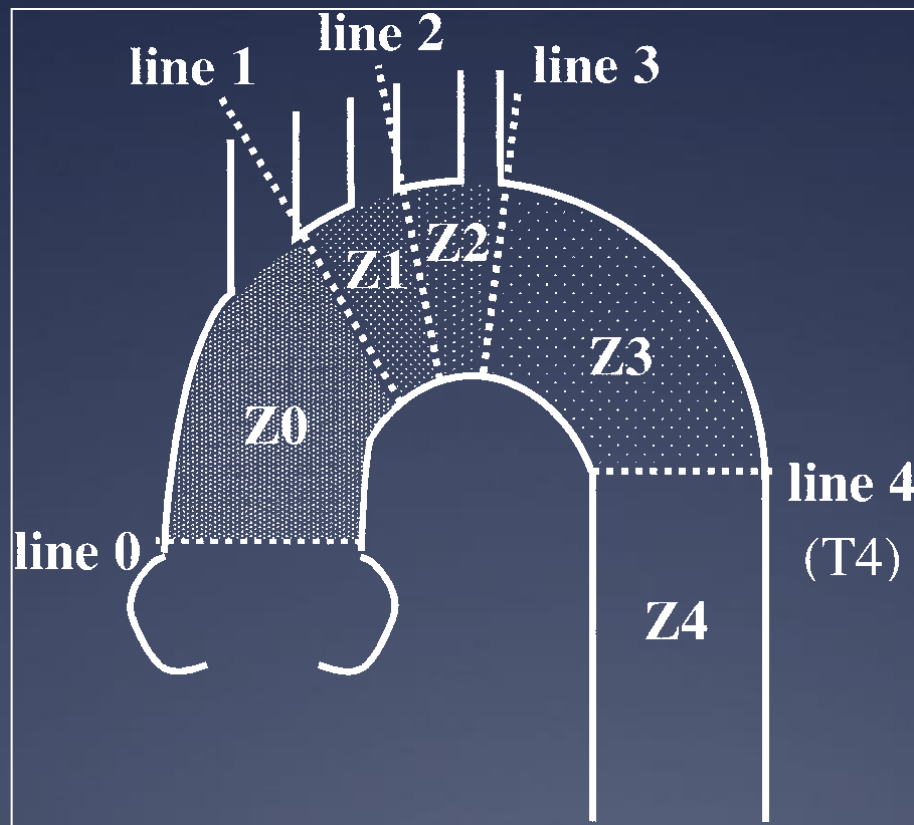


University Heart Center
University Hospital Eppendorf
Hamburg, Germany



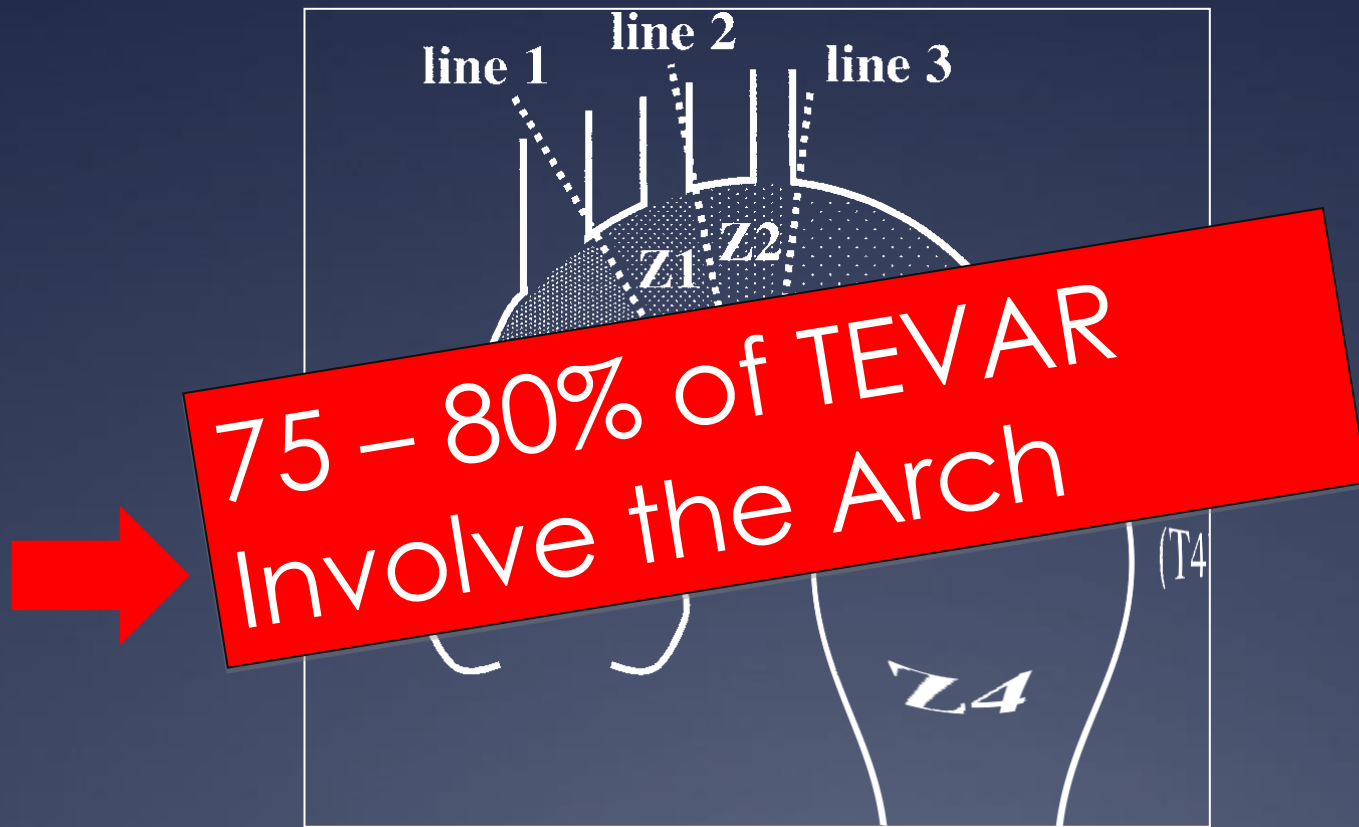
**2nd International Meeting
on Aortic Disease**
New insights into an old problem
CHU Liège, FAD, APF
September 30 & October 1-2 2010, Liège, Belgium

