Background: Percutaneous nephrolithotomy (PCNL) is performed on a routine basis for the rapid and efficient removal of large caliceal stones. After percutaneous puncture, rigid dilators or an inflatable balloon are used to dilate the nephrostomy tract to allow access to the collecting system for stone removal. Little is known of the acute impact of tract dilation procedures on renal function.
Materials and Methods: We compared renal hemodynamic and excretory function in female pigs immediately before and up to 5 hours after percutaneous nephrostomy (PCN) using sequential Amplatz dilators (N = 8) or Nephromax balloon inflation (N = 7) and control pigs with no PCN access (N = 8). We also examined renal function in patients undergoing PCNL.
Results: The two PCN procedures produced a renal lesion of comparable size and morphology, as well as similar changes in renal function. Glomerular filtration rate (GFR), renal plasma flow (RPF), and urinary sodium excretion (U(Na)V) were significantly reduced in Amplatz- and Nephromax-treated kidneys throughout the 5-hour observation period, by about 50%, 60%, and 80%, respectively. In control pigs, GFR and RPF remained stable and U(Na)V declined progressively to about 50% of baseline over the course of the experiment. The contralateral kidney showed changes in renal function similar to those in the PCN-treated or control kidney in all three groups. A retrospective analysis of 196 adults with normal renal function who underwent unilateral PCNL using the Nephromax balloon dilator revealed a significant increase in serum creatinine of 0.14 mg/dL at 1 day.
Conclusion: Both animal and human studies show that PCN is associated with an acute decline in renal function.

Editorial Comment
This study raises concern regarding transient decrease in ipsilateral and contralateral renal function during PCNL. The authors did not have a control group where percutaneous access was gained with a puncture needle, but the tract was not dilated. Such a group would help delineate whether the insult to the kidney leading to hemodynamic and functional changes is the percutaneous access or tract dilation. Renal obstruction may have confounded the results obtained during the evaluation period - it is possible that the 8F Cope catheter and ureter may have been blocked by clots associated with the tract dilation. Indeed the authors report a marked decrease in urine output in these animals, with 2 animals experiencing complete cessation of urine formation from the treated kidney. Future studies evaluating the relative changes in function with regards to maximum diameter of tract dilation may help support or refute the concept of a mini-PCNL. As such, these findings are critical for the practicing urologist to appreciate, as the impact on ipsilateral and contralateral renal filtration, perfusion and excretory function suggests a need to monitor the use of nephrotoxic medications, such as ketorolac or gentamycin, during the immediate post-PCNL period.

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ENDOUROLOGY & LAPAROSCOPY

Preoperative and Intraoperative Risk Factors for Side-Specific Positive Surgical Margins in Laparoscopic Radical Prostatectomy for Prostate Cancer

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Objectives: Identification of variables predicting positive surgical margins (PSMs) in patients undergoing laparoscopic radical prostatectomy (LRP) for clinically localized prostate cancer is lacking. Our objective was to determine preoperative risk factors and the association of ipsilateral degree of neurovascular bundle dissection (intraoperative factor) with side-specific PSMs in these patients.
Material and Methods: Between October 2002 and April 2005, one surgeon performed LRP on 407 previously untreated patients. Of 814 evaluable prostate sides, 728 harboured prostate cancer in the specimen and composed the study population. For each prostate side, we obtained clinical stage, biopsy Gleason, maximum percentage of tumour in the biopsy, suspected extracapsular extension (ECE) on endorectal coil magnetic resonance imaging (MRI), degree of neurovascular bundle (NVB) dissection, and PSMs. PSM was defined as cancer cells at the inked margins. Logistic regression analyses with random effects were generated.
Results: Of the 728 prostate sides with cancer, 51 (7%) had at least one PSM. In multivariable analysis, higher PSA (p=0.01), Gleason score of 7 compared with </=6 in the biopsy (p=0.04), lower prostate volume on MRI (p=0.01), and interfascial NVB dissection compared with intrafascial dissection (p=0.01) were associated with an increased risk of side-specific PSMs. Suspected ECE on MRI (p=0.9) and clinical stage (p=0.3) were not significantly associated with side-specific PSMs. A subset analysis of 321 patients with bilateral tumours did not show statistically significant differences in PSMs according to tumour side (p=0.3).
Conclusions: High serum prostate-specific antigen, biopsy Gleason score of 7, low prostate volume, and interfascial NVB dissection were independently associated with side-specific PSMs after LRP, and should be considered during planning of the LRP surgical strategy.

