PROTAGORAS: Standarization of the chimney technique can improve the outcomes

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Disclosure

Speaker name:
......K. Donas.................................................................

I have the following potential conflicts of interest to report:

☑ Consulting

☐ Employment in industry

☐ Stockholder of a healthcare company

☐ Owner of a healthcare company

☐ Other(s)

☐ I do not have any potential conflict of interest
The PROTAGORAS study to evaluate the performance of the Endurant stent graft for patients with pararenal pathologic processes treated by the chimney/snorkel endovascular technique

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Objective: The chimney/snorkel endovascular aortic repair (ch-EVAR) is gaining ever-greater acceptance in the treatment of pararenal pathologic processes. However, the published experience includes mainly short-term clinical results with combinations of several abdominal devices and types of chimney grafts. The aim of this study was the midterm evaluation of the Endurant stent graft (Medtronic, Santa Rosa, Calif) as a standard abdominal device for ch-EVAR.

Methods: Between January 2009 and January 2013, prospectively collected data of high-risk patients with pararenal pathologic processes who underwent ch-EVAR with placement of the Endurant abdominal device were analyzed. The chimney graft intended for use was a balloon-expandable covered stent. Main outcome measures were aneurysm sac regression and chimney graft patency.

Results: A total of 187 snorkel/chimney grafts were successfully placed in 128 patients (mean age, 76.6 years). The technical success was 100%. The mean preoperative proximal neck length and aneurysm size were 4.7 mm and 64.8 mm (range, 48-135 mm), respectively. The postoperative new neck length after use of chimney grafts was 18.7 ± 6.3 mm. The mean aneurysm sac decreased significantly (60.8 mm; 95% confidence interval, 2.036-7.084; P = .001) after a mean radiologic follow up of 24.6 ± 17.4 months. Thirty-day mortality and midterm mortality were 0.8% and 17.2%, respectively. Two patients (1.6%) with single chimneys presented with late new onset of type la endoleak and underwent additional tube and multiple chimney placement. Primary chimney graft patency was 95.7%. Freedom from chimney graft-related reinterventions was 93.1%.

Conclusions: Standard use of the Endurant abdominal device for ch-EVAR in >120 patients is associated with high technical success, significant aneurysm sac regression, and low incidence of secondary procedures after 2-year radiologic follow-up. These results will give significant impetus to device selection, facilitating the standardization of technique. (J Vasc Surg 2016;63:1-7.)
The Chimney Technique in Endovascular Aortic Aneurysm Repair: Late Ruptures After Successful Single Renal Chimney Stent Grafts

Andrew Schiro,¹ George A. Antoniou,¹ David Ormesher,¹ Adam C. Pichel,² Finn Farquharson,¹ and Ferdinand Serracino-Inglott,¹,³ Manchester, United Kingdom


Critical analysis of results after chimney endovascular aortic aneurysm repair raises cause for concern

Salvatore T. Scali, MD, Robert J. Feezor, MD, Catherine K. Chang, MD, Alyson L. Waterman, MD, MPH, Scott A. Berceli, MD, PhD, Thomas S. Huber, MD, PhD, and Adam W. Beck, MD, Gainesville, Fla

What are the reasons for such divergent experiences?
What is the impact of devices combinations on ch-EVAR results?
NEED FOR EVALUATION OF CHIMNEY TECHNIQUE

EVALUATION OF BEST COMBINATIONS BETWEEN ABDOMINAL AND CHIMNEY GRAFTS
Symptomatic para-anastomotic aneurysm of 6.9 cm diameter
Chevar case

Preoperative CTA was used for the creation of a silicon model with a morphology similar with the anatomy of the treated case.
Connection of the silicon model with a **pulsatile pump unit** simulating blood flow
Fluid simulation system
Fluid simulation system

- The device can be exposed to **computed tomography** and offers the option for injection of contrast medium performing additional an **angiography (CTA)**
CT Angiography

Injection of contrast medium
Evaluation of different abdominal devices combinations with Advanta

- **Incraft** and Advanta V12
- **Endurant** and Advanta V12
Incraft and Advanta V12

Parallel configuration

Avg=692,93 HU  Min=352 HU  Max=1223 HU
Std.Dev=157,33 HU  Median=731,1 HU
17,10 mm² / 190 pixel
Endurant and **Advanta V12**
Evaluation of different chimney devices combinations with Endurant

- **Endurant** with self-expanding covered stents **(Viabahn)**
- **Endurant** with balloon expandable covered stents **(Begraft and Begraft plus)**
Endurant with Viabahn (lined with bare stents)
Endurant with *(Viabahn lined with bare stents)*
Endurant with **balloon expandable chimney grafts**

**Begraft**

**Begraft plus**
Impact of degree of aortic stent-graft oversizing
Endurant 15% OVERSIZING
Endurant 30% OVERSIZING
Synopsis

• First in vitro tests highlight the importance of chimney devices combinations and
• explain very well the variability of different results and experiences
Thank you very much

Research team
Project: “in vitro testing chimney endografting”

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