Open Renal Revascularization Can Salvage Failed Renal PTAs and Stents and are Durable: Tips and Tricks

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I have no relevant financial relationships to disclose at this time

Background

- Surgical treatment of renal artery diseases changed with advent of PTA/stenting
- The need for open surgical reconstruction for stent failure has increased
- Operations can be challenging

Accepted Indications for Interventions

- Failure of medical therapy
- Accelerated, resistant, or malignant HTN
- Need to preserve or improve renal function
- Cardiac destabilization syndromes
- Potential loss of solitary kidney


Most Reconstructions done with Kidney In Situ

- Cold perfusion + topical slush
- Heel and toe suture facilitates anastomosis
- Extra-aortic inflow
- Renal vein clamped and small venotomy made
- Cold perfusion until effluent clear
- Periureteral tissue occluded with silastic loop
- Modification

- R ilio-renal bypass with bifurcated saphenous vein to primary branches
- Renal protection with modified ex-vivo technique

65 y/o woman with CHF and recurrent in-stent stenosis extending to the renal artery bifurcation of her solitary kidney

IVC
Iliac artery
66 y/o woman with failed right renal stents and high-grade in-stent stenosis left renal

- Calcified aorta
- Celiac artery stenosis
- Common iliac artery stenoses

Modified technique
- Reconstruction of primary R branches
- Suprarenal aortobifemoral renal bypass with pantaloon graft

Reconstruction with Ex-vivo Repair
- Rarely needed
- Kidney mobilized from Gerota’s fascia
- Ureter kept intact
- Cold perfusion solution and topical ice slush
- Allows for complex branch reconstruction

Open Renal Revascularizations 1998-2013

n = 878

Failed Endovascular Interventions*

Failed Endovascular Interventions: 825

- 53 Patients had 41 Arteries Reconstructed for Stent Failure*
- 26 Women, mean age 63 ± 10 years
- 12 solitary kidneys; 92% stage 3, 4 or 5 CKD
- Median follow-up 47 mos (range: 1-116)

Outcomes

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-hospital mortality*</td>
<td>2</td>
<td>5.4</td>
</tr>
<tr>
<td>Any morbidity</td>
<td>12</td>
<td>32.4</td>
</tr>
<tr>
<td>Temporary dialysis**</td>
<td>3</td>
<td>8.1</td>
</tr>
<tr>
<td>Permanent dialysis**</td>
<td>2</td>
<td>5.4</td>
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Concomitant aortic reconstruction resulted in 1 death and more complications (63% vs 28%, p=0.07) than isolated repair

*One death at 48 and 65 days after operation
**All with chronic kidney disease; 32 pts. had no renal function decline at 3 mos.

Overall Survival

Overall Survival: 85%
Primary Patency and Dialysis Free Survival

Summary

- Open surgical reconstruction for stent failure has become more complex
- Overall mortality and chronic renal failure rates approximately 5%
- Extra-aortic source of inflow should be considered
- Successful outcome dependent on careful operative planning and measures to minimize warm ischemia