Percutaneous Interventions on the HeRO Device: etiologies for graft dysfunction

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HeRO Device
- Hemodialysis Reliable Outflow (HeRO) Vascular Access Device (Hemosphere Inc, Minneapolis, Minn)
- FDA approved for use in patients with end stage renal disease who have exhausted all peripheral venous access.
  - Central venous pathology
  - No adequate vein for AVG/AVF

HeRO Device

HeRO components

AV graft dysfunction
- Venous anastomosis stenosis: #1 cause
- HeRO device: anastomosed to artery
- Outflow connected to 19F catheter: tip in RA
- No venous anastomosis
- What causes dysfunction?

Purpose
- To evaluate the etiology of thrombosed and abnormally functioning HeRO devices
Materials and Methods

- 50 patients underwent surgical HeRO device insertion between 02/06-10/10.
- Avg. age 55.8 (33-83)
- 25 different grafts referred for percutaneous intervention
- Total of 60 declots and 8 shuntograms during this time period.

Results

- First time thrombosis or dysfunction occurred on avg. 170 days (range 15-470 days)
- Median of 3 interventions per graft for a total of 68
- Technical success rate at restoring function was 100%

<table>
<thead>
<tr>
<th>Location of stenosis</th>
<th># unique grafts affected</th>
<th>Total # Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intragraft</td>
<td>20 (80%)</td>
<td>38</td>
</tr>
<tr>
<td>- Venous limb</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>- Port-coupler</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>- Midgraft</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>- Arterial limb</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Arterial anastomosis</td>
<td>6 (30%)</td>
<td>11</td>
</tr>
<tr>
<td>Native artery</td>
<td>2 (4%)</td>
<td>2</td>
</tr>
<tr>
<td>No lesion identified</td>
<td>11 (44%)</td>
<td>15</td>
</tr>
</tbody>
</table>

25 intervened upon HeRO's, 68 interventions

Results

- Uncommon causes included:
  - Fibrin sheath
  - Kinking of the venous limb of the graft
  - Catheter side-walled
  - Azygous stenosis.
HeRO Graft

- Conclusion:
  - Most common cause of HeRO graft thrombosis or dysfunction was an intragraft stenosis.
  - Percutaneous interventions were highly successful at restoring function.