

## ENDOUROLOGY & LAPAROSCOPY

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### **Comparison of open and laparoscopic nephrectomy in obese and nonobese patients: outcomes stratified by body mass index**

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**Purpose:** Laparoscopic radical nephrectomy has been accepted as the preferred management for low stage renal masses not amenable to partial nephrectomy. Early in the mid 1990s several studies suggested that obesity should be a relative contraindication to laparoscopy. We present our surgical outcomes and complications in patients undergoing open and laparoscopic nephrectomy, stratified by body mass index. **Materials and Methods:** We retrospectively identified 88 patients, of whom 43 underwent open nephrectomy and 45 were treated laparoscopically. All patients were stratified by body mass index to compare multiple perioperative end points and pathological outcomes of laparoscopy.

**Results:** Overall our data showed that compared to open nephrectomy laparoscopic nephrectomy resulted in statistically significant lower estimated blood loss (147.95 vs. 640.48 cc,  $p < 0.0002$ ), operative time (156.11 vs. 198.95 minutes,  $p < 0.003$ ) and hospital stay (3.7 vs. 5.9 days,  $p < 0.004$ ). When stratified by body mass index less than 25, 25 to 29.9 and 30 kg/m<sup>2</sup> or greater, there was a statistically significant difference in estimated blood loss and hospital stay that was in favor of the laparoscopic approach in each body mass index category. Operative time did not show a statistical difference in the subgroups but all laparoscopic procedure times were shorter than open procedure times in each body mass index category. When patients with a body mass index of greater than 30 kg/m<sup>2</sup> were further subgrouped into 35 kg/m<sup>2</sup> or greater and 40 kg/m<sup>2</sup> or greater, there was a statistically significant difference in estimated blood loss and hospital stay that was again in favor of the laparoscopic method.

**Conclusions:** Laparoscopic radical nephrectomy is technically more challenging as body mass index increases due to many factors but our data show that it is feasible and safe in experienced hands. Laparoscopy appears to result in perioperative outcomes that are superior to those of open nephrectomy in this high risk population with a complication profile that is equivalent to that of the open method for each stratified body mass index category.

### **Editorial Comment**

Historically, obesity has been considered a relative contra-indication for laparoscopic surgery. Recently, experienced laparoscopic surgeons have demonstrated the benefits of laparoscopic approach, particularly on this population of patients.

The authors have demonstrated on this retrospective study that obese patients undergoing laparoscopic radical nephrectomy had less blood loss and decreased operative time than the cohort open nephrectomy patients. Moreover, the increase in operative time for the laparoscopic approach was calculated as 7.56 minutes per BMI in average, while the mean operative time difference was 38.9 minutes less than an open procedure. In conclusion, the laparoscopic approach has been shown to offer several advantages especially to the obese population.

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## **The impact of minimally invasive techniques on open partial nephrectomy: a 10-year single institutional experience**

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**Purpose:** With the advent of minimally invasive, nephron sparing surgical options we hypothesized that the indications, perioperative parameters and complication rates of open partial nephrectomy may have changed significantly during a 10-year period. **Materials and Methods:** Open partial nephrectomy was compared during 2, 3-year periods. From 1994 to 1996 (before laparoscopic partial nephrectomy, cryoablation and radio frequency ablation) 208 cases were compared vs. 347 open partial nephrectomies performed from 2004 to 2006 with regard to indications, perioperative parameters and complication rates.

**Results:** There were no significant differences between the groups with regard to age (59 vs. 58 years), gender (65.5% vs. 65.0% male) and tumor size (3.9 vs. 3.6 cm). Tumors removed in the recent era were more often in a solitary kidney (40.0% vs. 15.6%) and centrally located (55.6% vs. 37.3%), and pathological evaluation more often revealed higher grade (Fuhrman 3 or 4) (43.1% vs. 27.8%, each  $p < 0.0001$ ). Despite increased technical difficulty ischemia time in the more recent era was shorter (19.1 vs. 40.6 minutes,  $p = 0.0000$ ), and the urological and overall complication rates were statistically similar (7.5% vs. 8.9%,  $p = 0.6071$  and 19.1% vs. 14.4%,  $p = 0.1723$ , respectively).

**Conclusions:** At a tertiary referral center the introduction of minimally invasive, nephron sparing surgical techniques has drawn away less complicated, less aggressive tumors, reserving the bulk of more complicated central tumors for open partial nephrectomy without decreasing the total number of open cases. With experience these more difficult central tumors are being successfully treated with decreased warm ischemia time and complication rates that are comparable to those in historical series.

### **Editorial Comment**

This retrospective study demonstrated that the outcomes of the management of small renal masses in a high volume tertiary care institution were consistent when oncological principles were followed despite the different minimally invasive techniques were applied to treat these masses.

The open partial nephrectomies were reserved to manage more complicated central masses, while the laparoscopic approach allowed small masses to be managed with nephron-sparing techniques, including ablative technology.

The overall number of open procedures remained the same, as well as the level and number of complications for both open and minimally invasive approaches.

Once again, the authors demonstrated that when the basic oncological principles are followed and a systemic protocol evaluates patients for complex minimally invasive surgery, experienced surgeons could attain comparable results as historically established open surgery in a high volume tertiary care institution.

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