Aortic Arch Zones



Ishimaru-classification

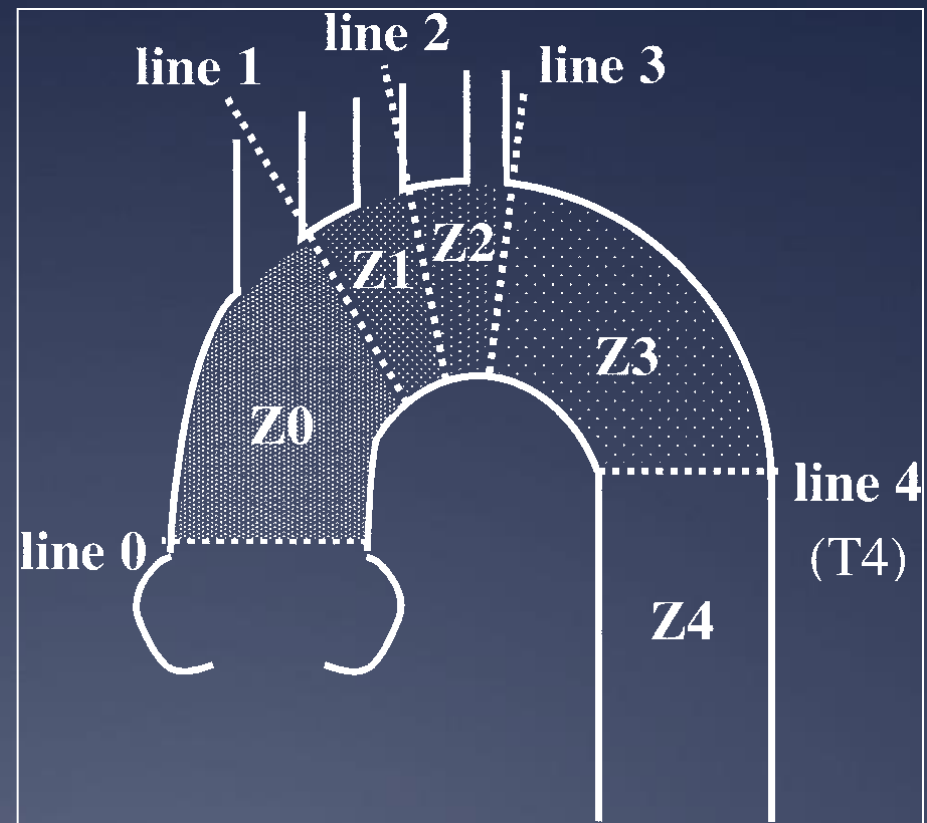
Aortic Arch Zones



Ishimaru-classification

Specifics of the Aortic Arch

- * Branch vessels
Patency / endoleak
- * Pulsatility
Oversizing / migration
- * Curvature
Conformity / infolding
- * Access
Distance / profile



Descending Thoracic Aorta

Comparative studies

n = 5888

TAA and Dissection

TEVAR better

- * 30d mortality
- * Paraplegia
- * Transfusion
- * Cardiac compl.
- * Renal function
- * Pneumonia
- * Reoperation
- * Length of stay

Endovascular Aortic Repair Versus Open Surgical Repair for Descending Thoracic Aortic Disease

A Systematic Review and Meta-Analysis of Comparative Studies

Davy Cheng, MD,* Janet Martin, PHARM.D, MSc (HTA&M),* Hani Shennib, MBBS,†
Joel Dunning, PH.D,‡ Claudio Muneretto, MD,§ Stephan Schueler, PH.D, MD,||
Ludwig Von Segesser, MD,¶ Paul Sergeant, MD, PH.D,# Marko Turina, MD**

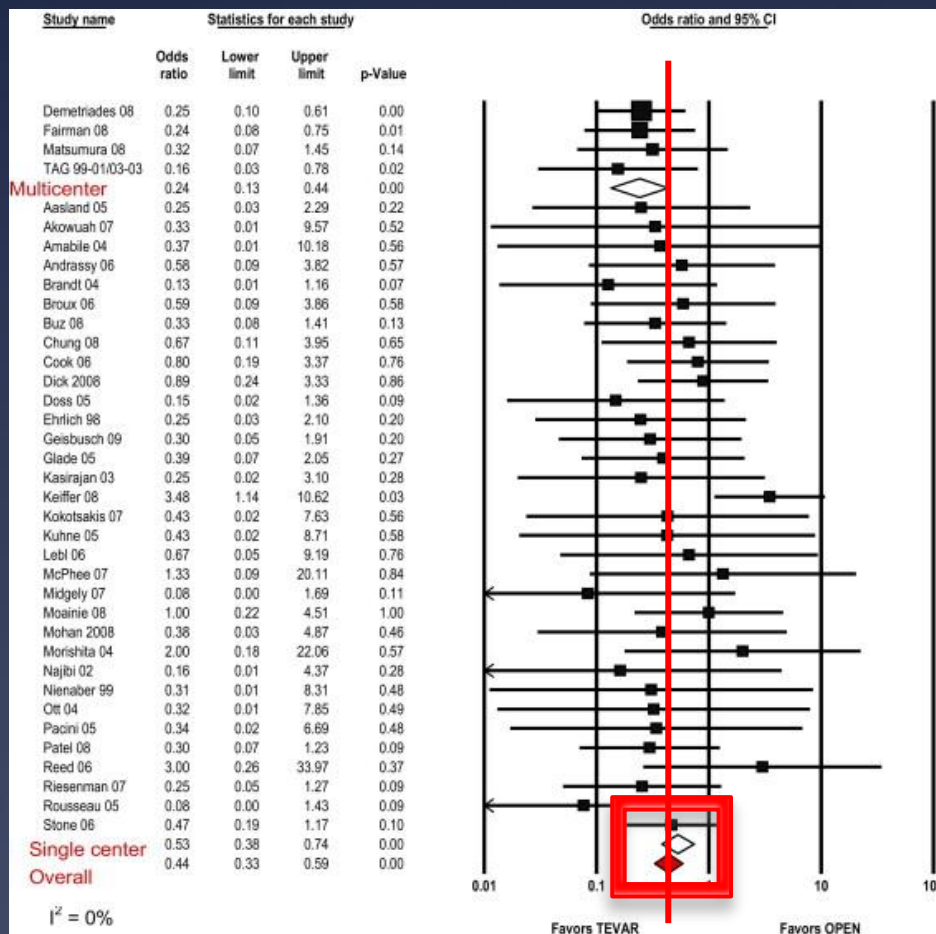
*London, Ontario, Canada; Phoenix, Arizona; Middlesbrough and Newcastle upon Tyne, United Kingdom;
Brescia, Italy; Lausanne and Zurich, Switzerland; and Leuven, Belgium*

