Ureteroscopic management of ureteric stones - its efficacy and complications

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Abstract

Before the Extracorporeal Shockwave Lithotripsy (ESWL) and Ureteroscopy, open ureterolithotomy was the only technique available for ureteric stone removal. Ureteroscopic fragmentation and removal of stone have dramatically advanced the urologist's ability to render patients stone free with one procedure. Our Urology unit was established on 1st of March, 2005 and since then we have treated 25 patients with ureteric stones via ureteroscopic procedures. Altogether 27 procedures were performed because 2 patients had a repeated ureteroscopic procedures few months later. Nineteen patients were successfully treated ureteroscopically, 2 had cystolithotripsy instead as a result of migration of the stones into the bladder, 1 needed conversion to open ureterolithotomy because of physical restriction and 4 had uneventful ureteroscopy as the stones migrated up to the kidney and 1 had ureteric stricture dilated. Nine cases were stented with DJ stents for 1 case of perforation, 2 cases of mucosal trauma, 3 cases of stone migration upstream and 3 cases of residual stones. Ureteroscopic procedures are efficient as the primary management of ureteric stones because it is quick, less invasive than conventional open method and it renders patient stone free with one procedure most of the time. Our result shows that ureteroscopy is safe and the perforation rate

Introduction

Ureteroscopy is a minimally invasive surgery using an endoscopic technique where a surgeon passes a thin viewing instrument (ureteroscope) into the bladder and then up the ureter to the location of the ureteric or kidney stone. The kidney stone was then removed using forceps or basket while larger stones may need fragmentation before removal. Before Ureteroscopy and the Extracorporeal Shockwave Lithotripsy (ESWL), open ureterolithotomy was the only technique available for ureteric stone removal. And hence ureteroscopy fragmentation and removal of stones have dramatically advanced the urologist's ability to render patients stone free with one procedure only. Although more invasive than ESWL, ureteroscopy with small, rigid or flexible endoscopes is the most efficient technique for treatment and removal of ureteric stones (Grasso and Bagley, 1998). Patient desiring a single procedure with maximal efficacy should consider primary ureteroscopy.

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The idea of an endoscopic technique in urology was started by Hugh H.Young in 1912 when he passes a rigid cystoscope into a dilated ureter of a patient with posterior urethral valve. But it was not until 52 years later when a smaller fiberscope is introduced into the ureter to visualize the ureteric stone by Victor F.Marshall. There are more recent advancements since, such as the flexible ureteroscopes with Holmium Yag laser lithotriptors and the hopskins rod-lens system.

Materials and Methods

Our Urology Unit in the Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital was established on the 1st of March, 2005 and since then we have treated 25 patients (from 1/03/2005 – 12/01/2006) with ureteric stones via ureteroscopic procedures. We performed a retrospective search on these patients to evaluate the efficacy of the above method. There were 18 men and 7 women were treated with the age range between 31 – 71 years old (mean age 40.48). Out of which, 12 of them presented with lower ureteric stones, 6 middle ureteric stones, 3 upper ureteric stones, 1 multiple stones along the ureter (stainstrasse), 1 bladder stone, 1 ureteric stricture and 1 diagnostic ureteroscopy.

Results

Altogether 27 procedures were performed because 2 patients had a repeated ureteroscopic procedures few months later. And 19 were successfully treated ureteroscopically, 2 had cystolithotripsy instead as a result of migration of the stones into the bladder, 1 needed conversion to open ureterolithotomy because of physical restriction and 4 had uneventful ureteroscopy as the stones migrated up to the kidney and 1 had the ureteric stricture dilated. Nine cases were stented with Double-J stents for 1 case of perforation, 2 cases of mucosal trauma, 3 cases of stone migration upstream and 3 cases of residual stones. The only major complication we encountered was the 1 case of perforation which was safely and successfully stented.

Discussion

Our Retrospective study confirmed that ureteroscopic procedures are efficient as the primary treatment of ureteric stones and other pathology – 24/27 (88.89%). It is quick, less invasive than the conventional open method and it renders patient stone free with one procedure most of the time. Our results show that ureteroscopic procedure is safe and the perforation rate of 3.7% which is equivalent to other reported series (<5%).

Ureteroscopy has gained widespread use for diagnosis and treatment of diseases in the supravesical urinary tract. Diagnostic indications for ureteroscopy include:

- Evaluation of radiologic filling defect within the upper urinary tract
- Evaluation of haematuria arising frm the upper urinary tract
- Evaluation of unilateral positive cytology
- Surveillance of patients with upper tract urothelial malignancy treated endoscopically

While its therapeutic indications include:

- Fragmentation and extraction of stones
- Incision of ureteral or ureteropelvic strictures
- Ablation or resection of localized low-grade and low-stage urothelial malignancy
- Removal of foreign bodies located within the upper urinary tract

Figures 1-3 show some typical ureteric stones.

Figure 1. Left upper ureteric stone at the level of L2 transverse pro

Figure 2. A right ureteric stone at the level of L2 transverse process

Figure 3. A left vesicoureteric stones

There are complications arising from doing the procedure and these includes: ureteral perforation, ureteral stricture, submucosal or "lost" stones, ureteral false passage, ruptured balloon dilator, ureteral avulsion, bleeding and sepsis. However owing to smaller, less traumatic ureteroscopes, improved intracorporeal lithotriptors and better understanding of the principle of ureteroscopy, the number of complications from doing ureteroscopy and the management of ureteric stones have decreased steadily.

References

1. Walsh PC, Retik, AB, Vaughan ED, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA. 2002. Campbell's Urology. Saunders.