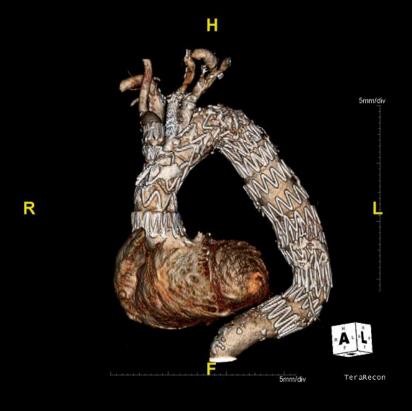
16[™] INTERNATIONAL EXPERTS SYMPOSIUM CRITICAL ISSUES in aortic endografting 2012



May 24 & 25
LILLE, FRANCE

The celiac trunk should never be covered: current experience with the Bolton fenestrated endograft

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Faculty Disclosure



Vincent Riambau MD, PhD

Consultant: Bolton Medical/ Medtronic/ LeMaitre/ Jotec/Biotronik/ W.L. Gore/ Cordis/ Aptus

Proctor. Cook/ Bolton Medical/ Medtronic/ W.L. Gore



- The problem
- Potential solutions
- How safe is to cover the Celiac Trunk?
- The scallop approach
- Summary
- Conclusions



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The problem



Stententgrafting Durability in Thoracic

Aneurysm treatment

Stentgraft migration

Distal sealing and fixation

Pivotal Trials	Migration rates
Gore TAG J Vasc Surg 2005	2.1% @ 2y
Valor J Vasc Surg. 2008	3.9% @ 1y
TX2 J Vasc Surg. 2008	2.8% @ 1y





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Potential solutions



How to improve distal fixation and sealing?

- Aortic wraping
- Hooks
- Branched
- Debranching
- Scallop
- Endosutures
- Periscope
- Coverage of CT

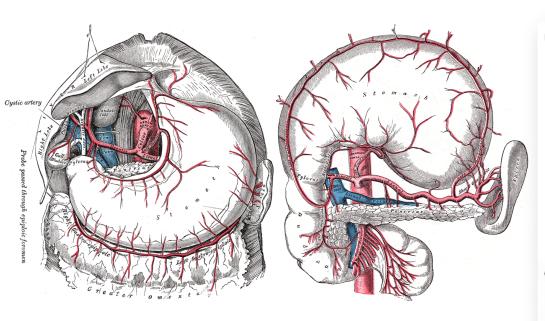




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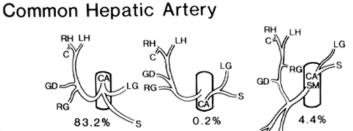
CT Anatomy and variations



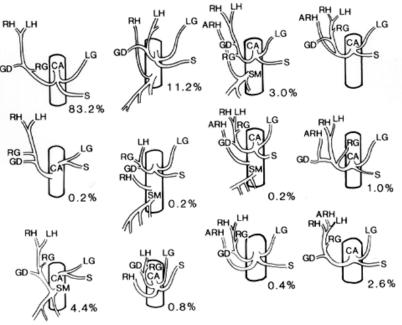


Potential consequences of CT occlusion:

- Foregut ischemia
- Ischemic Pancreatitis
- Ischemic Cholecystitis
- Ischemic Hepatitis
- Spleen ischemia
- Paraplegia



Right Hepatic Artery



Outcome after celiac artery coverage during endovascular thoracic aortic aneurysm repair:

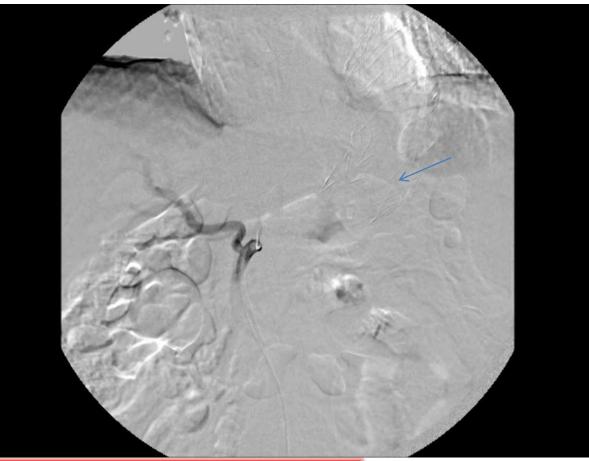
Preliminary results

Sarat K. Vaddineni, MD, Steve M. Taylor, MD, Mark and William D. Jordan, Jr., MD, Birmingham, Ala

