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CONTENTS

Editorial

- Activities of Bangladesh Association of Urological Surgeons
Prof. M.A. Wahab

Original Articles

- Outcome of Radical Prostatectomy and Short Term Follow-Up Result in Localized Carcinoma of Prostate 1
MA Salam, MM Uddin, MS Islam, S Rahman, S Hasan, GM Maula, P Saha, R Abedin
- Does Residual Prostatic Weight Ratio Predict the Outcome After Transurethral Resection of Prostate for Benign Prostatic Hyperplasia? 7
MS Islam, AKMK Alam, MA Salam
- Comparison of Outcome of Ureteroscopic Lithotripsy with and Without Stents for the Management of Distal Ureteric Stone 12
MSA Chowdhury, AZMZ Hossain, M M Rahman, MS Alam, MM Rahman, TMS Hossain, MW Islam
- Expulsion Rate of Distal Ureteral and Juxtavesical Calculus with Tamsulosin - A Comparative Study 18
Ashraf Uddin Mallik

Review Article

- Progress in Urinary Stone Management in Bangladesh 21
AKM Anwarul Islam

Case Report

- Adenocarcinoma of Urinary Bladder: A Case Report 25
ATM Mowladad Chowdhury, AB Shahriar Ahmed, Nazimul Islam

- Abstract from Current Literature 26

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Summary
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(Table-1 near here)

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ACTIVITIES OF BANGLADESH ASSOCIATION OF UROLOGICAL SURGEONS

Bangladesh Association of Urological Surgeons (BAUS) was established in December 1988. There was only a handful of urologist in the country at that time. A committee was formed with Professor Md. Idris Lasker as the President and Professor M.A. Wahab as the general Secretary of the Association. Thus the BAUS was formed. Presently Professor AKM Anwarul Islam is the President of the Association with 112 members. The Association is closely associated with Asian, British, European, American and Indian Urological Societies and Association. The society was loaned with an idea to improve and organise the urological services, patients care, training and research in an orderly fashion, which were existing in a scattered fashion. Since then the Society regularly organizes programs to update the urological knowledge, skill and technology. The urologists specially the trainee urologists are given the opportunity to present their experiences, so that they can improve their skill of presentation, academic activities and research work.

The activities of BAUS are summarised below:

Monthly Clinical Meeting:

At the end of every month a clinical meeting is organized to discuss various aspects of Urology. All the urologists registered in the society (BAUS) as well as the post-graduate students in Urology course attend the meeting. Here the urologists get an opportunity to exchange their views. They can enrich their knowledge, get information about new techniques and opportunity to eliminate confusions. It is also a forum to discuss controversies in order to reach a general consensus suitable for our society.

Annual General Meeting with Scientific Seminar:

At the end of every year, BAUS holds its Annual General Meeting (AGM). In every two years new office bearers

of Executive Committee of the Association are elected the end of AGM. It has become a convention to hold a National Scientific Seminar in the year of election. The whole day long seminar precedes the AGM and election.

International Meeting:

The society also holds an International Conference in every two years. The objective of this meeting is to invite recognized faculties from different advanced centres in order to transfer technology. This meeting consists of live demonstrations including Endourology and Laparoscopic Urology workshop, video demonstrations of new urological techniques and plenary lectures of recognized faculties.

TWO successful International meetings were held in 1988 and 2000 respectively. The last meeting was dignified by the bright participation of Asian School of Urology, an educational body of the Urological Association of Asia.

Satellite Academic meetings in Peripheral Hospital:

Several meetings have been organized by the Association in peripheral hospitals Or hum the capital city. These meetings are attended by the practicing general surgeons and general practitioners. The aim of this meeting is to oiler orientation about the *common* urological problem, faced by different practitioners.

Journal:

Bangladesh Journal of Urology is the official Journal of the Association and is Published twice yearly. Various research activities, reviews, interesting case reports are regularly being published in the Journal.

