Use of Covered Stents for Carotid and Vertebral Artery Injuries, Patch and Tumor False Aneurysms and Blowouts: How to use Them Safely and Preliminary Results

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DISCLOSURES
• Physician Training Grants, Clinical Trials, Medical Advisory Boards
• WL Gore
• Boston Scientific
• Endologix
• Abbott Endovascular
• Bard

Rationale
While uncommon, management of acute arterial bleeding or prevention of hemorrhage for future operative resection of oncologic, iatrogenic or traumatic pathology involving the carotid and vertebral arteries can present a complex clinical dilemma.

Endovascular Management
Head and Neck Cancers and Traumatic Injuries

OPEN vs. ENDO
• Open approach may involve technical challenges for obtaining proximal and distal arterial control as well as limiting occlusion time and has been associated with significant morbidity and even mortality.
• Endovascular techniques including temporary balloon occlusion, coil embolization and covered stent placement may simplify the management of these patients while preserving patency of the internal carotid and vertebral arteries.

Management of Carotid and Vertebral Injury and Pathology
• Head and Neck Cancers
• AVF/AVM
• Carotid Blow Out (Treatment or Prevention)
• Traumatic Injuries
• Post Surgical or Intraoperative Bleeding
• Aneurysms and Pseudoaneurysms
Patch Aneurysms and Pseudoaneurysms

Carotid Blow Out
Technical Considerations
Initial Assessment

Duplex
CT
Angiography for Intervention
Anticoagulation
Identification of Source
Complete Arch and Cervico-cerebral vessel study prior to intervention if possible

Technical Considerations
Endografting the Carotid Artery

Anticoagulation
7 Fr 90 cm sheath advanced into the common using CAS techniques (allows 5mm-8mm self expanding graft)
0.14” 300cm embolic protection device is deployed in the distal segment of the internal carotid artery
External coil embolization – triaxial cath as needed

Technical Considerations
Endografting the Vertebral

• 6 Fr 90cm Sheath into Subclavian Artery
• 0.14 “ 300 cm Filter wire
• 5mm x 2.5 cm Viabahn
UTMB Experience with Covered stents in the Carotids and Vertebrals Aug 2007 – Aug 2016

<table>
<thead>
<tr>
<th>Traumatic injuries Carotid</th>
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<tbody>
<tr>
<td>Traumatic injuries Vertebral</td>
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<tr>
<td>Iatrogenic injuries Vertebral</td>
<td>2</td>
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<tr>
<td>Carotid aneurysms/pseudoaneurysms</td>
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<td>Bleeding Control for Head and Neck Malignancies</td>
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<td><strong>Total</strong></td>
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Results

- All patients had stents placed
- No intraoperative deaths
- One intraoperative stroke died in hospice 4mo post op
- One late asymptomatic occlusion at 2 years
- One recurrent bleeding - contralateral side embolized and stented
- One reoperation for in graft thrombus at 14 months treated with an additional stent
- 1 trauma death from other injuries

Conclusions

Endovascular control of hemorrhage from multiple etiologies using covered stents is effective.

This may be used either therapeutically or prophylactically to control bleeding.

Long-term efficacy of these interventions should continue to be monitored with regular follow-up.

References