Embolization Treatment For Splenic Artery Aneurysms: When, When Not, Technical Tips And Long-Term Results

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Disclosures:
In the past 12 months, my spouse or myself have engaged in financial relationships as follows:

• Consultant:
  – Boston Scientific, Medtronic, Abbott Vascular
• Advisory Board: Boston Scientific, Medtronic
• Clinical Events Committee: INTACT Vascular, Shockwave
• Speakers Bureau:
  – Boston Scientific, Penumbra, Medtronic, Cook, Endologix,
• Research Support
  – Philips Healthcare, Spectranetics, Terumo, BTG, Boston Scientific
Historical Perspective/Background

- 1770 – First Described by Beaussier
- 1954 – First Description of Surgical Technique by Williams, et al
- 1976 – Babb Establishes Treatment Guidelines
- 1997 – First Successful Laparoscopic Repair


Purpose

• Transcatheter coil embolization of splenic artery aneurysms
  – Minimally invasive treatment option
  – Prevents systemic pressurization and rupture

Technique

- Isolation Technique
  - Embolize Inflow and Outflow
  - Packing
  - Combination
Patients and Methods

• Patients
  – 17 yr experience (2002-2019)
  – n = 94 consecutive patients with true splenic aneurysms
    • 27 male, 67 female
    • Ages 24 – 89 years, mean 54 years

• Data
  ▪ Imaging
  ▪ Radiology reports
  ▪ EMR
  ▪ Office visits
Patients and Methods

- Surveillance Methods
  - CT Unacceptable – Artifact
  - 1 month, 6 months, 12 months, then annually

- MR Preferred
  - Platinum Coils Virtually Transparent
  - No susceptibility Artifact

1 month, 6 months, 12 months, then annually
Patients and Methods

- Retrospective review
  - Patient history
  - Aneurysm characteristics
  - Technical success
  - Re-intervention rate
- Complications
  - Splenic infarct
  - Aneurysm rupture
Results

• 110 SPLENIC ARTERY ANEURYSMS

<table>
<thead>
<tr>
<th>Location</th>
<th>#</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Proximal</td>
<td>47</td>
<td>42</td>
</tr>
<tr>
<td>Distal</td>
<td>38</td>
<td>34</td>
</tr>
<tr>
<td>Hilar/Parenchymal</td>
<td>25</td>
<td>24</td>
</tr>
</tbody>
</table>

- Size: 9 – 80mm, mean 24 mm
- 107 aneurysms coils alone
- 3 with coils and glue or gelfoam

Results

• Outcome
  – 100% technically successful
  – Follow-up imaging available in 92/94 (98%) patients.
Results

- **Outcome**
  - Reintervention was necessary in 4 (4%)
    - Persistent aneurysmal perfusion
    - No re-interventions since 2009
  - All re-interventions were successful
    - 1 with glue
    - 3 with additional coiling
Preservation of collateral circulation
Results

- Complications
  - 47 (50%) patients had any splenic infarcts
  - 3/92 had >50% splenic infarct

- 16/22 patients with severe portal hypertension with marked splenomegaly (p<0.05)
Results

- 100% freedom from aneurysm rupture at follow up
- (1-120 months, mean 28 months)
Conclusions

• Percutaneous transcatheter coil embolization of splenic artery aneurysms
  – Non-invasive
  – High technical success
  – Freedom from aneurysm rupture

- Major splenic infarcts rare
  - More often with portal hypertension
Thank You
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