Background: Endovascular repair of descending thoracic aor Coverage of the left subclavian origin has been reported to coverage of the celiac artery origin with a thoracic stent graf Methods: All patients undergoing endovascular aneurysm rep All patients who underwent thoracic endovascular aneury identified and retrospectively analyzed. End points for eval anatomic features of the distal landing zone, demonstration superior mesenteric artery, technical success of the procedu procedure.

Results: Between March 2005 and May 2006, 46 patients ur aneurysms. Seven patients had planned celiac artery coverage sealing zone. Six patients demonstrated collateral circulation superior mesenteric arteries before deployment of the ster conclusion of the procedure related to inadequate sealing at were evident at the final intraoperative angiogram or 30-day deaths, no ischemic abdominal complications, and no clin months) has demonstrated no additional endoleaks (type I ruptures.

Conclusion: This limited series supports the suitability, in sele landing zone when the distal sealing zone proximal to the co evaluation of the collateral circulation between the celiac and origin is being considered. (J Vasc Surg 2007;45:467-71.)



16[™] INTERNATIONAL EXPERTS SYMPOSIUM

in aortic endografting 2012

- 7 cases
- 6 with good collateralization
- None adverse event



Endovascular repair of extent I thoracoabdominal aneurysms with landing zone extension into the aortic arch and mesenteric portion of the abdominal aorta

Clayton J. Brinster, MD,^a Wilson Y. Szeto, MD,^b Joseph E. Bavaria, MD,^b Edward Y. Woo, MD,^a Ronald M. Fairman, MD,^a and Benjamin M. Jackson, MD,^a *Philadelphia*, *Pa*

Thoracic endovascular aortic repair (TEVAR) has emerged as an alternative for patients at prohibitive risk for open thoracic or thoracoabdominal surgery, decreasing perioperative morbidity and mortality. Aneurysms that involve both the left subclavian artery (LSA) proximally and the celiac artery (CA) distally present a unique challenge to the use of TEVAR. We report a series of six high-risk patients presenting with extent I thoracoabdominal aortic aneurysms who were successfully treated with TEVAR including coverage of the LSA and the CA. (J Vasc Surg 2010;52:460-3.)

- 6 cases
- 4 complete CT occlusion
- 1 Distal and 1 proximal Type I endoleaks
- No other adverse events



J Cardiovasc Surg (Torino). 2008 Aug;49(4):479-82.

When is safe to cover the left subclavian and celiac arteries. Part II: celiac artery.

Gawenda M, Brunkwall J.

Department of Vascular Surgery, University of Cologne, Cologne, Germany, michael.gawenda@uk-koeln.de

Abstract

Endovascular repair of thoracic and thoraco-abdominal agrtic aneurysms became apparent as an alternative to open repair. When the distal landing zone proximal to celiac artery is inadequate, a traditional open surgical approach with thoracoabdominal aortic replacement concomitant with visceral and renal bypasses is necessary. Alternatively, either an abdominal hybrid procedure with debranching of the visceral vessels with subsequent thoracic stent graft placement or complete endovascular aneurysm exclusion with branched stent grafts is required. Extending the distala zone Intentional coverage can be done safely with a previous occlusion test (?) might be possible by covering the celiac artery origin. In this article, the authors review the anatomy of the celiac artery mesenteric artery (SMA) and consequences of CA coverage as scenery for a discussion of the thoracic aortic repair (TEVAR). Summarizing the currently available literature sed on a diagnostic algorithm.

J Cardiovasc Su TEVAR ar Falkenberg M.

