

ENDOUROLOGY & LAPAROSCOPY

Laparoscopic nephrectomy: assessment of morcellation versus intact specimen extraction on postoperative status

Hernandez F, Rha KH, Pinto PA, Kim FJ, Klicos N, Chan TY, Kavoussi LR, Jarrett TW
From the Departments of Urology and Pathology, The Johns Hopkins Medical Institutions, Baltimore, Maryland, USA

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Purpose: We compared pathological evaluation and postoperative recovery in patients undergoing transperitoneal laparoscopic nephrectomy at our institution with morcellated vs intact specimen extraction.

Materials and Methods: A prospective evaluation of 57 consecutive patients undergoing radical and simple transperitoneal laparoscopic nephrectomy was reviewed. One patient was excluded from study due to transitional cell carcinoma, which was detected intraoperatively. The 33 morcellated specimens were extracted at the umbilical port and the 23 intact specimens were extracted through a midline infraumbilical incision. Data were obtained on narcotic requirements, hospital stay, complications, estimated blood loss, mass size based on preoperative imaging, specimen weight and extraction incision length.

Results: Mean incision length in the morcellated and intact specimen removal groups was 1.2 and 7.1 cm, respectively ($p < 0.001$). No significant differences in pain or recovery were noted between the 2 groups. Two cases of microscopic invasion of the perinephric adipose tissue in the intact specimen group were up staged from clinical T1 to pT3a disease. No change in patient treatment was made based on this information.

Conclusions: We did not find a significant difference in surgical time, pain or hospital stay. Only incision length was statistically significant. Postoperative recovery appeared to be similar in these 2 groups. With modern imaging modalities information on pathological stage did not alter patient treatment.

Editorial Comment

Although prospective, this study was non-randomized. The authors report that “the decision to morcellate or perform intact extraction was based solely on patient preference”. There were some differences between the groups, including patients that were older (mean age of 54.6 vs. 61.5 years, $p = 0.03$) and larger (BMI of 31.7 vs. 27.9) in the morcellated group. The mean operative time was only 11 minutes longer in the morcellated group. Unfortunately, the authors did not report the operative time for extraction separately. It would have been informative to compare the operative time after complete dissection of the kidney, to determine if the longer extraction time in the morcellated group was outweighed by the longer time to close the incision in the intact extraction group. Entrapping a specimen in the Cook LapSac is a challenging task, which the authors appropriately bemoan in their discussion section, and I would think that in most surgeon’s hands it would take longer to entrap and morcellate a specimen than to close the 7.1 cm average incision for intact extraction. That the authors of this study managed to perform morecellation in only 11 minutes longer than they took to perform intact extraction, especially given the greater BMI in the morcellated group, is a testament to their skill. The major finding of this study is the lack of benefit in terms of patient convalescence in the morcellation group, despite the smaller incision. This leaves cosmetics as being the only advantage of morcellation. There are a number of potential advantages to intact extraction. With intact extraction, pathological staging is possible. There is a growing body of evidence, however, that there is little prognostic difference between clinical T1 renal cancers that are confirmed as pT1 and those that are upstaged to pT3a. In addition, there is concern that morcellation might increase the risk of port implantation. Fortunately, there have been only 3 reported cases of port site implantation of renal cell carcinoma, and 2 of them occurred after inappropriate blind morcellation in a plastic bag. My conclusion is that port site implantation is not a significant concern with renal cell carcinoma

and that there is minimal benefit to the pathological staging provided by intact extraction. Given this, and the findings of this study, the only difference between intact extraction and morcellation is improved cosmetics in the last. As such, I prefer morcellation unless the specimen is very large (> 750 grams), in which cases I use hand-assistance (and therefore intact extraction) to simplify dissection and entrapment.

Dr. J. Stuart Wolf Jr.

Associate Professor of Urology

University of Michigan

Ann Arbor, Michigan, USA

Prospective randomized comparative study of the effectiveness and safety of electrohydraulic and electromagnetic extracorporeal shock wave lithotriptors

Sheir KZ, Madbouly K, Elsobky E

From the Urology and Nephrology Center, Mansoura University, Mansoura, Egypt

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Purpose: We compared the efficacy of 2 shock wave energy sources, electrohydraulic (Dornier MFL 5000, Dornier MedTech, Wessling, Germany) and electromagnetic (DLS, Dornier Lithotripter S, Dornier MedTech), for the treatment of urinary calculi.

Materials and Methods: A prospective randomized study of 694 patients with urinary stones was conducted during 12 months to compare the efficacy of the 2 machines. Entrance criteria were radiopaque single or multiple stones at any location within the kidney or the ureter, 25 mm or smaller that had not previously been treated by any means. Patients with congenital anomalies were excluded from this study with all other contraindications for extracorporeal shock wave lithotripsy. Following lithotripsy a plain abdominal film and tomograms were done 1 week after each session to determine if there were residual stones and assess the need for re-treatment. Patients were evaluated 4 weeks after lithotripsy by plane abdominal x-ray and spiral computerized tomography. Success was defined as no residual stones. Univariate and multivariate statistical analyses were performed for different variables that may have an impact on the success rate, including the type of lithotripter. Comparisons of treatment parameters, complications and success rate for both lithotriptors were done.

