Hybrid repair for complicated chronic B dissection

Zoran Rancic, MD, PhD
Francesco Setacci, MD
on behalf of Vascular Specialists @ UHZ
Hybrid repair (Debranching)
HYBRID VISCERAL PROCEDURE

Thoracoabdominal and pararenal aortic aneurysms

Konstantinos P. Donas, MD, a Mario Lachat, MD, a Zoran Rancic, MD, a Christian Oberkofler, MD, a Thomas Pfammatter, MD, b Ivo Guber, MD, a Frank J. Veith, c and Dieter Mayer, MD, a Zurich, Switzerland; and Cleveland, Ohio

n=58 (74 years)
30-day mortality 8.6%

Results: Primary technical success of VORTEC was 97% during a mean follow-up of 22.1 months. Subgroups PAAAs and TAAAs was 97.7% and 96.4%. All occluded Viabahn grafts were reopened by thrombectomy. Thirty-day mortality rate was 8.6% (2 patients). A new neurologic deficit occurred in two cases (3.4%): paraplegia and as three patients presented early (30-day) type I endoleak and II endoleak, three of them treated by coil embolization and radiological surveillance.

Conclusion: VORTEC allows performance of easy, durable, and cost-effective aortic repair and may represent a significant technical advance in the treatment of this complex clinical entity. Whether the questions of reproducibility by other centers and long-term survival can be addressed by the starburst approach remains to be seen.

Fig. Primary cumulative patency rate of the Viabahn's endoprosthesis in patients with thoracoabdominal and juxtarenal aortic aneurysms over a mean follow-up period of 22.1 ± 12.9 months.
n=20
30-day mortality 7.6%

Novel sutureless telescopig anastomosis revascularization technique of supra-aortic vessels to simplify combined open endovascular procedures in the treatment of aortic arch pathologies

Rancic, MD,a Mario Lachat, MD,a Thomas Pfammatter, MD,b Veith, MD,c and Dieter Mayer, MD,a Zurich, Switzerland; Cleveland, Ohio, USA

Revascularization techniques that combine open and endovascular procedures through the use of a sutureless telescopig anastomosis, initially described as the TEEchtm technique, have been proposed for the treatment of aortic arch pathologies. Improvements in surgical and endovascular procedures have led to more widespread adoption of endovascular stent grafting. To simplify combined open endovascular procedures, we proposed and evaluated a novel sutureless telescopig anastomosis technique in patients with aortic arch lesions. A hybrid arch procedure was performed in 2008, 20 patients (15 men) with an aortic arch lesion underwent trans-sternal debranching with sutureless telescopig anastomosis performed with a Viabahn (diameter, 5-8 mm; length, 5-15 cm) or Hemobahn (diameter, 9-13 mm; length, 10-15 cm), followed by endovascular aneurysm repair. Initially, the Viabahn/Hemobahn was sutured to a feeding graft after deployment. Since 2008, the Viabahn/Hemobahn has been deployed within an interposition graft for treating patients with an underlying aortic pathology. In 10 patients, the underlying aortic pathology was (1) isolated aortic arch aneurysm in 10 patients, (2) ascending or descending aorta in 6, (3) floating thoracic thrombus within the aortic arch without aneurysm in 2, (4) aortic arch and innominate arteries in 2, and (5) Crawford II thoracoabdominal aortic aneurysm extending into the arch in 1. Follow-up included computed tomography angiography at 3 months and annually.

Results: Overall, 56 supra-aortic vessels in the 20 patients were revascularized by the hybrid procedure, including the carotid artery in 18, subclavian artery in 13, and left vertebral artery in 14. The mean ischemia time was 3 minutes (range, 1-9 minutes) for the debranching procedure and 1 minute (range, 0-9 minutes) for a conventional suture anastomosis. The 30-day mortality rate was 15% in 18 cases and 7.6% (1 of 12) in elective patients. Three patients (15%) had neurologic events in conventionally-sutured anastomosis territories. No early (<30 days) occlusion occurred. At a mean follow-up of ± 9 months (range, 1-39 months), one patient with Takayasu disease showed an endoleak that was surgically repaired. The implanted stent graft occluded the left common carotid artery. Stenosis of the aortic arch anastomosis was successfully treated by angioplasty and stent placement through the right brachial artery.