Department of Rad

Abstract

Thoracic endovascular aortic repair (TEVAR) is the treatment of choice for descending thoracic aortic aneurysms (TAA). However, not all patients with TAA can be treated with the endovascular technique. Insufficient proximal and/or distal sealing zone is the most common reason for open surgery in these patients. If the distal sealing zone above the celiac axis is too short, several endovascular alternatives are possible; hybrid procedures with TEVAR and open by-pass to the celiac artery, custom made stent-grafts with scallop or fenestration for the celiac artery, or intentional coverage of the celiac artery. In the latter case, adequate collateral supply to the upper gastrointestinal tract is crucial. Collateral arteries joining the celiac and the superior mesenteric arteries are well characterized in patients with chronic celiac stenosis or occlusion. Are these collateral pathways sufficient also for sudden iatrogenic closure of the celiac artery? By performing a preoperative angiography of the superior mesenteric artery with temporary balloon occlusion of the celiac artery, collateral capacity between the two vessels can be tested in advance. Exact positioning of the distal end of a large thoracic stent-graft can be challenging and require special considerations and techniques. Most case series in the literature support the efficacy and the safety of intentional celiac covering. However, there are also reports of ischemic foregut complications that could be associated to the procedure. Taken together, in the large majority of patients, it appears that intentional celiac coverage can be done safely provided that sufficient collateral function have been demonstrated in advance.



Vasc Endovascular Surg. 2009 Feb-Mar;43(1):51-60. Epub 2008 Nov 7.

The risks of celiac artery coverage during endoluminal repair of thoracic and thoracoabdominal aortic aneurysms.

Leon LR Jr, Mills JL Sr, Jordan W, Morasch MM, Kovacs M, Becker GJ, Arslan B.

Department of Vascular Surgery, Southern Arizona Veterans Affairs Health Care System (SAVAHCS), Tucson, Arizona 85723, USA. luis.leon@va.gov

Abstract

The risks of purposeful celiac artery coverage during endovascular thoracic aortic aneurysm repair (TEVAR) to obtain an adequate distal landing zone have received scant scientific attention. Patients undergoing TEVAR at 6 tertiary centers from January 2000 to June 2007 were identified (n = 434); cases requiring celiac artery exclusion (n = 19; 4.4% of the total) were analyzed. The mean follow-up was 8.7 months (range, 0.2-21.2). The mean patients' age was 73.6 years (range, 56-86); 57.9% were men. The mean aneurysm diameter was 6.7 cm (range, 5-8.6). In 2 patients, the celiac artery balloon occlusion test was performed prior to TEVAR. In both, intact collateral foregut circulation was seen. Both underwent TEVAR without celiac artery revascularization; 1 did well, whereas the other developed foregut ischemia. In 16 cases (84.2%), the celiac artery was not revascularized prior to TEVAR. In those patients, 10 complications were reported (2 deaths; 2 parapleois). No similar events occurred in those who underwent celiac artery

revascularization (complications. Cor celiac artery cover

19 cases of celiac trunk coverage

- 16/19 no previous revascularization
 - 19 complications (118%)
 - 3 deaths (18.7%)
 - 2 paraplegia (12.5%)
- 2 balloon occlusion test with intact collaterals
 - One did OK
 - One developed foregut ischemia
- 3/19 with previous revascularization without adverse events

number of major VAR. Specific

Outcomes of planned celiac artery coverage during TEVAR



Manish Mehta, MD, MPH, R. Clement Darling III, MD, John B. Taggert, MD, Sean P. Roddy, MD, Yaron Sternbach, MD, Kathleen J. Ozsvath, MD, Paul B. Kreienberg, MD, and Philip S. K. Paty, MD, Albany, NY

