

STONE DISEASE

Frequency of Ureteroscope Damage Seen at a Tertiary Care Center

Carey RI, Gomez CS, Maurici G, Lynne CM, Leveillee RJ, Bird VG

Department of Urology, University of Miami and Jackson Memorial Hospital, Florida 33101, USA

J Urol. 2006; 176: 607-10

Purpose: There is controversy regarding ureteroscope durability. Little is known regarding the subsequent durability of a flexible ureteroscope after major damage has been incurred and the ureteroscope has been repaired. Maintenance and repair are associated with significant cost. We reviewed and assessed the frequency and cause of ureteroscope damage at our medical center.

Materials and Methods: From December 2001 we prospectively recorded the specific use of all ureteroscopes and any resultant damage at a single tertiary care institution. We then reviewed a total of 601 ureteroscopic cases involving 654 semirigid and flexible ureteroscope uses from December 2001 to November 2004. Cases were performed by multiple residents and fellows under the supervision of 3 attending urologists (CML, RJL and VGB). Retrograde and antegrade cases involving stones, urothelial carcinoma, strictures and diagnostic evaluations were included. Repairs for the respective ureteroscopes were performed by the original manufacturer.

Results: A total of 53 reports of damage (8.1% of total uses) were recorded. Major damage when the scope was deemed unusable and required repair was seen in 39 cases (6.0%). Four newly purchased flexible ureteroscopes were entered into the study and they provided 40 to 48 uses before the initial repair was needed. After these new ureteroscopes underwent comprehensive repair for major damage they averaged only 11.1 uses (median 8) before needing repair again. Older model ureteroscopes that underwent repair before being entered into our study averaged between 4.75 and 7.7 uses before being sent for subsequent repair. Of the total of 39 breakages 39 for which ureteroscopes were sent for repair 14 (35.9%) were the result of errant laser firing, 11 (28.2%) were the result of excessive torque, 8 (20.5%) were the result of decreased flexion in the distal tip or another loss of function without obvious iatrogenic cause, 3 (7.7%) were the result of multifocal catastrophic damage involving laser firing and excessive torque, and 3 (7.7%) were the result of cleaning and processing outside of the ureteroscopy suite.

Conclusions: The most important risk factors for predicting the number of uses expected from a ureteroscope at our institution is ureteroscope age and whether the ureteroscope has undergone comprehensive repair as the result of prior damage. Our analysis suggests that after damage occurs to a ureteroscope more damage occurs with greater frequency. The cost of maintaining previously used ureteroscopes should be carefully considered in comparison to the cost of purchasing a new ureteroscope.

Editorial Comment

This study supports the fragility of flexible ureteroscopes, though it suggests that newer generation endoscopes may be utilized for up to 48 procedures before requiring a major repair. The complexity of the case, need for treatment of the lower pole, use of holmium laser lithotripsy and patient anatomy are all important variables that determine the amount of stress placed on the ureteroscope during a procedure, therefore it is difficult to say whether 50 cases should be expected with a new ureteroscope. However, the most important observation from this study is that once a ureteroscope returns from a major repair, this refurbished endoscope is prone to breakage a second time, at a much more rapid rate – such that less than 10 cases can be expected. Evaluating the cost of

repair vs. purchase of a new scope it appears that the cost per case (US\$300 for a new scope, US\$536 for a refurbished scope) favors discarding the broken scope and starting afresh.

Dr. Manoj Monga
*Professor, Department of Urology
University of Minnesota
Edina, Minnesota, USA*

Endoscopically Guided Percutaneous Renal Access: “Seeing is Believing”

Khan F, Borin JF, Pearle MS, McDougall EM, Clayman RV
Department of Urology, University of California, Irvine, Orange, California 92868, USA
J Endourol. 2006; 20: 451-5

Image-guided percutaneous nephrostomy tube placement can be a challenging procedure, particularly in a nondilated system or in the morbidly obese patient. Herein, we report the routine use of ureteroscopy-guided percutaneous renal access. With this method, rapid, accurate creation and dilation of the nephrostomy tract is assured in all patients regardless of body habitus or stone burden.

Editorial Comment

Access is everything when it comes to percutaneous nephrolithotomy. Selecting the appropriate calyx, entering on the papillae, avoiding the infundibulum, gaining guidewire access down to the bladder, or better yet through-and-through from flank to urethral meatus are key steps that make or break the procedure. Traditionally we have relied on ultrasound or biplanar fluoroscopy to help guide renal access, and then experience, manipulation, torque catheters and a pinch of luck to get the guidewire down to the bladder.

The technique described in this study emphasizes the endoscopic skills inherent to urologists rather than the imaging skills more commonly found with radiologists. By observing the angle of entry of the access needle and advancement of the guidewire into the collecting system one can limit the opportunity for inaccurate or unsuccessful renal access. When we have utilized this technique, we grasp the guidewire with a 3-prong Triceps grasper (Boston Scientific) and pull it through the ureteral access sheath to gain through-and-through access.

When weighing the advantage of this technique against the added cost of flexible ureteroscopy with a ureteral access sheath, it is clear that this may not be needed for all cases; rather it may play a more important role in complex cases where ureteroscopic management or displacement of some of the stones may be needed. It may also be of particular important for a novice on the learning curve of gaining renal access. Also important to note is that it requires two experienced endoscopists – one at each end of the patient, therefore it may be a technique more suited for teaching environments.

Dr. Manoj Monga
*Professor, Department of Urology
University of Minnesota
Edina, Minnesota, USA*