Prof. M.A. Wahab

COMPARISON OF OUTCOME OF URETEROSCOPIC LITHOTRIPSY WITH AND WITHOUT STENTS FOR THE MANAGEMENT OF DISTAL URETERIC STONE

MSA CHOWDHURY¹, AZMZ HOSSAIN², M M RAHMAN³, MS ALAM¹, MM RAHMAN¹, TMS HOSSAIN¹, MW ISLAM¹

Abstract

Insertion of a ureteral stent is routinely done after ureteroscopic lithotripsy. Recently, several authors have questioned routine stenting after ureteroscopy for distal ureteric stones. We report our results comparing ureteroscopic lithotripsy with and without placement of stents for distal ureteral stones. In this prospective comparative study, 60 patients were selected. 30 of them were stented and rest 30 were non-stented. Patients were followed up at immediate post operative period, 3rd weeks and 3rd months. Patients were assessed for stone clearance, operative time, and stent related symptoms (haematuria, flank pain, lower abdominal pain, irritative bladder, symptoms, stent migration), hospital stay and risk of ureteral stricture formation. Baseline variables were not significantly different in two groups. The variables chosen to measure the outcome were haematuria, flank pain, lower abdominal pain, irritative bladder symptoms, operative time and hospital stay. All but lower abdominal pain responded significantly well in stented group. Mean operative time was much higher in stented group. These entire outcomes suggest that non-stented ureteroscopic lithotripsy is a better option than stented ureteroscopic lithotripsy for the management of uncomplicated distal ureteric stone.

Introduction

Distal ureteral calculi are a common urological problem often requiring surgical intervention. Ureteroscopy with or without the use of lithotrite for stone fragmentation is the preferred endourological treatment of distal ureteral calculi¹. Recently our interest is on how to decrease the morbidity of ureteroscopic lithotripsy further while maintaining efficacy. To date, the standard of care has been to place a ureteral stent at the end of ureteroscopic lithotripsy.

Stent use is thought to minimize post operative complications, including flank pain secondary to ureteral edema, ureteral stricture development and possibly aid with the passage of small stone fragments¹. Stenting may promote ureteral healing⁵.

However, the ureteral stent itself causes morbidity, including bladder irritation, loin pain, haematuria, infection, Pyelonephritis, encrustation, breakage and even stent migration, that requires subsequent surgical removal⁴. Stents need to be removed later on.

Very recently, urologists from various parts of the world and also in our country are on way to change traditional stented ureteroscopic lithotripsy to non- stented ureteroscopic lithotripsy.

No study has yet been done in Bangladesh to compare the result of ureteroscopic lithotripsy with & without ureteral stent for management of distal ureteral calculi.

Keeping this idea in mind this study has been designed to focus on the ureteroscopic lithotripsy without ureteral stent and to compare the outcome of ureteroscopic lithotripsy with ureteral stent for management of uncomplicated distal ureteral calculi.

Materials and Methods

This prospective, comparative clinical study was conducted in Dhaka Medical College Hospital. 60 patients were selected according to inclusion criteria with distal ureteric stone, age ranges between 18 to 70 years. Patients were excluded from the study if they had abnormal ureteral anatomy (may interfere selective operative procedure), long standing impacted stone, ureteral injury or perforation, previous ureteroscopy & failed for treatment of same stone, renal failure, solitary functioning kidney, pregnancy indwelling ureteral stent preoperatively, radiolucent stone (that made follow up by plain X-ray difficult). All the cases were evaluated by history, physical examination, urinalysis, ultrasonogram, S. Creatinine and IVU.

Patients were selected using purposive sampling method. Selected patients were numbered chronologically and odd number selected as Group-A (stented, n=30) and even number as Group-B (non-stented, n=30).

Cystoscopy followed by ureteroscopy (by semirigid ureteroscope), with the help of guide wire was done and

stone fragmentation done by pneumatic lithotripsy. In group- A patient D-J stent (6 Fr.) was placed under combined fluoroscopic and cystoscopic guidance. In group- B patient no stenting was done. In group-A patients D-J stents was removed after 3 weeks.