Objectives	The purpose of this study was to determine whether thoracic endovascular aortic repair (TEVAR) reduces death and morbidity compared with open surgical repair for descending thoracic aortic disease.
Background	The role of TEVAR versus open surgery remains unclear. Metaregression can be used to maximally inform adoption of new technologies by utilizing evidence from existing trials.
Methods	Data from comparative studies of TEVAR versus open repair of the descending aorta were combined through meta-analysis. Metaregression was performed to account for baseline risk factor imbalances, study design, and thoracic pathology. Due to significant heterogeneity, registry data were analyzed separately from comparative studies.
Results	Forty-two nonrandomized studies involving 5,888 patients were included (38 comparative studies, 4 registries). Patient characteristics were balanced except for age, as TEVAR patients were usually older than open surgery patients ($p = 0.001$). Registry data suggested overall perioperative complications were reduced. In comparative studies, all-cause mortality at 30 days (odds ratio [OR]: 0.44, 95% confidence interval [CI]: 0.33 to 0.59) and paraplegia (OR: 0.42, 95% CI: 0.28 to 0.63) were reduced for TEVAR versus open surgery. In addition, cardiac complications, transfusions, reoperation for bleeding, renal dysfunction, pneumonia, and length of stay were reduced. There was no significant difference in stroke, myocardial infarction, aortic reintervention, and mortality beyond 1 year. Metaregression to adjust for age imbalance, study design, and pathology did not materially change the results.
Conclusions	Current data from nonrandomized studies suggest that TEVAR may reduce early death, paraplegia, renal insufficiency, transfusions, reoperation for bleeding, cardiac complications, pneumonia, and length of stay compared with open surgery. Sustained benefits on survival have not been proven. (J Am Coll Cardiol 2010;55:986-1001) © 2010 by the American College of Cardiology Foundation