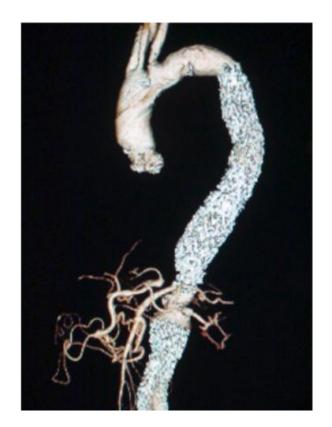
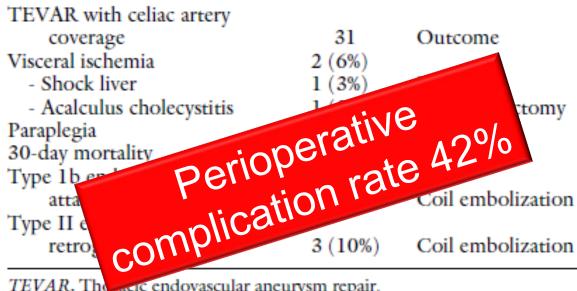


Table II. Complications in TEVAR patients with celiac coverage



TEVAR, The acic endovascular aneurysm repair.

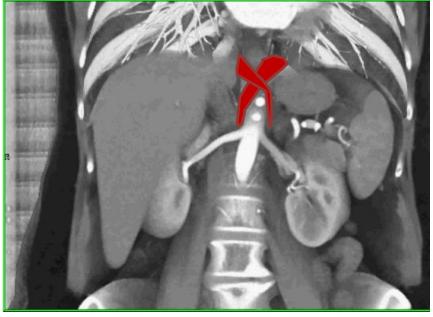


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The rationale







The indication



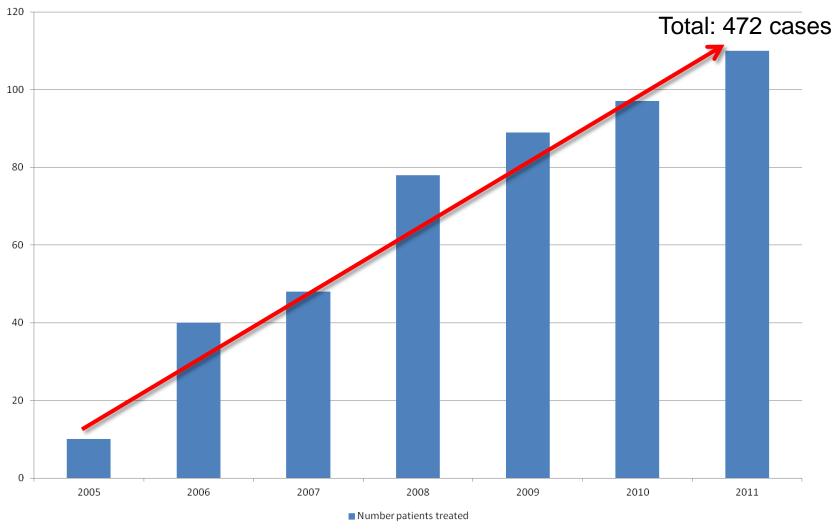
- Thoracic aneurysm with healthy distal neck
 < 3 cm and ≥ 1.5 cm above the celiac trunk



- Relay™ (Bolton Medical, Sunrise, FL, USA)
- Custom made device
- 2 designs: with or without bare stent
- Different sizes of scallops
- Tapered and reverse tapered shapes can be combined
- Manufacture of the device takes ≤ 3 weeks