Results: Of 9 variables examined with univariate analysis 6 had a significant impact on the success rate. Of these 4 maintained their statistical impact on multivariate analysis. These were side, site of the stones, renal morphology and type of lithotripter. Treatment time was significantly shortened for DLS (54 ± 32.9 minutes compared to 65.7 ± 44.7 for MFL, $p < 0.001$). The re-treatment rate was lower for DLS at 34% versus 51.6% for the MFL ($p < 0.001$). The overall success rate was 85.4%. It was 88.5% for DLS compared to 82.4% for MFL ($p = 0.03$). No statistically significant difference between the lithotriptors was noted for ureteral calculi ($p > 0.05$). The success rate was higher in the DLS group for renal stones especially lower caliceal and pyelic stones ($p < 0.05$). The success rate was higher in DLS group for stones 10 mm or smaller, 92.8% versus 85.3% for MFL ($p = 0.03$). The success rate was comparable in both groups for stones larger than 10 mm (81.8% for DLS versus 77.9% for MFL, $p > 0.05$). No statistically significant difference was found in the complication rate for the groups. Steinstrasse were noted in 4% of patients treated with MFL and 3% of those treated with DLS. Subcapsular hematomas were noted in 2 patients in each group. No procedures after extracorporeal shock wave lithotripsy were needed in either group.

Conclusions: The electromagnetic lithotripter (Dornier lithotripter S) has significant clinical advantages over the electrohydraulic lithotripter (Dornier MFL 5000) in terms of treatment time, re-treatment rate and success rate, although there is no difference in the complication rate.

Editorial Comment

As nice as it would be to conclude that this study provides definitive evidence with regards to one energy source over another, as the authors would like us to believe as suggested by their stress on the energy source rather than the particular lithotripter throughout the text, it does not do that. Other differences between the lithotriptors make this conclusion invalid. The focal zone is 224 mm² in the MFL and 175 mm² in the DLS. The number of shock wave delivered was not provided. One might conclude reasonably, however, that indeed the DLS is a better machine than the MFL – primarily owing to the lower retreatment rate. Since the MFL is no longer in production, this information is not all that useful. One finding in the study that is very useful, however, is the minimal (0.6 %) rate of hematoma formation overall, despite the use of sensitive CT scans for surveillance. Other studies have suggested that hematoma formation might be more frequent with either machine, and given the sensitive radiographic assessment in this study I find this reassuring.

Dr. J. Stuart Wolf Jr.
Associate Professor of Urology
University of Michigan
Ann Arbor, Michigan, USA

IMAGING

Multidetector CT angiography for preoperative evaluation of living laparoscopic kidney donors

Kawamoto S (1), Montgomery RA (2), Lawler LP (1), Horton KM (1), Fishman EK (1)

(1) The Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins Hospital, 601 N. Caroline St., Rm. 3254, Baltimore, MD, (2) Department of Surgery, Johns Hopkins Hospital, 600 N.

Wolfe St., Baltimore, Maryland, USA

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Purpose: The purpose of this study was to determine the accuracy of multidetector CT (MDCT) angiography as the primary imaging technique in the evaluation of living kidney donors.

Material and Methods: Seventy-four consecutive living kidney donors (30 men, 44 women; mean age, 41.7 years) who underwent MDCT were evaluated. CT examination was performed with 120 mL of IV contrast material at an injection rate of 3 mL/sec and a pitch of 6. In every case, arterial and venous phase volumetric data sets were acquired at 25 and 55 sec, respectively. Scans were reconstructed at 1-mm intervals for three-dimensional (3D) imaging using a volume-rendering technique. Axial CT images and 3D CT angiography were evaluated prospectively by one reviewer and retrospectively by two reviewers who had no knowledge of surgical results. Surgical correlation for the location of primary and accessory renal arteries, early branching of the renal arteries, and renal vein anomalies was made.

Results: Seventy-two subjects underwent left nephrectomy, and two subjects underwent right nephrectomy because supernumerary left renal arteries were detected on preoperative CT angiography. Eighteen supernumerary renal arteries (two arteries to 16 kidneys and three arteries to one kidney) to 74 kidneys underwent nephrectomy. CT and surgical findings agreed in 93% of subjects (the average of three reviewers; range, 89–97%). Two small accessory renal arteries were missed by all three reviewers. Those arteries were diminutive and were thought to be insignificant by the surgeons. Early branching of the renal arteries was shown in 14 arteries, and CT and surgical findings agreed in 96% (the average of three reviewers; range, 93–97%). Renal vein anomalies were present in eight subjects, and CT and surgical findings agreed in 99% of the cases (range, 96–100%).