Ninth European International Kidney Cancer Symposium

25-26 April 2014
The Convention Centre Dublin
with the Gibson Hotel
Dublin, Ireland

KidneyCancer.com
www.kidneycancersymposium.com
Is Robot-Assisted Partial Nephrectomy (RAPN) the New Standard for Treatment of SRMS?

Börje Ljungberg
Chairman, Professor of Urology,
Dept of Surgical and Perioperative Sciences
Umeå University Hospital
Sweden

Ljungberg KCA Dublin 2014
Questions for the patients

- Optimal Oncologic Result
- Good remnant renal function
- Few complications
- Low morbidity

Ljungberg KCA Dublin 2014
Nephron sparing surgery – strategy, Oncological Risks

• small RCCs can be locally aggressive and metastasize
  Guðmundsson, Eur Urol 2011

• NSS for patients with pT1a RCC shows similar oncological results as RN

• NSS for pT1b RCCs also shows similar oncological results as RN (in selected patients)
  Peycelon et al, J Urol 2009; Crépel et al, Urology 2010
Small Renal “Masses”- treatment strategy, renal function

- Concomitant diseases
- Conditions with impaired renal function/risk for impaired renal function in the future
- RCCs < 4 cm, having a “normal” contralateral kidney, 26% already have impaired glomerular filtration rates of < 60 ml/min/1,73m2, (diagnostic for stage 3 CKD)

Huang Lancet Oncol 2006

Ljungberg KCA Dublin 2014
Freedom from New Onset of GFR < 60 mL/min (per 1·72 m2), by NX type

Huang, WC, Lancet Oncol. 2006

Ljungberg KCA Dublin 2014
Adjusted Hazard Rates for Death from any Cause, Cardiovascular, and Hospitalization events, according to Estimated GFR (1,120,295 Adults)

<table>
<thead>
<tr>
<th>Estimated GFR</th>
<th>Death from Any Cause</th>
<th>Any Cardiovascular Event</th>
<th>Any Hospitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥60 ml/min/1.73 m²</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>45–59 ml/min/1.73 m²</td>
<td>1.2 (1.1–1.2)</td>
<td>1.4 (1.4–1.5)</td>
<td>1.1 (1.1–1.1)</td>
</tr>
<tr>
<td>30–44 ml/min/1.73 m²</td>
<td>1.8 (1.7–1.9)</td>
<td>2.0 (1.9–2.1)</td>
<td>1.5 (1.5–1.5)</td>
</tr>
<tr>
<td>15–29 ml/min/1.73 m²</td>
<td>3.2 (3.1–3.4)</td>
<td>2.8 (2.6–2.9)</td>
<td>2.1 (2.0–2.2)</td>
</tr>
<tr>
<td>&lt;15 ml/min/1.73 m²</td>
<td>5.9 (5.4–6.5)</td>
<td>3.4 (3.1–3.8)</td>
<td>3.1 (3.0–3.3)</td>
</tr>
</tbody>
</table>

Adjusted hazard ratio (95 percent confidence interval)

* The analyses were adjusted for age, sex, income, education, use or nonuse of dialysis, and the presence or absence of prior coronary heart disease, prior chronic heart failure, prior ischemic stroke or transient ischemic attack, prior peripheral arterial disease, diabetes mellitus, hypertension, dyslipidemia, cancer, a serum albumin level of 3.5 g per deciliter or less, dementia, cirrhosis or chronic liver disease, chronic lung disease, documented proteinuria, and prior hospitalizations.
Freedom from cardiovascular events and OS estimates according to PN or RN

Huang, J Urol. 2009

Each patient is compared with the survival of comparable individuals of the entire Swedish population
Nephron sparing surgery vs. Radical Nephrectomy

- Similar oncologic outcome using NSS vs. RN
- NSS save renal function
- But NSS is technically more demanding, more time-consuming, more complications?
- NSS Recommended by the EAU guidelines for SRM
NSS vs. total Nx for pT1a RCC, data from the Swedish National Kidney Cancer Register 2005 – 2012

