Stay tuned…our webinar will begin shortly!
(Please note that your line has been muted.)

Market and Network Services Access Line

A new, one-stop, easy to use service dedicated for Case Managers, Medical Directors and Corporate Leaders who need assistance in referring patients to Cleveland Clinic, Main Campus. This line is open from 7am – 11pm, seven days a week.

216-738-5439
Robotic Partial Nephrectomy

A NEW ERA FOR NEPHRON SPARING SURGERY

Jihad H. Kaouk, MD
Associate Professor of Surgery
Director, Center For Laparoscopic and Robotic Surgery
Glickman Urologic and Kidney Institute
ROBOTIC PARTIAL NEPHRECTOMY

More intense compared to radical prostatectomy
More time sensitive
More demanding hemostatic techniques
Dependent on assistant
Need background in laparoscopy
ROBOTIC PARTIAL NEPHRECTOMY

Surgical Steps

1. Colon mobilization
2. Renal hilar preparation
3. Tumor Exposure / Ultrasound
4. Control of renal hilum
5. Tumor Excision
6. Suture repair of collecting system/ hemostasis
7. Tumor extraction / Exit
Port Placement
Port Placement

- Port in Port
- Quick conversion
- Interchange port for assistant or robot instrument
Robotic Partial Nephrectomy

• Renal Hilar Preparation
  – **Bulldog clamp:** Individual dissection of all arteries and veins
  – **Satinsky clamp:** Creating windows above and below the hilum
Renal Hilum Clamping
Satinsky clamp

Advantage

• Minimal dissection of renal hilum
• Robust Clamping
• Option of quick re clamping in case of emergency
Renal Hilum Clamping
Satinsky clamp

Disadvantage
• Addition of extra port
• Clashing with robot instruments
• Challenge of multiple vessels
Robotic Partial Nephrectomy

- Not too much tissue
- Avoid ureter
- No clips
- Include all vessels
- No movement
Robotic Partial Nephrectomy

Bulldog clamping
Left sided 2.3 cm anterior, interpolar, hilar renal mass

60 yo male
Prior right sided partial nephrectomy had been performed for a 4cm renal mass
Path: Clear Cell RCC
Computed Tomography
Colon Mobilization
Mobilization of the Ureter
Hilar Dissection
Defatting the Kidney
Tumor Demarcation
Hilar Occlusion
Tumor Excision
Reconstruction
Application of Hemostatic Agents Specimen Extraction

- Operative Time: 150 minutes
- Warm Ischemia: 24 minutes
- EBL: 50ml
- Path: Clear Cell 2.4 cm negative margins
- Stage: T1a
- Preop creatinine and GFR: 0.75 and 113
- Postop creatinine and GFR: 0.79 and 107
Right Sided Posterior Interpolar Mesophytic Hilar Mass

- 66 yo female with an incidentally discovered left sided renal mass
- PMH: HTN, GERD
- PSH: Bilateral Femoral Hernia Repair
- AVSS
- Physical Exam is WNL
- Creatinine: 1.80
- CT scan demonstrates a partially exophytic enhancing 2.5 x 2.2 x 1.9 cm in the posterior mid right kidney, which reaches the renal sinus.
Enhancing 2.5 x 2.2 x 1.9 cm in the posterior mid right kidney
Satinsky Occlusion
Deep Renorrhaphy
Placement of Bolster and Hemostatic Agents

- Operative Time: 180 minutes
- Estimated Blood Loss: 50 ml
- Warm Ischemia time: 15 minutes
- Size of Mass: 2.0 cm
- Staging: T1a, Margins -ve
- Path: Clear Renal Cell Carcinoma
- Length of stay: 4 days
Renal Reconstruction

- Pre-prepare your sutures
- Faster suturing skills
- One hand needle positioning
Incomplete Hilar Occlusion and Control

- 35 yo female presented with an incidentally discovered left sided interpolar 4.5 cm renal mass.
DO WE ALWAYS NEED TO CLAMP THE RENAL HILUM?

