Endovascular treatment of an internal carotid pseudoaneurysm in a seventeen year-old male

Heather L. Hauter\textsuperscript{2}; Frederico J. C. de Vasconcelos\textsuperscript{2}; Antônio M. Kambara\textsuperscript{1}; Samuel M. Moreira\textsuperscript{4}; Nilo M. Izukawa\textsuperscript{3}; José Júlio B. M. Filho\textsuperscript{2}; Bruno L. de Almeida\textsuperscript{4}; Thiago O. Rodrigues\textsuperscript{4}; Paschoal C. Miranda\textsuperscript{4}; Fábio H. Rossi\textsuperscript{4}

\textsuperscript{1} Chief of Radiology of the Instituto Dante Pazzanese de Cardiologia \textsuperscript{2} Medical resident of the Endovascular Intervention Center of the Instituto Dante Pazzanese de Cardiologia \textsuperscript{3} Chief of Vascular Surgery of the Instituto Dante Pazzanese de Cardiologia \textsuperscript{4} Vascular and Endovascular Surgeon of the Instituto Dante Pazzanese de Cardiologia
Disclosure

Speaker name: HEATHER LYNN HAUTER

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
Extracranial carotid artery aneurysms

- Rare - 0.4 - 4% of all peripheral aneurysms (1,2,3)
- Most common site: common carotid bifurcation and internal carotid artery
- True aneurysms and pseudoaneurysms
- Etiology: atherosclerosis, fibromuscular dysplasia, infections, connective tissue disease (true aneurysms) trauma and post-carotid endarterectomy with patching (pseudoaneurysms)⁴
- Ratio men: women - 2:1

Extracranial carotid artery aneurysms

• Treatment:
  - Proximal ligation (Sir Astley Cooper – 1808)
    (risk of stroke: 30-50%)
  - Resection and reconstruction (Dimtza – 1956)
    (open surgery – risk of stroke and mortality up to 9%)
  - Endovascular treatment

Case Report

- JLSS
- Male
- 17 years old
- Chief complaint: pulsatile mass on the right side of the neck 2 years after local trauma during a soccer match.
- No prior history of surgeries or diseases
- In use of aspirin 100mg/day
• Physical examination: no alterations upon examination of the heart, lungs or abdomen.

• Pulsatile mass located on the right side of the neck extending to the mandibular angle.
Pre-operative imaging

- Duplex ultrasound showed an aneurysmic dilation of the right internal carotid artery and bulb, measuring 3.74 cm at its largest diameter with velocity reduction and turbulence.
CT scan

Fusiform aneurysmatic dilation of the right proximal internal carotid artery, starting 2 cm from its origin, measuring 6.7 cm in extension and 4.0 cm at its largest diameter.
Endovascular Procedure

- Cannulation of the right carotid artery with a JR catheter telescoped in a 75cm Fargo Max 6Fr guide sheath.
- Placement of a 0.035 hydrophilic guide wire in the intracranial internal carotid artery and progression of the Fargo guide sheath.
• Exchange length THSCF guide positioned in the internal carotid artery
• Placement of the covered stent Viabahn (Gore) 7x150mm
• Post procedure: arterial blood pressure 130x87, HR: 68 bpm, no neurological deficits or complaints

• Discharged on the first day post procedure
• Ambulatory follow-up 15 days after procedure: neck mass reduction.
• Duplex ultrasound and CT scan ordered for postoperative control.
One year follow-up

- No neurological deficits, no complaints
- Duplex ultrasound showed patent stent graft
Discussion

- Open surgery – risks: neurologic dysfunction 4-17% and cranial nerve injury 5-40%.

- Endovascular treatment: avoids cervical dissection, reduces risk of peripheral nerve lesion.

- Brito, C; Cirurgia Vascular: cirurgia endovascular, angiologia. 3 ed. – Rio de Janeiro: Revinter, 2014
Clinical reports published in English (1995-2010)
- 13 studies included
- 224 patients
- 258 aneurysms (true:18 // pseudoaneurysms:240)

Etiology:
- trauma 50.9%
- endarterectomy 11.2%
- surgery and/or radiation for neck cancer 11.2%
- dissection 6.7%
- atherosclerosis 4.5%

Data of devices:
- **Covered stent**: 68.4%
- Bare stent: 31.6%
- **Brand of stents**: Wallstent 27.5%; Wallgraft 15.6%; Jostent 11.8%; Smart 9.5%; Viabahn 10.9% (..)
- Distal protection device: 2.3%

- Therapeutic success rate: 92.8%
- In-hospital mortality: 4.1%
- Incidence of stroke: 1.8%
- Cranial nerve injury: 0.5%
• www.carotidaneurysmregistry.com

• Project initiated by a team from the University Medical Center Utrecht - The Netherlands

• “Through this study, we wish to gain knowledge about the incidence of ECAA, diagnostic assessments, treatment indication, and treatment outcome.”
Conclusion

• Extracranial carotid aneurysms are uncommon and have a poor prognosis if left untreated.

• Endovascular intervention is a safe and effective option for the treatment of these aneurysms.

• More data is needed to assess natural history of these aneurysms and best treatment.
Bibliography

Endovascular treatment of an internal carotid pseudoaneurysm in a seventeen year-old male

Heather L. Hauter\textsuperscript{2}; Frederico J. C. de Vasconcelos\textsuperscript{2}; Antônio M. Kambara\textsuperscript{1}; Samuel M. Moreira\textsuperscript{4}; Nilo M. Izukawa\textsuperscript{3}; José Júlio B. M. Filho\textsuperscript{2}; Bruno L. de Almeida\textsuperscript{4}; Thiago O. Rodrigues\textsuperscript{4}; Paschoal C. Miranda\textsuperscript{4}; Fábio H. Rossi\textsuperscript{4}

1- Chief of Radiology of the Instituto Dante Pazzanese de Cardiologia 2- Medical resident of the Endovascular Intervention Center of the Instituto Dante Pazzanese de Cardiologia 3- Chief of Vascular Surgery of the Instituto Dante Pazzanese de Cardiologia 4- Vascular and Endovascular Surgeon of the Instituto Dante Pazzanese de Cardiologia