False Lumen Occlusion Techniques with TBADs:

- When are they needed?
- How are they done?
- What are the Complications?
- What is the World Experience?

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When/Why Are They Needed?

- Open surgery in CTAAD reserved to good risk patients.
- TEVAR in CTAAD fails in 1/3 of patients.

Open Surgery for CTBAD

- Open surgical repair for chronic type B aortic dissection: a systematic review
  - David H. Tian1, Renzhi P. Du2, Yu Wang3, Tianda D. You1
  - 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"

TEVAR in Chronic Type B

- Predictors of Outcome after Endovascular Repair for Chronic Type B Dissection
- False Lumen Perfusion
- No Aortic Remodelling
- Death

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

Disclosures

- Research-grants, traveling, proctoring, speaking-fees, IP with Cook.
- Discussion of investigational devices, which are not FDA-approved.
How Are They Done?

- TEVAR extension to CA
- Embolisation or Knickerbocker
- Separates aortic FL-compartments!
- Does not restrict further distal techniques like fenestrated EVAR

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

Preop. CT | Intervention | Postop. CT

Iliac Occluder

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


Maximum Diameter: 24mm!

Candy-Plug

22mm Ampatzer plug I + 22mm ZIP iliac-occluder

Kölbel et al. 2013; J Endovasc Ther 20: 484-9
What Are The Complications?

- Risk for spinal cord ischemia:
  - Observation
  - SF-drainage
  - BP-control
  - 1 anecdotal case in ruptured CTAAD 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

Knickerbocker-Technique
- N=16
- Technical success 15/16
- 1 rupture
- No SCI
- No mortality
- 4 reinterventions for continuous perfusion
- Secondary FL-thrombosis all patients

Candy-Plug
- N=18
- Technical success 18/18
- No rupture
- No SCI
- No mortality
- 3 reinterventions for continuous perfusion
- Secondary FL-thrombosis all patients

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.