During post-operative period, all patients were followed properly for all outcome variables (haematuria, flank pain, lower abdominal pain, irritative bladder symptoms-dysuria, frequency, urgency, stent migration, ureteral stricture). Each of the patients was followed up at immediate post operative, three weeks (1st visit) and 3 months (2nd visit). The follow-up was done with strict adherence to the defined protocol

Data were collected of the variables of interest using a structural data collection format. Collected data were processed and analyzed using computer software SPSS-win-12 version (Statistical Package for Social Sciences). Student's t-test, chi-square test and Fisher's exact probability test were used to analyze the data. Significant value was determined at 0.05 levels.

Results

The findings of the study showed age and sex are almost identically distributed in both groups. The mean ages of Group-A and Group-B were 38.9+11.2 and 36.3+12.3 years respectively. A male predominance was observed in both groups with 56.7% male in Group-A and 70% in Group-B. Stone size was also observed identically in both groups. 46.7% of stone was smaller than 10 mm in Group-A and 43.3% stone was smaller than 10 mm in Group-B. Stone clearance rate was found 93.3% in group A and 96.7% in group B, which had no influence on outcome variables. None of other baseline variables found varied between groups.

Table I

Comparison of baseline characteristics between groups

Baseline characteristics	Group		p-value
	Group-A (n = 30)	Group-B (n = 30)	
Stone clearance	28(93.3)	29(96.7)	0.500
Associated UTI	2(6.7)	00	0.246
IVU excretion (delayed)	8(26.7)	8(26.7)	0.614
IVU PC system (dilated)	17(56.7)	18(60.0)	0.500
Operation time (minutes)	68.5 ± 11.8	43.2 ± 9.42	< 0.001

It was also observed statistically that mean operative time was much higher in group A (68.5 ± 11.8) minutes patients as compared to group B patients (43.2 ± 9.42) minutes.

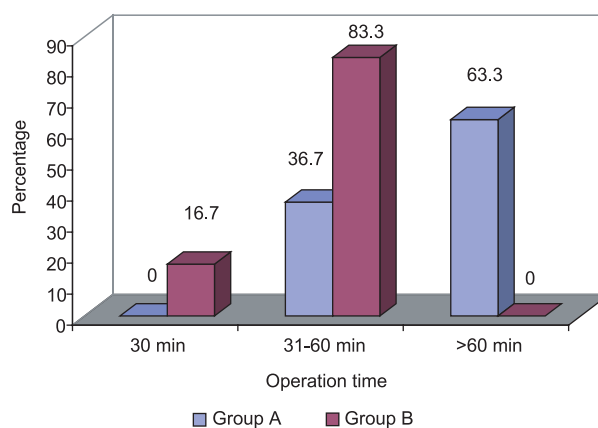


Fig.-1: Distribution of operation time

Immediate complications were higher in Group-A than those of Group-B. Haematuria in Group-A 50% compared to 6.7% in Group-B. Flank pain in Group-A was found 56.7% as opposed to 16.7% in Group-B. Lower abdominal pain in Group-A (33.3%) was observed to be more than 2 times higher than in Group-B (16.7%). Irritative bladder symptom was found in 66.7% in Group-A and 3.3% in Group B.

Table-II

Comparison of immediate outcome between groups

Variables	Group		p-value
	Group-A (n = 30)	Group-B (n = 30)	
Haematuria	15(50.0)	2(6.7)	< 0.001
Flank pain	17(56.7)	5(16.7)	0.001
Lower abdominal pain	10(33.3)	5(16.7)	0.136
Irritative bladder symptoms	20(66.7)	1(3.3)	< 0.001
Hospital stay (days)	4.0 ± 1.49	2.27 ± 0.45	< 0.001

More than 90% of patients of Group-B were released from the hospital within 3 days after operation, in contrast about 40% in Group-A left the hospital within 3 days.

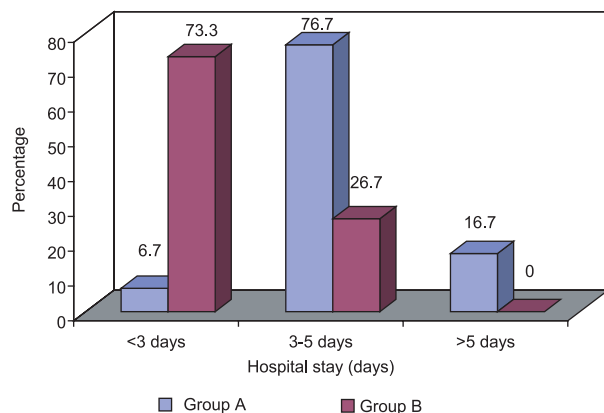


Fig-2: Distribution by hospital stay

Comparison after 3 weeks showed some differences (higher in Group-A) but that was not significant. Irritative bladder symptom was staggeringly less in Group-B, the rest of the outcome variable like haematuria, flank pain and lower abdominal pain were no different between groups in statistical term.