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Descending Thoracic Aorta

30 day mortality TEVAR vs. OR



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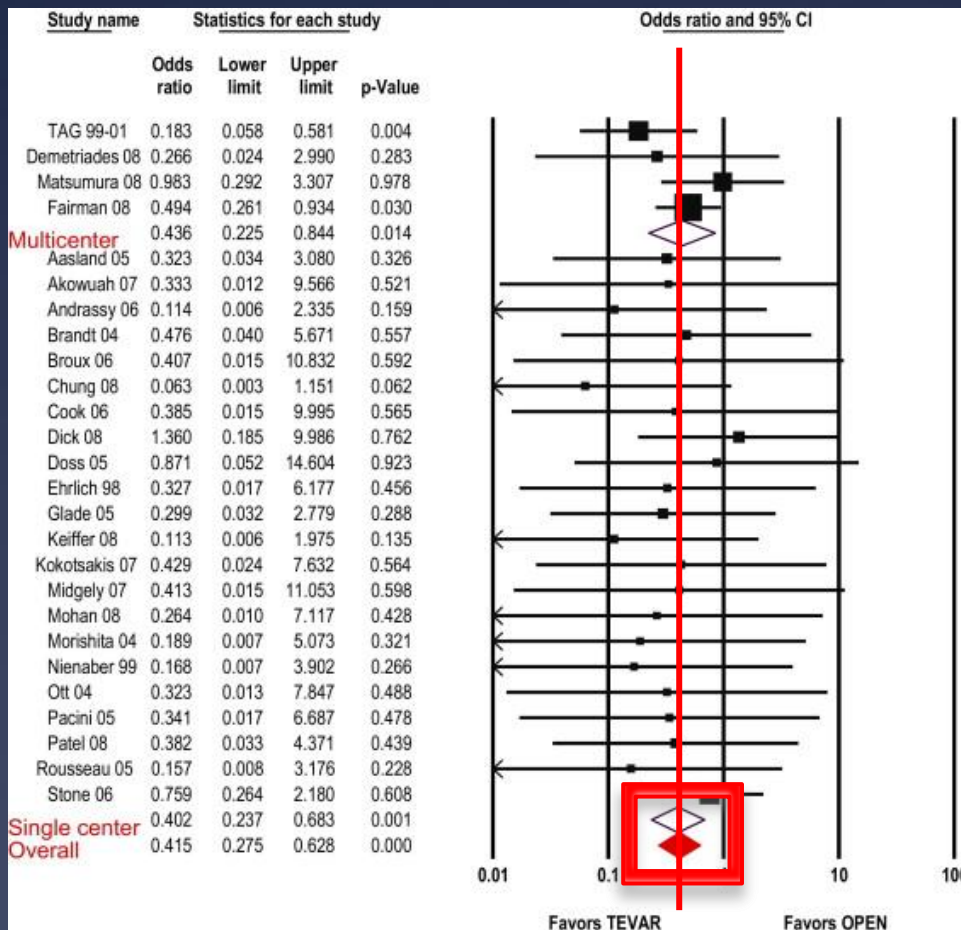
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Descending Thoracic Aorta