Editorial Comment
Preoperative PSA, clinical stage, and biopsy Gleason score can predict positive surgical margins preoperatively. Furthermore, a positive surgical margin has been shown to be associated with biochemical recurrence rates up to 50% at 10 years after radical prostatectomy. The authors present their experience in improving the surgical technique to optimize clinical outcome and survival. Their conclusion states that neurovascular bundle preservation is not a risk factor for increase rates of positive margins when the technique is applied adequately in selected patients. Other factors such as elevated serum PSA (> 10 ng/mL), small glands (< 30 g), biopsy Gleason scores of 7, degree of neurovascular bundle dissection, and presence of bulky disease should be considered by laparoscopic surgeons when planning the operation to decrease the incidence of positive surgical margins.

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Limitations of Laparoscopy for Bilateral Nephrectomy for Autosomal Dominant Polycystic Kidney Disease

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Purpose: We retrospectively studied outcomes following bilateral hand assisted laparoscopic nephrectomy.
Materials and Methods: We retrospectively reviewed the charts of 18 patients with symptomatic autosomal dominant polycystic kidney disease who underwent bilateral hand assisted laparoscopic nephrectomy.

Preoperative radiographic imaging was reviewed retrospectively to determine kidney size based on an ellipsoid shape. A visual analog pain scale with scores of 0 to 10 to assess pain related to autosomal dominant polycystic kidney disease was measured preoperatively and postoperatively.
Results: Average patient age was 48.2 years (range 30 to 64). Of the patients 14 successfully underwent bilateral hand assisted laparoscopic nephrectomy, while 4 required open conversion. A total of 16 patients underwent nephrectomy for pain and 2 underwent surgery for frequent recurrent symptomatic urinary tract infections. All patients except 1 underwent renal transplantation before bilateral nephrectomy. There was a significant difference in the volume of the right and left kidneys between the hand assisted laparoscopic and open groups (mean +/- SD 1,043 +/- 672 and 1,058 +/- 603.8 vs 4,052 +/- 548 and 3,592 +/- 1,752 cm (3), $p < 0.001$ and 0.06 respectively). There were 5 complications, including wound infection and protracted ileus in 2 patients each, and incisional hernia in 1. In addition, the difference in mean preoperative and postoperative visual analog pain scores was statistically significant (6.9, range 3 to 10 and 0.5, range 0 to 2, $p < 0.05$).
Conclusions: Bilateral laparoscopic hand assisted nephrectomy is a safe and reliable option in patients requiring removal of the 2 kidneys in a single setting. Rather than performing staged nephrectomies, hand assisted laparoscopic nephrectomy allows the single administration of general anesthesia and provides effective relief of bothersome symptoms in patients with symptomatic autosomal dominant polycystic kidney disease. This procedure is safe in patients with renal transplants. Patients with massive polycystic kidneys with a kidney volume of greater than 3,500 cc are at increased risk for open conversion and they may have improved outcomes if open nephrectomy is attempted from the outset.

Editorial Comment
The new era of minimally invasive surgery demonstrates the feasibility of bilateral nephrectomies performed laparoscopically. There are no more questions that patients recover faster with better outcomes than the open counterpart is. Moreover, this less invasive approach allows patients to undergo 2 procedures in one setting providing innumerous benefits to patients that in the past had to experience staged operations. The authors demonstrated limitations to the technique when the polycystic kidneys are massively large decreasing the working space.

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IMAGING

Conscious Sedation Reduces Distress in Children Undergoing Voiding Cystourethrography and Does Not Interfere With the Diagnosis of Vesicoureteric Reflux: A Randomized Controlled Study

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Objective: Voiding cystourethrography (VCU) is a distressing procedure for children. Conscious sedation using oral midazolam may reduce this distress, but its use may also alter the ability of the VCU to show vesicoureteric reflux (VUR). The objectives of our study were to assess the effectiveness of conscious sedation using oral midazolam when administered routinely in children undergoing VCU and to ensure that conscious sedation using oral midazolam does not alter the ability of VCU to show VUR.