Bolton Medical Custom Made Program Experience worldwide

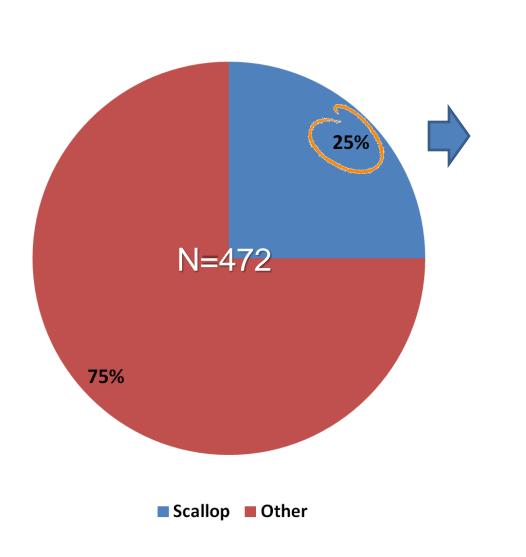




Source: Bolton Medical Internal data. Q4 2011

Bolton Medical Custom Made Program Experience worldwide





<u>Distal</u>

62%



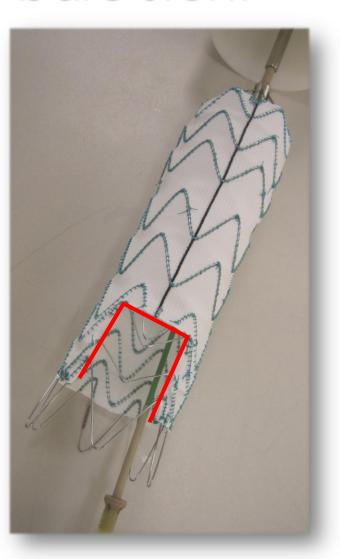
Proximal

38%

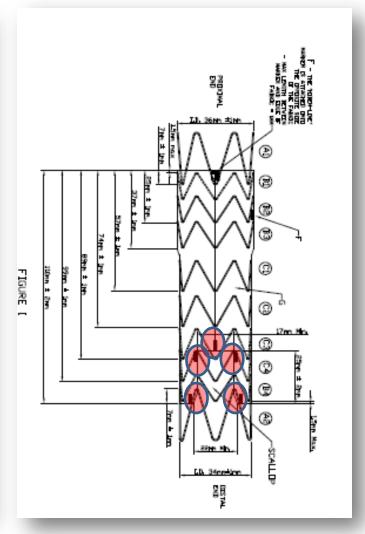


Scallop Design 1: w distal bare stent



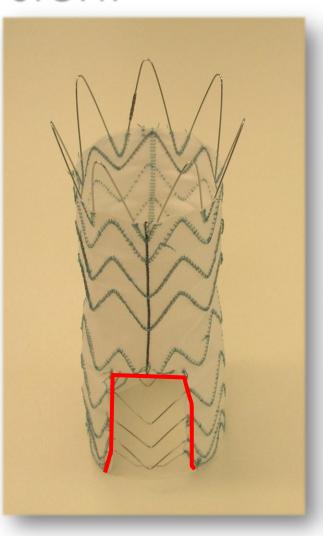