Paraplegia or -paresis TEVAR vs OR



Endovascular Aortic Repair Versus Open Surgical Repair for Descending Thoracic Aortic Disease
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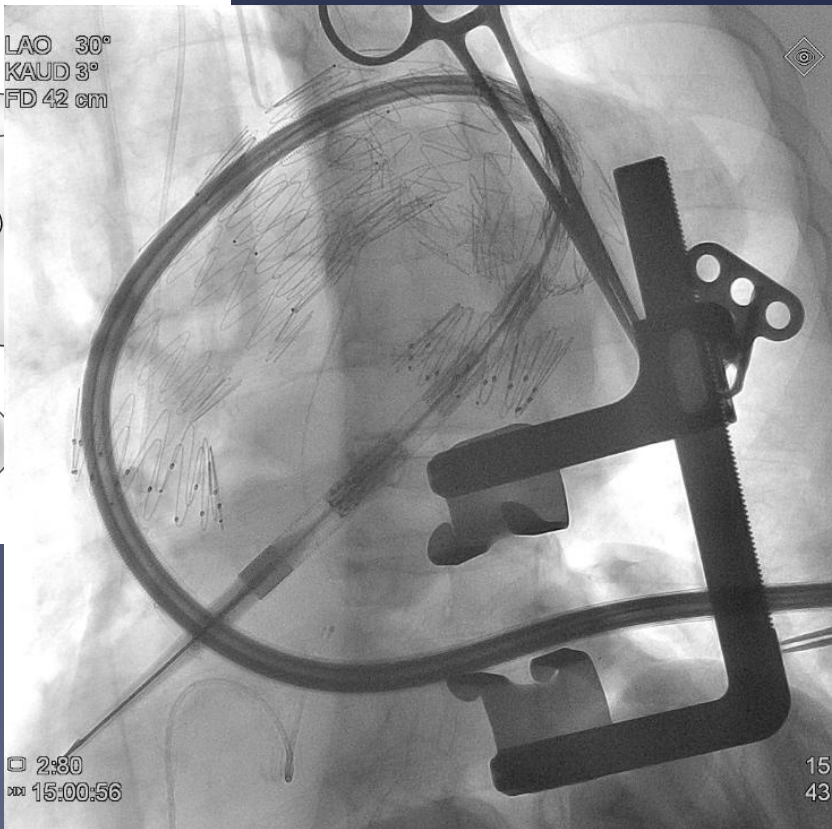