Table-III

Comparison of outcome after three weeks between groups

Variables	Group		p-value
	Group-A (n = 30)	Group-B (n = 30)	
Flank pain	5 (16.7)	3 (10.0)	0.353
Lower abdominal pain	5 (16.7)	2 (6.7)	0.212
Irritative bladder symptoms	6 (20.0)	1 (3.3)	0.051
Stent migration	1 (3.3)	00	0.500

Evaluation of the subjects three months after operation revealed that none of them in either group had any type of complaints. All the outcomes evaluated thus demonstrated that the non-stented group was better than the stented group.

Discussion

The present study has been designed to compare the outcome of ureteroscopic lithotripsy with and without stents for the management of distal ureteric stone. The findings derived from data analysis leaves some scope for discussion to arrive at a conclusion. All the variables of interest are discussed chronologically. Before comparing the outcome of interest, a statistical rigor demands that the groups should be comparable with respect to demographic and baseline characteristics that might influence outcome of treatment.

There was no significant difference observed between groups in terms of age and sex. Comparison of patient’s other baseline variables also had done, which might had influence the outcomes of intervention. Beyond stone size, the other variables chosen were stone clearance, associated urinary tract infection, renal function and condition of the pelvi-caliceal system and operative time. None of these variables except operative time was found to vary between two groups as evidenced by $p>0.05$. So, it is obviously seen that both group were almost identical.

Mean operative time was much higher in group A patients (68.5+11.8 minutes) as compared to Group B patients (43.2+9.42 minutes). Hollenbeck et al (2001) showed in a study that mean operation time 67.4 minutes in stented group and 46.4 minutes in non-stented group, which was very similar to the present study ($p<0.001$).

Byrne et al (2002) showed in a study that operative time was decreased in the no-stent group (43 minutes vs 55 minutes; $p= 0.013$). They concluded that ureteral stent placement following ureteroscopy may be avoided, thereby reducing operative time. So, it is likely to give us more perfect idea of safety and efficacy of intervention (stented ureteroscopic lithotripsy or non stented ureteroscopic lithotripsy).

Some of the immediate outcomes found in the present study considerably higher in Group A than those of Group B. In the present study, haematuria was observed in 15 (50%) cases of Group A compared to 2 (6.7%) cases in Group B which is highly significant ($p<0.001$). But it was not observed during second follow-up at 3 weeks. Urinalysis showed no proof of cystitis. Hence it might be concluded that stent was a cause of heamaturia in majority of cases. It is comparable to other studies. Heamaturia may be observed after D-J stenting.

In a study of 58 cases randomly divided into stented and non-stented group after URS for distal ureteric stones showed heamaturia in 16 (55%) cases in stented group whereas 1 (3%) in non-stented group⁴.

In the present study flank pain was observed in 17 patients in Group A and 5 patients in Group B. Flank pain is significantly higher ($P=0.001$) in Group A (56.7%) than in Group B (16.7%). In another study patients had statistically significantly more post-operative flank pain ($p= 0.005$) compared to those without stents¹. This study

was conducted among 113 patients with distal ureteral calculi amenable to ureteroscopic lithotripsy.

Jeong, et al., in 2004 showed unstented patients complained of flank pain as an immediate symptom, but this can be relieved with an oral analgesic and is only transient. They thought that routine stenting is unnecessary after uncomplicated ureteroscopic lithotripsy and it should be used selectively.

Lower abdominal pain in this study were 10 (33.3%) patients in Group-A (stented) and 5 (16.7%) in Group-B (non-stented) which was statistically non-significant ($p=0.136$).

