STATE OF THE ART OF ENDOVASCULAR REPAIR OF EXTRACRANIAL CAROTID ANEURYSMAL DISEASE

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Disclosures

- On the speaker’s bureau for W.L. Gore, & Endologix, Medtronic, Volcano, Abbott Vascular, TriVascular
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Extracranial Carotid Artery Aneurysm

**Causes**

- Atherosclerosis
- FMD
- Trauma
- Previous surgery
- Infection

- Indication for repair
  - Symptoms and progressive enlargement
- **Surgical repair is technically difficult** when extension into the skull base. Higher incidence of cranial nerve injury is expected with surgery
Endovascular Approaches

- Bare metal stents and coil embolization of ECA
- BE and SE covered stents

Wallgraft®
Viabahn®
Fluency®
Several recent reports have raised awareness in the use of stent-grafts in extracranial carotid artery aneurysmal disease.


Eleven pts, with a mean age of 72 years (range 54-85) were treated between July 2002 and February 2014.

Presenting symptoms: dyspnea and/or dysphagia.

Diagnosis: carotid duplex or CTA.

Causes:
- Spontaneous pseudoaneurysms in 4 pts
- Previous CEA in 7 pts

Location:
- ICA in 5 pts and at the
- Bifurcation of CCA in 6 pt.

Mean diameter was 3.07 cm (range 0.6 cm - 6.0 cm).

Duration of symptoms: 15 months (mean) (range 6-60)
• **Anesthesia**
  - *Local anesthesia* 6 procedures
  - *General anesthesia* 5 procedures

**Approach**

• *FA perc.* 10 pts
• *Direct CCA access in 1 pt.* due to severe tortuosity of the aortic arch and the carotid artery
THI Experience with Endovascular Treatment of Carotid Pseudoaneurysms

Procedural Information

- All patients were treated with Viabahn® stent graft
- Two pts also had coil embolization & 2 pts had Amplatzer II Vascular Plug placement in the ECA, to prevent type 2 endoleak
Endovascular Repair with 5x50 mm Viabahn

Before

After

After
Endovascular Repair With ECA Coil Embolization and Viabahn Stent Graft

Before

ECA

After coils

After Viabahn

6x50 Viabahn

5 mm Gore CPD

7x50 Viabahn

Texas Heart Institute™
Endovascular Repair with 6 mm Amplatzer II Plug and 6x50&7x25 mm Viabahn
Aortic Arch Angiogram

Right Carotid Angiogram

Tortuous Anatomy!
Successful Endovascular Repair with 6x50 mm Viabahn
Unsuccessful Endovascular Procedure Due to Inability to Advance a Pipeline stent or Viabahn
Procedural Results

• Technical success was in 10 out of 11 cases
• No patient suffered neurological deficit during or after the procedure
• Post procedure, patients were maintained either on oral antiplatelet or oral anticoagulant therapy
Follow-up Results

• Duration of follow up: 9.5 months (mean) (range 2-30)

• All patients were symptom free without aneurysm enlargement determined by carotid angiography, CT or/or duplex scan

• Post procedure one patient developed type 2 endoleak after 13 months of follow up, requiring a secondary procedure with stent-graft placement in CCA

• One pt died of cardiac causes
Conclusions

- **Endovascular** treatment of **ECAA** offers minimally invasive alternative to open surgery.
- **Endografts** are preferred for management of extracranial fusiform and pseudoaneurysms.
- **Self-expandable stent graft** are more adequate for this location, where external compression might occur.
- **Further refinement in stent graft design** is needed with **tapered configurations, lower profile** and **more flexible delivery systems**.