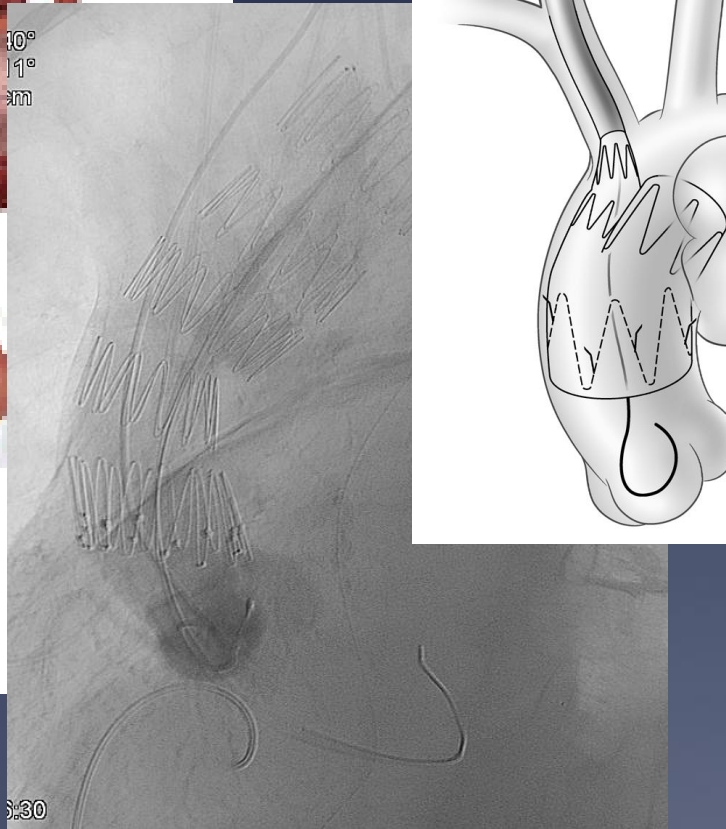
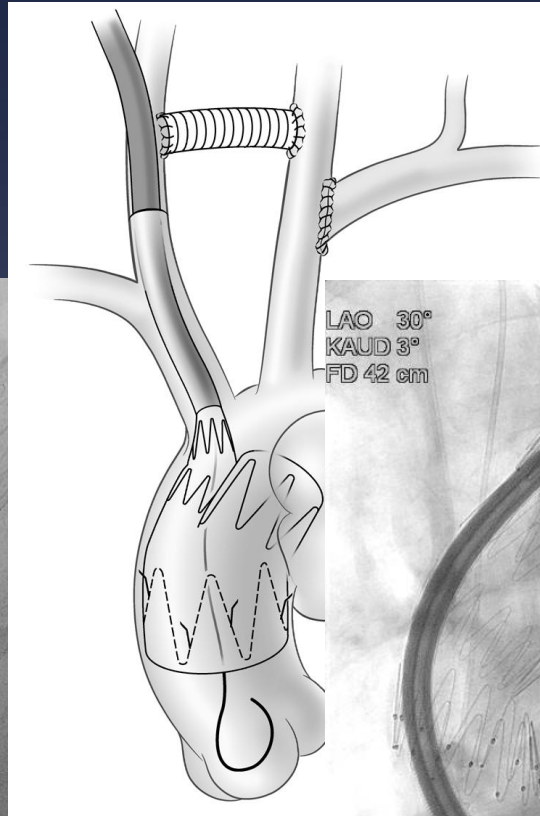
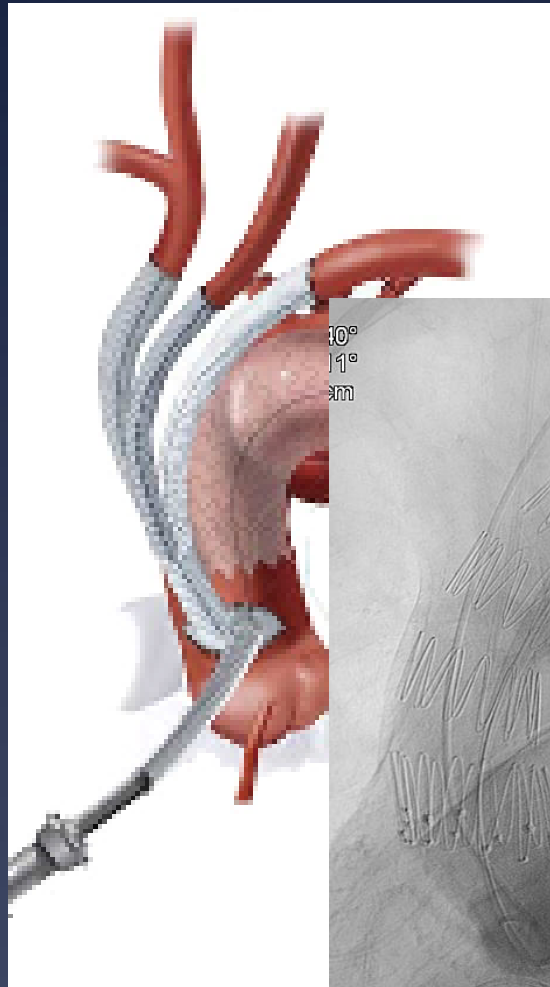
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Any Evidence for the Arch?