In a study conducted among 113 patients with distal ureteral calculi amenable to ureteroscopic lithotripsy with stents had statistically significantly more post operative lower abdominal pain ($p<0.001$) compared to the unstented group¹.

Another study showed lower abdominal pain was significantly greater in stented group than non-stented group (mean score 3.5 vs 0.9; $p=0.001$)⁵.

Irritative bladder symptoms present in the present study were 66.7% (20) patients in Group A (stented) and 3.3% (1) in Group B (non-stented), which is statistically significant ($p<0.001$). Report is similar to the study conducted by Cheung et al (2003) and Chen, et al., 2002.

Present study compares the outcome 3 weeks after operation between groups. Irritative bladder symptoms was staggeringly less in the non-stented group than that of the stented group ($p=0.051$). Rests of the outcome variables like flank pain, lower abdominal pain and stent migration were no different between groups in statistical term ($p>0.05$). Non significant findings like above mentioned outcomes were also mentioned by Denstedt et al (2001).

In the present study 1 stent migrated (3.3 %). Stent migration is also a complication associated with indwelling ureteric stents. Faqih et al (1999) reported an incidence of stent migration of 3.7% cases. Ringel et al (2000) showed in study that stent migration was 8.2% patients. Although silicone stents have a lower risk of calcification, their smooth regular surface renders them susceptible to migration.

Evaluation of the subjects 3 months after operation revealed that none of them in either group had any type

of complaints. All the outcomes evaluated thus demonstrated that the non-stented group was better than the stented group. This inference is also supported by Denstedt et al (2001), and Chen et al (2002).

After 3 months patients were evaluated for ureteric stricture formation, none patient was found to have developed stricture formation. In a study of 48 patients undergoing ureteroscopy for distal ureteric stone, Srivastava et al (2003) has done radiologic follow-up at the end of 3 months. None of the patients had evidence of ureteral stricture formation.

A prospective nonrandomized study by Rane et al (2000) followed 27 patients without stents after distal ureteroscopy for stones. Post-operative imaging was performed in 94% of their patients with no evidence of ureteral stricture.

In a separate study involving 107 patients they found that those without stents not only had significantly less bladder pain, urinary symptoms and narcotic use post-operatively, but also had fewer flanks and over all pain compared to the stented group. Their present study allowed intra-operative distal ureteral dilation with balloon or tapered dilators.

More than 90% of patients of Group-B were released from the hospital within 3 days after operation, in contrast about 40% in Group-A left the hospital within 3 days. This difference in hospital stay was probably due to more complications in Group-A patients as compared to Group-B patients.

The other potential benefits to leaving patients without stents after ureteroscopy include cost savings, reduced operation time and avoidance of follow-up cystoscopy for stent removal¹. Although cost analysis was not performed for this clinical trial, a direct cost savings to the health care system would be anticipated by the decreased use of stents, balloon dilators, baskets-graspers and secondary procedures to remove the stent. Indirect cost savings in the form of patient time lost from work because of stent symptoms and return visits for stent removal would also be expected in the non-stented group⁵.

Although not evaluated in their present study the additional operating room time needed to place a ureteral stent had been shown by Cheung et al to average 11 minutes. Combining the cost of a stent and additional time required to place a stent, significant cost savings could be realized by leaving patients without stents.

The cost and inconvenience to the patient for follow-up office cystoscopy and stent removal if required, should also be considered. In addition, patients without stents are not exposed to the numerous potential risks that stents have been shown to be associated with, including migration, infections, pyelonephritis, breakage, encrustation and stone formation, all of which have potential additional costs^{1,9,10}.

A weakness in the study is that surgeons were aware of the randomization result, stent or no stent, at the beginning of the procedure. This knowledge may have introduced some bias, encouraging the surgeon to be less traumatic with unstents cases. Although the multi-institutional design was intended to allow the results to be generalizable, the majority of patients were from a single institution¹.

Based on their findings, Borboroglu and his colleagues, believe that a significant number of patients can be safe without receiving a ureteral stent after ureteroscopy for distal ureteral calculi, even those in whom intraoperative distal ureteral dilatation is used. However, common sense should prevail. They do not suggest that all patients be without stents after ureteroscopy¹.

