STONE DISEASE

Miniperc? No, Thank You!

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Objectives: The aim of this retrospective study was to evaluate the results of our miniperc series through comparison with results from standard percutaneous nephrolithotomy (PNL) and tubeless PNL series in the treatment of stones < 2cm in diameter.
Patients and Methods: A total of 134 percutaneous treatments were performed for renal stones < 2cm in diameter. Among the treatments, 40 were minipercs, 67 were standard PNLs, and 27 were tubeless PNLs.
Results: Miniperc operative time was longer than that of standard PNL (155.5 vs 106.6 min, respectively) and tubeless PNL (95.9min). Conversely, there was an advantage for miniperc over standard PNL in terms of a significantly reduced hematocrit drop (4.49% vs 6.31%). No miniperc patients required blood transfusions, whereas two did in the standard PNL group and one in the tubeless PNL group. There was no statistical difference in terms of the amount of analgesics between the standard PNL and miniperc groups, although this difference was statistically significant between the miniperc and tubeless PNL groups (73.8 vs 41.1 mg, respectively). Hospitalization for the miniperc group was shorter than that required by the standard PNL group (3.05 vs 5.07 days), but tubeless PNL offered the best result (2.18 days). The stone-free rate was 100% in the tubeless PNL group, 94% in the standard PNL group, and 77.5% in the miniperc group.
Conclusions: Our retrospective study failed to demonstrate significant advantages of the miniperc technique. As such, we no longer perform miniperc but instead use tubeless PNL when possible.

Editorial Comment

As an early proponent of a mini-PCNL, the main advantage I anticipated with a mini-PCNL was a decrease in blood loss. Indeed, this hypothesis is supported by the current study. As it stands, decrease in blood loss would be an outcome worth striving for, yet not at the expense of lower stone-free rates. Improvements in instrumentation, in particular smaller ultrasonic devices, are needed to help raise the success rate of mini-PCNL to the expected standard. The issue of pain post-PCNL will be decided more by the size of tube than the size of tract - many studies now support the use of a small-bore or tubeless approach to minimize this aspect of PCNL-associated morbidity. As such, one might rephrase the title from “No, Thank You” to “Not Yet”. If the future brings improvement in instrumentation, one might anticipate that a tubeless mini-PCNL may resurface.

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Acute Effects of Percutaneous Tract Dilation on Renal Function and Structure

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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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