Treatment of Intracranial Aneurysms Using the Low-profile Visualized Intraluminal Support Device: a Single Center Five-Year Experience

Poster ID: 41308
Sadrameli, S.S., Barber, S.M., Jenson, A.V., Britz, G.W., Diaz, O, Klucznik, R, Zhang, Y.J.

Houston Methodist Neurological Institute
Disclosure

• None
Introduction

• Low-profile Visualized Intraluminal Support (LVIS) devices are newly-developed, self-expandable, braided, high-porosity stents

• Approved for stent-assisted coil embolization of large to giant wide-necked intracranial aneurysms of the internal carotid artery.

• We report the radiographic and clinical outcomes seen with LVIS, LVIS Jr. and LVIS Blue at our institution over a five-year period.
Methods

• Retrospective review of patients with intracranial aneurysms treated by LVIS, LVIS Jr., and LVIS Blue technology

• Five-year period (2012 - 2017) at a single institution

• Exclusion criteria: stand-alone stent placement without coil embolization
Results

• Sixty-seven patients
  • 49 females and 18 males
  • Age 29 - 85

• Sixty-seven aneurysms treated with stent-assisted coil embolization
  • LVIS (N = 10)
  • LVIS Jr. (N = 46)
  • LVIS Blue (N = 11)
Results

• The most common location of treated aneurysms
  • Anterior communicating artery
  • Basilar tip
  • Internal carotid artery
  • Posterior communicating artery

• The majority of treated aneurysms were small
  • Mean dome size, 6.6mm
  • Mean neck size, 4 mm

<table>
<thead>
<tr>
<th>Aneurysm Location</th>
<th>Number (%)</th>
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</thead>
<tbody>
<tr>
<td>Ant. Communicating a.</td>
<td>24 (35.8%)</td>
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<tr>
<td>Basilar a. tip</td>
<td>9 (13.4%)</td>
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<tr>
<td>Internal Carotid a.</td>
<td>9 (13.4%)</td>
</tr>
<tr>
<td>Middle Cerebral a.</td>
<td>8 (11.9%)</td>
</tr>
<tr>
<td>Pericallosal a.</td>
<td>4 (6%)</td>
</tr>
<tr>
<td>Post Communicating a.</td>
<td>4 (6%)</td>
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</tbody>
</table>
Results

• The mean radiographic follow-up was 8 months.

• 91% of aneurysms completely occluded (Raymond-Roy class 1) immediately after embolization

• 97% completely occluded at latest radiographic follow-up.
Complications

• The stent failed to open completely in 5 patients (7.5%)
  • Balloon angioplasty (N = 3)
  • Stent recapture and use of another device (N = 2)

• Clinically significant complications occurred in four patients (6%)
  • Post-embolization infarct in 3 patients
  • Intraoperative perforation in a single patient requiring decompressive craniectomy.
Discussion

• Treatment of wide-neck, complex aneurysms is challenging and requires bridging of the neck by stents to reconstruct parent artery

• LVIS stents are self expanding wire stents designed for use with embolic coils

• Our experience with LVIS, LVIS Jr, and LVIS Blue stents imply effectiveness of treatment (97% total obliteration rate) and low complication rate of 6%
Summary

• LVIS is a safe, effective, and technically feasible treatment modality for wide-necked intracranial aneurysms

• It offers 91% and 97% total obliteration rate post embolization and at follow-up angiogram, respectively