As outcome is considered it is seen that both study group experienced a favourable outcome. However, in relative terms the outcome of Group-B was much better than that of Group-A.

Data required validation by other studies conducted around the world on the same issue. The present study is by far the first study conducted in Bangladesh.

Entire outcomes suggest that non-stented ureteroscopic lithotripsy is a better option than stented ureteroscopic lithotripsy for the management of uncomplicated distal ureteric stone by using ureteroscope.

Conclusion

Ureteroscopy is an accepted procedure for management of distal ureteric stone worldwide. To prevent the uncontrolled complications including flank pain secondary to ureteral edema, ureteral stricture development and easy passage of small stone fragments of ureteral stones, D-J stents has been being used for long time. But this fear of these complications was found unfounded. Avoiding stents may be particularly cost effective in developing countries.

This present study revealed nonstented ureteroscopic lithotripsy is better option for the management of uncomplicated distal ureteric stone by using semi rigid

ureteroscope, in term of less complications and less operation time.

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ORIGINAL ARTICLES

OUTCOME OF RADICAL PROSTATECTOMY AND SHORT TERM FOLLOW-UP RESULT IN LOCALIZED CARCINOMA OF PROSTATE

MA SALAM, MM UDDIN, MS ISLAM, S RAHMAN, S HASAN, GM MAULA, P SAHA, R ABEDIN

Abstract

Objective: To evaluate the result of retropubic radical prostatectomy performed for the localized carcinoma of the prostate at BSMMU and in a private medical institutions.

Patients and Methods: Between January 2000 to July 2007 one hundred and twenty four radical retropubic prostatectomy was performed in the university hospital & in a single private hospital by the same surgeon. Only patients with histological proven Carcinoma prostate stage B were included for radical prostatectomy. The patient was followed up at regular for IPSS score, PSA, Uroflowmetry, U/S scan with yearly bone scan and CT scan of the abdomen and the chest.

Results: The mean age was 54.5 years. Mean preoperative PSA was 13.5 and mean Gleason score was 5.8. Pre operatively all patients had low libido and significant erectile dysfunction. Mean operating time taken 1.5 hours. Mean operative blood loss was 250ml. Incontinence was observed in 15 (12.09%) patients in the immediate post operative period which was improved over the course of mean 3 months time in all the cases except one case who eventually recovered in 9 month time. Erectile dysfunction was present in 72 (58.06%) before the operation. All patient complained erectile dysfunction early post operative period. Out of 52 patient who were sexually potent before surgery they were evaluated by EF questioner 43 (82.69%) patients were satisfied with the sexual function at three months after surgery. 5 patients were not bothered for the ED. Rest of the patient was given sildenafil citrate 50 mg to 100 mg before sexual intercourse and all showed a good response. The mean follow up period was 48 months and found to have bladder neck stricture in 13 (10.48%) cases which was incised with urethrotome and was placed in self dilation programme. The margins of the resected specimen was found to be positive in 36 (29.03%) cases. All patients with margin positive for malignancy were placed on radiation therapy for effective control of local disease. In 76 (61.29%) cases lymphadenectomy was performed and out of these cases

18 (23.68%) cases was found to be positive. The quality of life was assessed in all patient and was found to be at a satisfactory level in all patients.

Conclusion: The challenges of incontinence and impotence were found to be overcome in radical retropubic prostatectomy for a localized carcinoma of prostate.

Key words: Radical prostatectomy out come

Introduction

The incidence of prostate cancer in Asia has been reported to be the lowest among the ethnic groups assessed¹⁻³. In Japan, the estimated number of deaths from prostate cancer is relatively low, but has increased steadily, from 1736 in 1980 to 6006 in 1996². The age-adjusted death rate per 100 000 people almost doubled (from 4.4 to 8.2) during the same period. In 1996, prostate cancer was the ninth leading cause of cancer death among Japanese men. In recent years, increased screening for prostate cancer, primarily with PSA testing, has led to an increase in the apparent incidence of prostate cancer, and resulted in a shift to an earlier age and stage at diagnosis, a trend similar to that in the USA and European countries^{1,2}. To our knowledge, no definitive data from a large patient population have been reported from Asian countries. Independent knowledge of the true complications of a contemporary series of anatomical RRP is essential, especially when decision-analysis models are to be applied effectively to the problem of managing early-stage prostate cancer in each country. Thus we evaluated time trends, morbidity and mortality of contemporary anatomical RRP in a multi-institutional study in Japan^{1,3}. Radical retropubic prostatectomy is currently the most widely used surgical treatment for localized prostate cancer. This procedure has developed technically over the last 20 years, reducing dramatically the associated complications and morbidity, e.g. blood loss, incontinence and impotence. Currently the operation is safe and is the best choice for eradicating localized disease, with little loss in quality of life. Currently this procedure is performed by laparoscopic technique. Oncological principle can be maintained with this procedure and gradually the