- Smaller numbers of patients
- Heterogeneity of techniques
- Different specialties involved
- Rapid technical development



Access for Arch TEVAR



3:30

2:30
15:00:56

15
43

TEVAR in the Aortic Arch

TEVAR involving Zone 0-2

Hybrid Procedures

Arch Replacement
On-pump

Ascending Debranching
Off-pump

Cervical Debranching

Total Endovascular Repair

Chimney Graft

In-Situ Fenestration

Branched/
Fenestrated Device

Cardiac Surgeon

Vascular Surgeon

Interventionalist

Zone 0 – Debranching



Zone 0 – Debranching



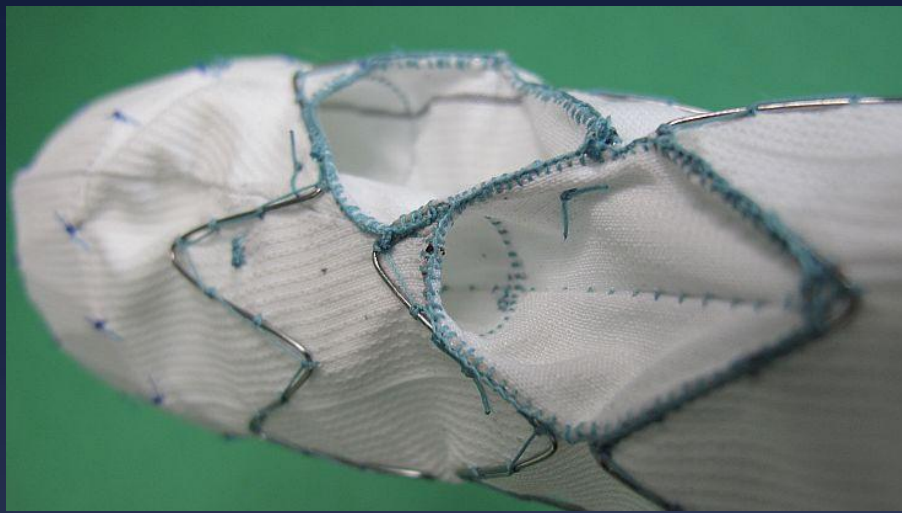
Zone 0 – Debranching



Zone 0 – Branched SG



Courtesy of Krassi Ivancev, UCLH London, UK



Courtesy of Krassi Ivancev, UCLH London, UK

Zone 0 – Chimney Graft



Zone 0 – Chimney Graft



Zone 0 – Chimney Graft



Zone 0 – In-Situ Fenestration



Zone 0 – In-Situ Fenestration



Conclusions

- *Technique under rapid development and we cannot expect evidence on its role in the near future
- *Technique depends on local organisation and team-structure
- *Feasible and lifesaving option in patients unfit for surgery