- Better Exposure
- Less bleeding
- Essential for deep or hilar tumors
- Warm ischemia time
Robotic Partial Nephrectomy
No clamping

- For selected cortical masses only
- Small margin may risk positive margin
- Generous margin risk deep cut in kidney and more bleeding
- NO WARM ISCHEMIA TIME
Robotic Partial Nephrectomy
No clamping

- Harmonic Scalpel effective for small cortical vessels
- Need Articulation for better surgical angles

TAKE YOUR TIME
Robotic Partial Nephrectomy
No clamping

• Surgical field may not be dry
• Depend on experienced bedside assistant
• Suction very important
• Hilum should always be ready for quick clamping if needed
Early Suturing Technique
### Robotic Partial Nephrectomy

#### Clamp vs Unclamp

**N=21**

<table>
<thead>
<tr>
<th></th>
<th>Clamped (n=12)</th>
<th>Unclamped (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td>58.5 ± 13.1</td>
<td>56.5 ± 14</td>
</tr>
<tr>
<td><strong>BMI (kg/m²)</strong></td>
<td>29.9 ± 7.0</td>
<td>28.5 ± 4.6</td>
</tr>
<tr>
<td><strong>Tumor size (cm)</strong></td>
<td>2.77 ± 0.9</td>
<td>2.37 ± 0.8</td>
</tr>
<tr>
<td><strong>EBL (cc)</strong></td>
<td>261 ± 152</td>
<td>375 ± 141</td>
</tr>
<tr>
<td><strong>OR time (min)</strong></td>
<td>197 ± 32</td>
<td>170 ± 25</td>
</tr>
<tr>
<td><strong>Warm Ischemia Time (min)</strong></td>
<td>26.7 ± 5.00</td>
<td>0</td>
</tr>
<tr>
<td><strong>LOS</strong></td>
<td>4.4 ± 2.1</td>
<td>4 ± 0.9</td>
</tr>
<tr>
<td><strong>Complications</strong></td>
<td>DVT (1), post op bleed (1), ileus (1)</td>
<td>Ileus (1), post op bleed (1)</td>
</tr>
<tr>
<td><strong>Transfusion (units)</strong></td>
<td>0.7 ± 1.9</td>
<td>0.33 ± 0.8</td>
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## ROBOTIC PARTIAL NEPHRECTOMY

### Cleveland Clinic Experience

<table>
<thead>
<tr>
<th>Demographic</th>
<th></th>
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<tbody>
<tr>
<td>Male/ Female</td>
<td>101/74</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>60.3</td>
</tr>
<tr>
<td>BMI(Kg/m2)</td>
<td>30.3</td>
</tr>
<tr>
<td>ASA</td>
<td>2.36</td>
</tr>
<tr>
<td>CCI</td>
<td>1.12</td>
</tr>
<tr>
<td>Tumor size (cm)</td>
<td>3</td>
</tr>
<tr>
<td>Solitary kidney (n)</td>
<td>2</td>
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</table>

RPN (n=175)
### Intraoperative Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>OR time (hrs)</td>
<td>182</td>
</tr>
<tr>
<td>WI time (mn)</td>
<td>17.5</td>
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<tr>
<td>EBL (cc)</td>
<td>293</td>
</tr>
<tr>
<td>Intraoperative Complications, n</td>
<td></td>
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<tr>
<td>- Transfusion</td>
<td>4</td>
</tr>
<tr>
<td>- Ileus</td>
<td>6</td>
</tr>
<tr>
<td>- DVT</td>
<td>5</td>
</tr>
<tr>
<td>Positive Margins</td>
<td>1 focally</td>
</tr>
</tbody>
</table>
## ROBOTIC PARTIAL NEPHRECTOMY

### Cleveland Clinic Experience

<table>
<thead>
<tr>
<th>Postoperative Data</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Selective Angioembolization</td>
<td>1</td>
</tr>
<tr>
<td>Conversion to open</td>
<td>0</td>
</tr>
<tr>
<td>Conversion to radical nephrectomy</td>
<td>0</td>
</tr>
<tr>
<td>F/u period</td>
<td>11 months</td>
</tr>
<tr>
<td>Local recurrence</td>
<td>0</td>
</tr>
<tr>
<td>Distant metastasis</td>
<td>1</td>
</tr>
<tr>
<td>Mean decrease in e GFR</td>
<td>7.9%</td>
</tr>
</tbody>
</table>
Single Port Partial Nephrectomy

2nd Annual Single-Port Laparoscopy, Robotics, and NOTES® Surgery
“A Multidisciplinary Hands-On Course”

May 14-15, 2010
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Thank you for participating in our webinar today!

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