Unpublished

Ljungberg KCA Dublin 2014
Quality parameters of NSS for patients

- Oncologic result – positive margins
- Warm ischemia time – remnant renal function
- Complications
- Morbidity – including hernia, bulging

Ljungberg KCA Dublin 2014
Lucas et al. Compared RAPN vs OPN

27 RAPN, 54 OPN (and 15 LPN) reviewed, matched for tumor size, nephrotomy score, and preoperative GFR

Operative time: OPN - 147 min vs RAPN - 190 min

WIT: OPN - 12 min vs RAPN - 25 min

Blood loss: OPN - 250 ml vs RAPN - 100 ml

LOS: OPN - 3.0 d vs RAPN - 2 d

Complications: no difference

Lucas SM et al. JSLS. 2012

Ljungberg KCA Dublin 2014
A Multicenter Matched-Pair Analysis Comparing 200 RAPN Vs. 200 OPN

- WIT: OPN 15 vs RAPN 19 min
- EBL: OPN 150 vs. RAPN 100 ml
- Postoperative complications: OPN 22% vs. RAPN 14%

- Intraoperative complication rate: similar
- Major complications (grade 3-4): similar
- OR time: No difference
- Positive margins: similar
- eGFR decline similar: OPN 16.6 group and RAPN 16.4

Ficarra BJU Int. 2013  Ljungberg KCA Dublin 2014
Perioperative outcomes of RAPN and OPN for moderately and highly complex renal lesions

Retrospectively compared 81 RAPN vs. 136 OPN

- **OPN** higher pathological stage and size (3.2 vs 4.1 cm)
- Change in GFR similar.
- Operative time: longer for RAPN (206 vs 190, OPN)
- Blood loss: RAPN (131 vs 257)
- Hospital stay: less in RAPN (3.7 vs 5.6)
- Complications: no difference
- Positive margins: similar

Simhan, J Urol. 2012
A Propensity-Score Matched Comparison of Perioperative and Early Renal Functional Outcomes of RAPN versus OPN

94 OPN matched to 51 RAPN adjusted for potential selection biases:
- RAPN offers comparable perioperative and early renal functional outcomes to OPN,
- RAPN with the advantage of improved postoperative pain and shorter LOS

Wu Z, PLoS One 2014
Ljungberg KCA DSimilar ublin 2014
Wu Z et al 2014, made a Systematic Review and Meta-Analysis of RAPN vs. OPN

<table>
<thead>
<tr>
<th></th>
<th>RAPN</th>
<th>757 pts</th>
<th>OPN</th>
<th>2661 pts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OR time</strong></td>
<td>+ 41 min (14 - 67)</td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td><strong>Periop. Compl.</strong></td>
<td>+</td>
<td>19.3%</td>
<td>29.5%</td>
<td></td>
</tr>
<tr>
<td><strong>LOS</strong></td>
<td>+</td>
<td>+2.8; (1.9-3.4)</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td><strong>Blood loss</strong></td>
<td>+</td>
<td>106; (37-176)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transfusions, conversion to RN, ischemia time and estimated GFR change, margin status</strong> – Similar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
With an increased interest toward RAPN and minimally invasive surgery

- The benefits must be weighed against WIT, positive margins and recurrent tumors, and postoperative bleeding
- The increase in the society's cost e.g. the net cost for instruments, the robotic platform and maintenance costs
- The overall need for an optimal partial nephrectomy in small renal tumors – more important than the technique

Ljungberg KCA Dublin 2014
Conclusions

High level evidence based data (RCT) are needed to recommend a specific technique.

Each approach to PN has its advantages and disadvantages, and continued effort must be applied to comparative effectiveness research for NSS in RCC.

Randomised trials are desirable.
No Robot-Assisted Partial Nephrectomy is not the New Standard for Treatment of SRMS?

RAPN is an optional treatment for patients with T1 RCC

NSS is the standard treatment for patients with T1 RCC, whenever technically feasible
Ninth European International Kidney Cancer Symposium

25-26 April 2014
The Convention Centre Dublin
with the Gibson Hotel
Dublin, Ireland

KidneyCancer.com

www.kidneycancersymposium.com