technique is popularized in most of the advanced center of urology. Recently the radical prostatectomy is performed with Da Vinci system, a robotic assisted technology which overcomes many technical challenges related to the conventional procedure. But still the robotic assisted technology is too far from the developing world because of the high cost. For the centers where these technology is not available yet, the standard retropubic radical prostatectomy is still continue to be the old and gold standard procedure.

Radical retropubic prostatectomy (RRP) is one of the major forms of therapy for localized prostate cancer; through better anatomical descriptions of the procedure the morbidity has dramatically decreased. However, incontinence continues to be a significant morbidity in these patients⁴. Other series with patients operated at other academic institutions indicate that nearly 30% of men wear pads or other devices to deal with incontinence after RRP. The incidence of incontinence is much reduced after introduction of improved techniques and modifications of the surgical technique. Some of the variance in the reported incidence may be related to the definition of incontinence, while other reasons may include patient rather physician reported assessments of incontinence.

Sexual dysfunction associated with radical retropubic prostatectomy (RRP) may start before the surgery. Men undergoing RRP frequently have some degree of sexual dysfunction. In addition to the psychological stress of the diagnosis, the biopsy may itself have a detrimental effect. After surgery, all men will experience loss of ejaculate, because the organ responsible for ejaculate has been removed. Orgasm quality is adversely affected in many men. Erectile dysfunction is immediate and recovery from it is slow. Initially, phosphodiesterase (PDE)-5 inhibitors do not work, and they take up to 18 months for their effect to be maximized. Younger men who have had bilateral nerve-sparing procedures respond the best. Combination treatment with prostaglandin E1

or high-dose PDE-5 inhibitors may provide salvage therapy when initial PDE-5 inhibitor therapy has failed¹⁴.

Many published series have reported different factors that might be important in incontinence after RRP. These include: membranous urethral length, bladder neck preservation, pubo prostatic ligament (PPL) sparing, patient age, cavernous nerve sparing, seminal vesicle (SV) sparing, intussusceptions of the bladder neck, and control of the deep dorsal vein. None of these methods has been completely successful in eliminating incontinence. We perofomed a combination of sequential, critical and technical steps in the Retropubic prostatectomy with posterior bladder neck placation technique. We think this may leads to faster recovery of continence.

Patients and Methods

Between June 1999 and July 2007 one surgeon operated on 124 consecutive patients who underwent RRP for clinically localized prostate cancer in two hospitals. The patients were evaluated carefully to confirm the staging of the prostate cancer. Ultrasound scan, CT scan of the abdomen and chest were routinely performed. Digital guided 10 core biopsy were performed in early part of the study but the procedure was replaced with 12 core biopsy under transrectal ultrasound guided biopsy with a BARD biopty Gun.

The retropubic space is opened up through a suitable incision (8-10cm lower midline incision form below the umbilicus to the pubic symphysis or a Pfannenstiel incision) and the structures were displayed clearly. After incising the endopelvic fascia, the exposed fibers of the levator muscles are gently dissected off the sides of the prostate with careful blunt and sharp dissection. A plane is developed between the urethra and the dorsal vein complex. The dorsal vein complex is now ligated with #02 Dexon /Vicryl. Next, the dorsal vein complex is divided. This may follow a brisk bleeding from the dorsal venous complex which can be easily controlled with a

