Ureteroscopy and Lithotripsy service in Patan Hospital

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ABSTRACT

Introduction: With advent of URSL (ureterorenoscopy and lithotripsy) and other minimally invasive technique viz; SWL (shock wave lithotripsy), PCNL (percutaneous nephrolithotomy), the urinary stones management has taken a giant leap to serve mankind. The aim of this study is to review a wide series of ureteral stones in which ureteroscopy combined with endoscopic lithotripsy was chosen as the first approach for the treatment of ureteral calculi and to study its diagnostic efficacy.

Methods: This is a retrospective study that was carried out in Patan Hospital from Feburary 2010 to Jan 2013. In all cases preoperatively intravenous urography, and a plain film of the urinary tract was taken before the procedure. The operations were carried out with the patient under general anesthesia. Rigid ureteroscopes and the pneumatic lithotripter were used. The fragments were extracted with forceps or baskets assisted with saline flush.

Results: We analyzed the result of URSL done in our hospital for variety of urology problem. We found age group 20-40, being the most common group to develop urinary calculus. Most of our patient had single stone of size >5mm. Upper ureter, mid ureter and distal ureter comprises of 4, 30 and 56 stone respectively. Our success rate of URS insertion is 96%(96/100) with complete stone fragmentation with expulsion of the fragments occurred in 97.8%(88/90). Our major perioperative complication were 3% without mortality.

Conclusion: URS is useful for diagnostic purpose & URSL is safe and treatment of choice for mid and lower ureteic calculus

Key Words: Lithotripsy, ureterorenoscopy, ureteric calculus.

ORIGINAL ARTICLE

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INTRODUCTION

Urolithiasis is a common disease affecting the population with a peak incidence around the third to fourth decade of life.[1] The lifetime risk of urolithiasis in the general population is approximately three times higher in men as compared to women. The prevalence of stone disease is increasing with increasing annual expenditure.[2] Socioeconomic status, environmental factors, genetic predisposition and certain metabolic disorders are some of the known risk factors of this disease.[3] Open surgical procedures for the treatment of ureteric stones have gradually disappeared in the last 30 years due to the emergence of increasingly efficacious minimally invasive techniques such as ESWL and ureteroscopy. The success rate following ureteroscopic management using different ureteroscopes and intracorporeal devices has been reported in the range of 86% to 100%.[4] Miniaturization of instruments has decreased the rate of serious complications such as ureteric perforation and development of stricture. The rate of ureteric perforation and stricture formation remains around 2% to 4% and 0% to 2% respectively following ureteroscopic management of ureteric calculi.[5]

METHODS

This is a retrospective study that was carried out in Patan Hospital from Feb 2010 to Jan 2013. Demographic data and data regarding urinary disease, number of stone its site and type of the procedure, were collected and analysed. In all cases preoperatively intravenous urography, urinalysis, and urine culture were done and gentamicin 160 mg intravenous was given as prophylactic antimicrobial therapy prior to surgery. A plain film of the urinary tract was taken before the procedure. The operations were carried out with the patient under general anesthesia. Rigid ureteroscopes and the pneumatic lithotripter were used. The fragments were extracted with forceps or baskets assisted with saline flush.

For URS insertion, guide wire was used in every case. For ureteric calculus, lithotripsy was carried out to fragment the stone into size equivalent to the diameter of the lithotripter tip approximately 1-2 mm size. Clearance of stone were checked with URS itself during the procedure and at 4weeks using X ray KUB . Double J stent were placed in selected cases.

RESULTS

All together 108 patient of ureteric calculus and other urological problem who underwent URS/L were analysed in the study. Out of which 8 patients were excluded due to unavailability of the required document. So, total of 100 patient were studied. The age range from 18 to 72 years with average of 32.5 years. The age group of 21-40 was the commonest with ureteric calculus. Male are quite predominant with 60% (60 patients) while female were 40%(40 patients). 40 patients underwent left sided URS/L, 54 patients on the right sided URS/L and 6 patients underwent bilateral URSL in the same setting. 56 patient underwent URS for lower ureteric calculus while 30 and 4 patient under went URS for mid and upper ureteric calculus respectively. Of the 100 patients 10 underwent URS for diagnostic evaluation for hydronephrosis of which 6 had ureteric stricture and 4 had normal

finding. Regarding the size of the calculus 16, 52 and 22 patients respectively had <5mm, 5-10mm & >10mm size stone. 8 patients had multiple stones while 82 patients had single stone. DJ stent were placed in 18 case (all the 10 case with hydronephrotic evaluation, 3 with proximal stone migration, 2 with ureteric perforation and 3 with severe mucosal edema secondary to stone impaction). URSL was failed in five patient including 3 with proximal stone migration and 2 with severe stenosis just distal to stone impaction site. All of these URSL failure were subjected to ESWL (in proximal migration of stone) and open ureterolithotomy (in two patient with stenosis distal to stone impaction). We had perioperative complications, two with ureteric perforation which was managed with DJ stent placement and conservative management. While the other one developed urosepsis which was managed with ICU care and antibiotics. 10 patients had hematuria, 38 had flank pain and 11 had urinary tract infection. All of them were managed conservatively. Patients without complications were discharge home on first post operative day.

DISCUSSION

Ureteroscopy is the most cost effective treatment strategy for ureteral stones at all location.[6] In morbidly obese patient with symptomatic stone, URSL is safe, successful and efficient with stone free rate 70% after initial procedure.[7] After the introduction of URSL in our hospital, all patient with mid to lower ureteric stone who consents to undergo URSL had been subjected to this procedure.

URSL is the first line therapy for ureteric stone in different part of the world with stone free rate more than 90%. In China, Chen QS et al analysed 515 cases undergone URSL and the got 97.2% of success. He concluded that the therapeutic effects of pneumatic lithotripsy through URS were reliable and safe in the treatment of ureteric stones, with rapid post operative recovery.[8] While in USA, Baglay DS et al got >90% of success rate of URSL in ureteric calculus, which is comparable to our 97.8% success rate. Zhong W et al used pneumatic lithotripter for 180 patients during URSL and got stone free rate of 93.3%, ureteric perforation of 3.3% and retreatment rate of 2.2%.[9] In Pakistan, Ather MH[10] got stone free rate of 85% with minor complication of 32%, while our peroperative complication rate were 3%. There is marked heterogeneity in the retreatment rate using different lithotriptors. Pearle[4] reported no retreatment rate in patients using the HM3 lithotriptor, while 5 patient in our study, were subjected to ESWL and open ureterolithotomy without retreatment with URSL again, which is comparable to the aforementioned study. Most patients required placement of DJ stents following ureteroscopy. This was routinely carried out in some studies[9] and selectively in others.[4] Similarly we placed double J stent in 18 of our patients. In one study the definition of auxiliary procedures was much broader and included flushing of ureters, Dormia basket extraction and administration of frusemide[11], which according to the American Urological Association guidelines would be considered as routine procedures for ureteroscopy. Similarly we also used dormia baketting and saline flush to retrieve stone fragment in our study.

CONCLUSION

Ureterolithotripsy by a pneumatic lithotripter is a minimally invasive, highly tolerable procedure with a low complication rate and short hospital stay when performed meticulously with pathology in urinary tract. Ureterorenoscopy and lithotripsy is the gold standard and well established procedure for ureteric calculus, mainly for lower and middle third region

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