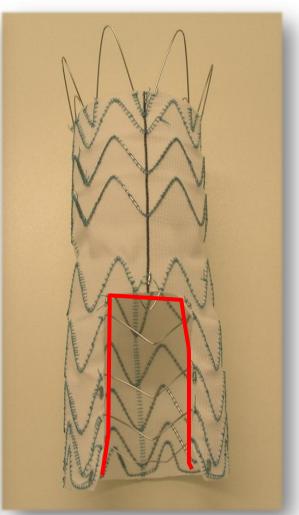


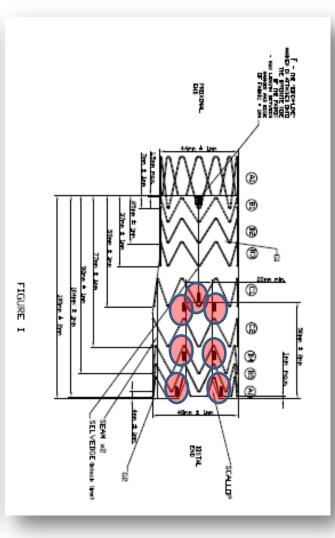


Scallop Design 2: w/o bare stent

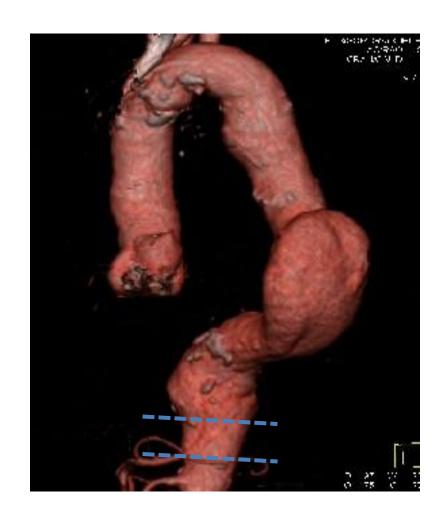


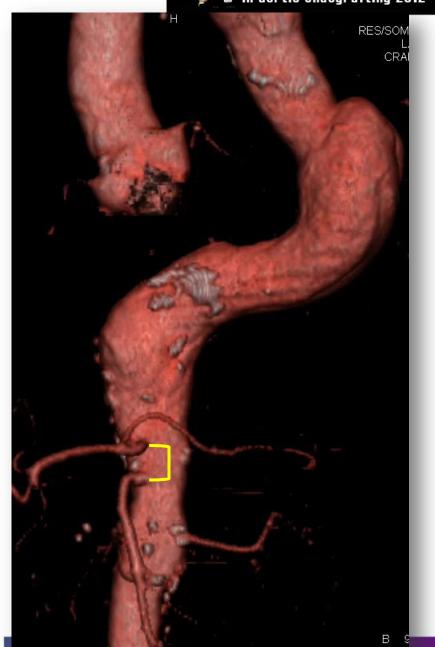




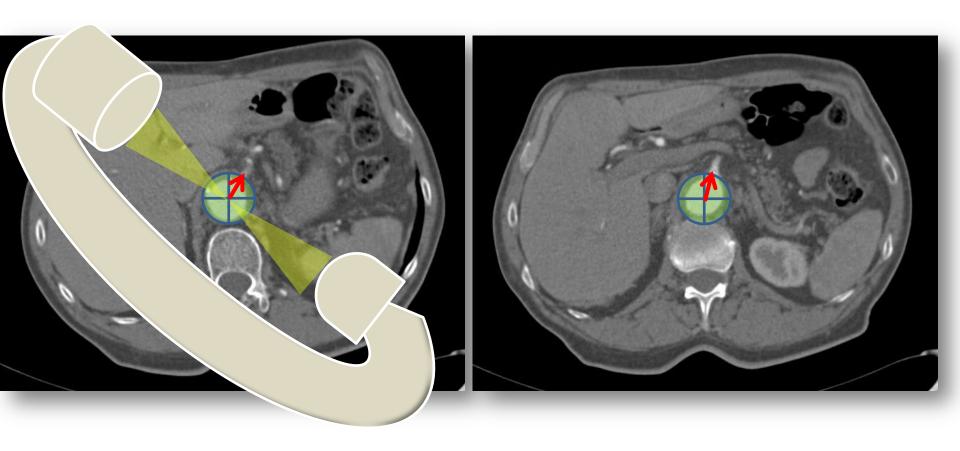






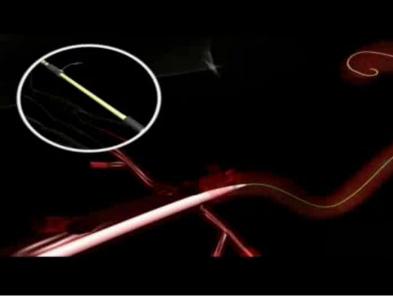








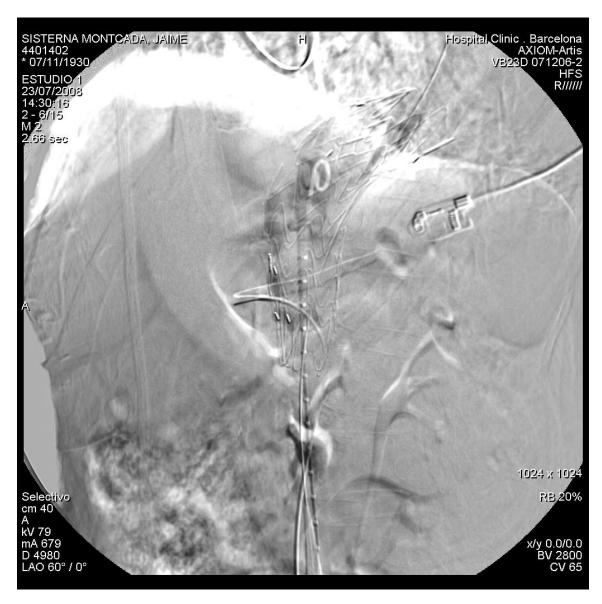












Clinical experience Hospital Clínic of Barcelona and Rikshospitalet, Oslo University Hospital



