False Lumen Occlusion Techniques in CAD:
What is its role? How is it done?

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Disclosures

- Research-grants, travelling, proctoring, speaking-fees, IP with Cook.
- Discussion of investigational devices, which are not FDA-approved.
Open Surgery for CTBAD

19 studies, n=970, 58y mean age

- 30d mortality: 11%
- Stroke: 6%, SCI: 5%, CNI: 8%
- 3/10y survival: 74/50%
- Conclusion: “poorer compared to TEVAR”

Predictors of Outcome after Endovascular Repair for Chronic Type B Dissection

K. Mani, R.E. Clough, O.T.A. Lyons, R.E. Bell, T.W. Carrell, H.A. Zayed, M. Waltham, P.R. Taylor

Figure 5. Kaplan–Meier analysis of survival based on remodelling of the aorta after endovascular intervention for chronic type B dissection.

Mani et al. 2012; Eur J Vasc Endovasc Surg 43: 386-91
Failure to Remodel in Chronic Dissection

- Perfusion and pressure unchanged in false lumen
- Presence of Intercostals originating from false lumen
- False lumen back flow to Intercostals
- FL-TAA in 1/3 of TEVAR-patients!
FL-Aneurysm in Chronic AD

Long-Term Predictors of Descending Aorta Aneurysm Change in Patients With AD

Jong-Min Song, MD, PhD,* Sung-Doo Kim

Figure 1: Incidence of Distal Aorta Aneurysm

Incidences of aneurysm at the aortic arch; upper, mid, and lower descending thoracic aorta; and abdominal aorta in patients with type 1 and type 3 aortic dissection.

Song et al. 2007; JACC 50:799-804
Direct False Lumen Occlusion
Direct False Lumen Occlusion

- TEVAR-extension to CA
- Embolisation or Knickerbocker
- Separates aortic FL-compartments!
- Does not restrict further distal techniques like fenestrated EVAR
Open surgery in CTBAD reserved to good risk patients.

TEVAR in CTBAD fails in 1/3 of patients.

False lumen occlusion needed if proximal thoracic aorta expands or diameter requires immediate occlusion.
Filters, Balloons, Thrombin

2 Cases

1. FL-TAA-occlusion with:
   - 2 Greenfield filters
   - 6 detachable balloons
   - 5ml thrombin

2. FL-TAA-occlusion with:
   - 24mm Talent occluder

Loubert et al. 2003; J Endovasc Ther 10: 244-8
Coils, Plugs, Glue

Preop. CT

Intervention

Postop. CT
Outcomes after false lumen embolization with covered stent devices in chronic dissection

Jahanzaib Idrees, MD, Eric E. Roselli, MD, Susan Shafii, MD, Bruce W. Lytle, MD, Cleveland, Ohio

Maximum Diameter: 24 mm!

Candy-Plug

50mm

22mm Amplatzer plug II

22mm ZIP iliac-occluder

Kölbel et al. 2013; J Endovasc Ther 20: 484-9
Knickerbocker-Technique

Kölbel et al. 2014; J Endovasc Ther 21: 117-22
Knickerbocker-Technique

Kölbel et al. 2014; J Endovasc Ther 21: 117-22
Knickerbocker-Technique

Kölbel et al. 2014; J Endovasc Ther 21: 117-22
What Are The Complications?

- Risk for spinal cord ischemia:
  - Observation
  - SF-drainage
  - BP-control
  - 1 anecdotal case in ruptured CTBAd and surgeon-modified candyplug

Knickerbocker:

- Risk for FL-rupture:
  - 1 case: salvaged by additional coil and glue embolisation.
What Is The World Experience?

Recently collected data, all Cook-Medical CMDs

**Knickerbocker:**
- German Aortic Center Hamburg, Germany
- Fabio Verzini, University of Perugia, Italy
- Andrew Holden, Auckland City Hospital, New Zealand
- Carla van Rijswijk, Leiden UMC, Netherlands
- Anders Wanhainen, Uppsala University Hospital, Sweden

**Candyplug:**
- German Aortic Center Hamburg, Germany
- Matt Thompson, St. Georges Hospital London, Great Britain
- Joachim Florek, Helios-Klinikum Freital, Germany
- Hence Verhagen, Erasmus UMC Rotterdam, Netherlands
Candy-Plug

- N=18
- Technical success 18/18
- No rupture
- No SCI
- No mortality
- 3 reinterventions for continuous perfusion
- Secondary FL-thrombosis all patients
FL-Aneurysm in Chronic AD

N=100: 51 post TAAD; 49 TBAD

FU: 53±26 months: FL-Aneurysm

- Aortic arch 3%
- Upper desc. aorta 14%
- Mid desc. aorta 8%
- Lower desc. aorta 4%
- Abdominal aorta 3%

Song et al. 2007; JACC 50:799-804
fEVAR in Chronic Type B

Courtesy of Stephan Haulon, Lille
fEVAR in Chronic Type A/B

Outcomes of Fenestrated/Branched Endografting in Post-dissection Thoracoabdominal Aortic Aneurysms

K. Oikonomou, R. Kopp, A. Katsargyris, K. Pfister, E.L. Verhoeven, P. Kasprzak

*Department of Surgery, Division of Vascular Surgery, University Hospital Regensburg, Regensburg, Germany
*Department of Vascular and Endovascular Surgery, Paracelsus Medical University, Nürnberg, Germany

- 2010-2014
- N=31, 17 months FU
- 6 Type II EL; 6 type 1b EL
- 30d-mortality: 9.6%
- Technical success: 93.5%
- FL-thrombosis: 88%

Oikonomou et al. 2014; J Vasc Endovasc Surg 48: 641-8
Conclusion

- Tubular stent-graft sufficient in majority cases of TBAD.
- False lumen backflow limiting treatment success in chronic TBAD.
- Techniques for false-lumen embolisation:
  - Plugs, coils, glue
  - Candy-plug
  - Knickerbocker-technique
- World experience promising, but future role to be defined.