Conclusions: Sutureless telescopig anastomosis with a Viabahn or a Hemobahn in a hybrid arch procedure is a safe and reliable alternative to sutured anastomosis. It enables safe and fast access in an anatomically challenging situations, and requires a very short ischemia time. Questions about the technique reproducibility must be addressed. (J Vasc Surg 2010;51:836-41.)
Acute type A (De Bakey 1) AD
Ascending aorta replacement (2007)
24.8.2009
After arch repair and distal stureless telescoping aortic anastomosis
After arch repair and distal stentless telescoping aortic anastomosis

Surgical graft

26 months FUP
Management of distal tear
Tear exclusion
SG EIA-CIA
• Chronic type A (DeBakey I) AD

• 2000: Composite graft & ½Arch
  – CV and RV Malperfusion
    • Stroke, epilepsy
    • Bowel shortening
    • Acute/Chronic renal failure

• **2009: decline surgery**
  – Lost to follow-up
• Chronic type A (DeBakey I) AD

• 2000: Composite graft & ½Arch
  – CV and RV Malperfusion
    • Stroke, epilepsy
    • Bowel shortening
    • Acute/Chronic renal failure

• 2012: Symptomatic TAAA
  – Descending max TDM 92mm
• Chronic type A (DeBakey I) AD

• 2000: Composite graft & ½Arch
  – CV and RV Malperfusion
    • Stroke, epilepsy
    • Bowel shortening
    • Acute/Chronic renal failure

• 2012: «Symptomatic TAAA»
  – Descending max TDM 92mm
OPEN AND ENDOVASCULAR SA & RV DEBRANCING

Sympt TAAA
OPEN AND ENDOVASCULAR SA & RV DEBRANCHING

Asympt TAAA
OPEN AND ENDOVASCULAR SA & RV DEBRANCHING
OPEN AND ENDOVASCULAR SA & RV DEBRANCHING
OPEN AND ENDOVASCULAR SA & RV DEBRANCHING
OPEN AND Endovascular SA & RV Debranching
OPEN AND ENDOVASCULAR SA & RV DEBRANCHING
Full midline laparotomy

GHG (SMA)

VORTEC (CT)

Bending the needle
OPEN AND ENDOVASCULAR SA & RV DEBRANCHING
OPEN AND ENDOVASCULAR
SA & RV DEBRANCHING
TRJ 1943

• Chronic type A (DeBakey I) AD

• 1997: Ascending & hemiarch

• 2005: composite graft & arch replacement

• **Symptomatic TAAA**
  – Visceral aorta max DM 60mm
• Infrarenal Y graft
• Visceral debranching
  – SMA VORTEC
  – TC conventional
• Infrarenal Y graft
• Visceral debranching
  – SMA VORTEC

• TAAA EVAR
  – Renal periscopes (3)
• Infrarenal Y graft
• Visceral debranching
  – SMA VORTEC

• TAAA EVAR
  – Renal periscopes (3)

9 months FUP (Mai 2013)
22 months FUP (juni 2014)
Rationale for ≥2 procedures

• Reduce complexity of
  – Open surgery (HR)
  – (T)EVAR

• Renal protection
  – reduce amount of contrast (EVAR)

• «Reduces risk of paraplegia»
Results

• 36 patients
  – 15 PRAA, 11 TAAA, 4 Descending
  – 6 A&V
  – 5 B-Dissection

• 30d results
  – mortality: 3 deaths (9%)
    • 2x intestinal 1x respiratory and MOF
    • 1x B-dissection
Conclusion

• Hybrid Repair allows treating complexe aortic dissection
  – Unfortunately still quite invasive procedure
  – VORTEC and Gore Hybrid Graft facilitate challenging anastomosis

• Combined open/endovascular debranching
  – Promising new option
  – Allows staging complex aortic surgery
  – Allows addressing patients unfit for open surgery or EVAR
  – Reduces invasiveness of open surgery and complexity of EVAR
Limitations

- Diseased arch and branches