Editorial Comment

Surprisingly little progress has occurred in lithotripter technology over the last 2 decades, and even less has translated into improved clinical success. However, recent efforts have been underway to not only improve technological aspects of lithotripters but to optimize treatment parameters to improve the efficiency and success of stone fragmentation.

Zhou and colleagues compared the efficiency of in vitro fragmentation of stone phantoms with a Dornier HM3 lithotripter using 3 different strategies for administering output voltage: stepwise increase in voltage, stepwise decrease in voltage and constant voltage, with all strategies delivering approximately the same overall acoustic dose. Although initially, fragmentation efficiency correlated with shock wave dosage, ultimately comminution efficiency was greatest when output voltage was increased in a stepwise fashion compared with a strategy of decreasing or constant voltage. These finding are consistent with 2 synergistic processes of stone fragmentation, one based on stress waves that are thought to be pivotal in initial stone fragmentation, and one based on cavitation that is responsible for completion of fragmentation to small, passable pieces.

These findings have yet to be validated in an animal model or in the clinical realm; however, they suggest that a strategy of a stepwise incremental increase in shock wave voltage output may provide for more effective stone fragmentation while potentially reducing tissue injury. This is encouraging news; perhaps by slowing the rate of delivery of shock waves as suggested by a recent randomized trial and incrementally increasing the output voltage during SWL, stone free rates may be improved without further risking tissue injury and without the need for new lithotripter technology.

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ENDOUROLOGY & LAPAROSCOPY

Clinical utility of dual active deflection flexible ureteroscope during upper tract ureteropyeloscopy

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Objectives: To evaluate the clinical utility of a dual active deflection ACMI DUR-8 Elite ureteroscope in a referral endourology practice.

Methods: Retrospective chart review was performed on 54 consecutive patients who underwent flexible ureteroscopy by a single surgeon (S.Y.N.) from February to July 2003. Cases in which standard flexible ureteroscopes alone could complete the procedure, cases in which standard flexible ureteroscopy could not complete the procedure and the DUR-8 Elite ureteroscope did, and cases in which both ureteroscopes failed to complete the procedure were analyzed.

Results: A total of 54 procedures were performed on 37 patients. Three cases were not analyzed because they were distal ureter procedures. Of the remaining 51 procedures, 6 were removed from analysis because they were second-look procedures. When classified by diagnosis, 27 patients had stones (79.4%), 5 had cancer

(14.7%), and 1 had hematuria (2.9%). The global success rate was 91.1%. The average use rate of the DUR-8 was 28.9%, and the success rate using the DUR-8 Elite was 69.2% in those cases in which it was necessary. Of the 13 cases in which the DUR-8 was used, 61.5% were for lower pole pathologic findings. The DUR Elite use and success rate in the lower pole was 57.1% and 75%, respectively. A statistically significant association was found between the diagnosis and procedure location (P = 0.00128).

Conclusions: Our preliminary data indicate that the dual deflecting DUR-8 Elite ureteroscope may be helpful in cases in which the single deflection flexible instruments fail to access and treat upper urinary tract pathologic findings.

Editorial Comment

The second actively flexible portion of the ureteroscope used by the authors provides an additional 170 degrees of flexion in one direction. The authors clearly demonstrate the utility of this device in their hands. In almost 1/3 of cases, the authors had sub-optimal access with the standard (single actively flexible joint) ureteroscope, and the dual active deflection ACMI DUR-8 Elite ureteroscope was used. About half of the uses of the DUR-8 were for inability to access a calyx (usually lower pole), and about half were because even the 200 micron laser fiber restricted flexion of the standard ureteroscope and the extra flexion of the DUR-8 was needed. Overall, the DUR-8 was successful 2/3 of the time it was used. We have trialed the DUR-8 and other dual active deflection ureteroscopes at our institution but have not yet made a purchase. We have found that failure to access a calyx is uncommon with a good-condition single active deflection ureteroscope and patience. When access is not possible, stones can generally be moved with a nitinol tipless basket (which can get to a stone even when it can barely be seen through the ureteroscope). Moreover, with use of this stone displacement technique, stones in a location that push the limits of flexibility with the 200-micron laser fiber can be moved and addressed more effectively elsewhere. As such, we have less of a use for a dual active deflection ureteroscope than these authors do. That being said, in cases of tumor or large stones, where the lesions cannot be moved, these scopes would undoubtedly be of use. They probably do merit a place in the armamentarium of a busy endourologist.

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Laparoscopic versus open partial nephrectomy

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Objectives: To compare, retrospectively, the results of laparoscopic partial nephrectomy (LPN) to open partial nephrectomy (OPN) using a tumor size-matched cohort of patients. Limited data are available comparing LPN to OPN in the treatment of small renal tumors.

Methods: Between September 2000 and September 2003, 27 LPNs and 22 OPNs were performed to treat renal masses less than 4 cm. Patient demographics and tumor location and size (2.4 ± 1.0 cm versus 2.9 ± 0.9 cm, respectively; P = not statistically significant) were similar between the LPN and OPN groups.

Results: Although the mean operative time was longer in the LPN than in the OPN group (210 ± 76 minutes versus 144 ± 24 minutes; P <0.001), the blood loss was comparable between the two groups (250 ± 250 mL versus 334 ± 343 mL; P = not statistically significant). No blood transfusions were performed in either group. The hospital stay was significantly reduced after LPN compared with after OPN (2.9 ± 1.5 days versus 6.4 ± 1.8 days; P <0.0002), and the postoperative parenteral narcotic requirements were lower in the LPN group (mean morphine equivalent 43 ± 62 mg versus 187 ± 71 mg; P <0.02). Three complications occurred in each group. With LPN, no patient had positive margins or tumor recurrence. Also, direct financial analysis demonstrated lower total hospital costs after LPN ($4839 ± $1551 versus $6297 ± $2972; P <0.05).

Conclusions: LPN confers several benefits over OPN concerning patient convalescence and costs, despite prolonged resection times at our current phase of the learning curve. Long-term results on cancer control in patients treated with LPN continue to be assessed.

Editorial Comment

Laparoscopic nephron sparing surgery is here to stay! Although other comparative studies have been published, this study it notable for the remarkable similarity between the open and laparoscopic groups. The data suggest that the safety and efficacy of the laparoscopic procedure is equivalent to that of open surgery, with improved convalescence and reduced cost. In addition, the authors are not part of the original group that started performing this procedure in the mid-to-late 1990's. They are part of the second wave of skilled laparoscopic surgeons who have better training, have learned from the efforts of the pioneers, and have successfully incorporate laparoscopy into routine oncologic practice. At large centers with advanced laparoscopy, laparascopic partial nephrectomy is now the standard approach to all but the most central of small renal masses. The enthusiasm for the procedure must not overcome good surgical practice, however. The difficulty of laparascopic partial nephrectomy increases dramatically as tumors are deeper and more central. Each surgeon must establish individual "comfort zones" with the lesion that he or she can tackle laparoscopically. In the early experience at our own institution, we overestimated our technique after a series of challenging but successful cases - only to have some major hemorrhagic complications (the complication that typically rewards the overconfident surgeon in this procedure). We backed off, altered our technique, slowly advanced again, and are now routinely performing laparascopic partial nephrectomies that would have failed with our technique of only a year ago. Renal hilar clamping and laparoscopic suturing are, despite great efforts to simplify the technique, still required for deep resections with the current technology. There is great hope that future advances will reduce the technical requirements, and risk, of laparascopic partial nephrectomy.

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IMAGING

Comparison of 3 different methods of anesthesia before transrectal prostate biopsy: a prospective randomized trial

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