- 12 patients (age:68-80; M/F:6/6)
 - 9 TAA
 - 1 Chronic Type B
 - 2 PAU
- 2.2 Endografts/procedure
- Fu: 6-44 months



Early Results

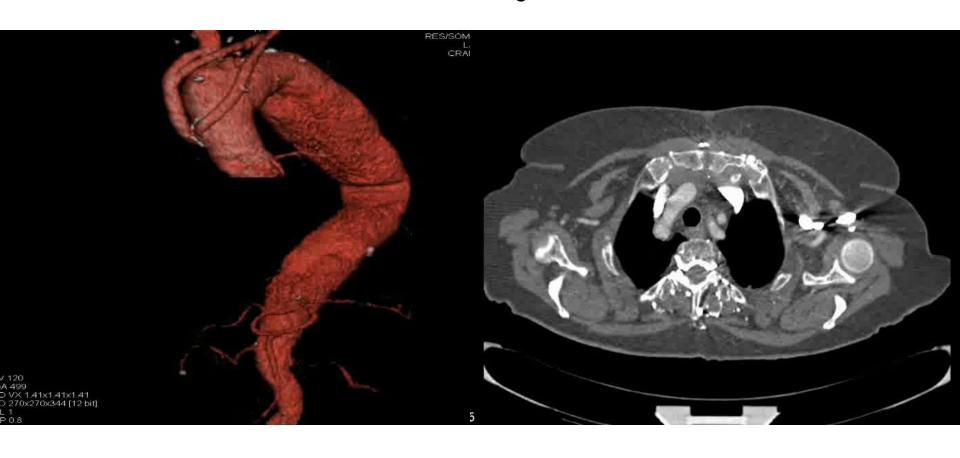


- Early technical success: 11*/12 (91.6%)
- One partial rotational misplacement*
- One distal type I endoleak* (solved with an extra cuff and covering CT)
- One partial coverage: bare stent
- No ischemic events
- No in hospital mortality
- No paraplegia

Case



78 yo female Previous Ascending Aorta replacement with total debranching TAA 70 cm Ø with a distal neck of 1.5 cm length



Case

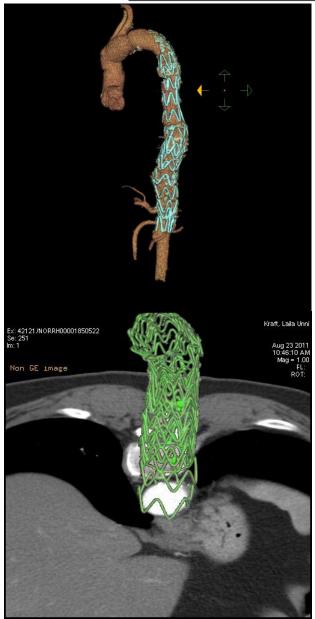




Late Results

- Fu: 6-44 months
 - 1 non related death
 - No type I endoleaks
 - No ischemic events







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- Cranial Migration of thoracic endografts is a concern and reduces durability of the procedure
- Different mechanisms have been applied to avoid it
- Trans-diaphragmatic landing increase distal fixation and sealing
- Coverage of CT is not benign even with angiographic collateralization



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Conclusions



- The celiac trunk should never be covered:
 with impunity without a previous occlusion test
- Some technical alternatives can maintain blood flow to CT
- Distal scallop design represents an useful customized solution in selected cases

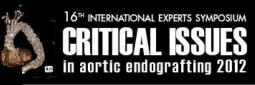


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www.site2013.atlantacongress.org
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Rodriguez et al , Tec Endovasc 2009