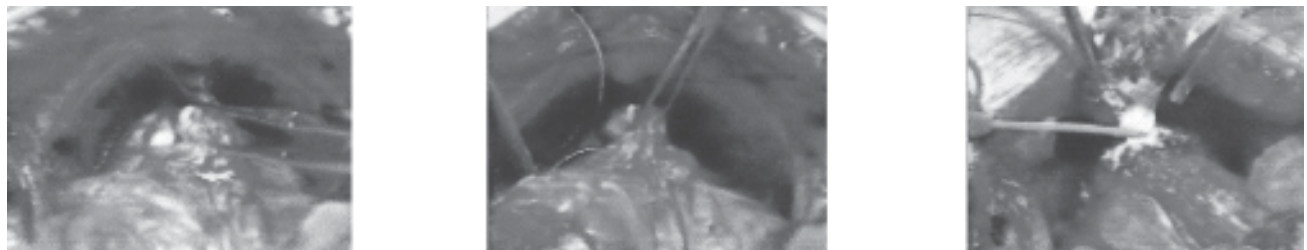


Fig.-1: Control of Dorsal Venous Complex by suture ligation and division

running 3-0 dexion or vicryl suture. This allows for a relatively bloodless field with excellent visualization of the rhabdo sphincter, urethra and prostatic apex.

The anterior aspect of membranous urethra is incised with a number 15 blade over the catheter, exposing the urinary catheter. The catheter is lifted out of the urethrotomy and then divided at its most distal portion between two clamps. The most distal clamp is held under tension, thereby exposing the posterior aspect of membranous urethra, which is then incised sharply. If the nerves are to be spared (based on a preoperative pathological assessment) the fascia overlying the prostate is then removed high and laterally with a fine scissor dissection and the neurovascular bundle pushed posteriorly off the prostate. The recto urethralis and Denonvilliers fascia are separated sharply and a plane developed between the posterior prostate and the rectum. The lateral pedicle is taken between right angle clamps above the neurovascular bundles when the nerves are spared.

The Denonvillier's fascia over the vas deferens and seminal vesicles is incised; this technique decreases the risk of injury to the inferior hypogastric plexus near the tip of the seminal vesicles^{12,18}. The vasa deferentia are identified, ligated and transected; they are separated from the seminal vesicles with diathermy scissors. The seminal vesicles are simply separated from the posterior bladder with blunt dissection and with the aid of diathermy scissors. The seminal vesicles are dissected to their tip sharply and ligated at the feeding vessels under direct vision.

To preserve the bladder neck a marking suture at the bladder neck at the start of operation is extremely helpful. An incision at this level will expose the lumen. Allice clamps are placed at the bladder neck junction and held

upwards, thereby aiding in the identification of the anterior prostate and the bladder neck. With continued blunt and sharp dissection, the prostate is removed with seminal vesicles and terminal portion of vas. The bladder neck is properly fashioned by putting few interrupted stitches in the posterior end of the bladder neck admitting little finger. The mucosa of the bladder neck is then everted with a series of simple interrupted 4-0 dexion / vicryl sutures. This technique will allow mucosal to mucosal anastomosis with the urethra.

A series sutures consisting of six 3-0 dexion / vicryl were placed in the urethra at 12, 2, 4, 6, 9 and 10 o'clock with the help of metallic bugie in the urethra and properly marked. The sutures are now passed thorough the newly constructed bladder neck taking appropriate measure to carefully pass the sutures through in appropriate place to avoid any distortion. At this stage a three way 20 Fr Foley catheter is introduced and the balloon is inflated. The bladder is mobilized downwards aided by the traction on the Folley catheter to approximate the bladder neck and the urethra. Finally, all six sutures are carefully tied down onto the urethra. Sterile irrigation is started and the bladder is filled to confirm watertight anastomosis. The wound is closed with a 12/14 Fr drainage tube in the retropubic space.

The urinary catheter was removed 10 days after RRP; prospective data on continence were then obtained immediately and at 3, 6, 9, and 12 months after RRP. Incontinence was defined simply as the need to wear diapers, sanitary napkins or a device after RRP. Those patients who only occasionally wear one pad prophylactically before strenuous exercise were considered continent. This information was obtained using a questionnaire or interview, independent of the physicians. The records were then reviewed

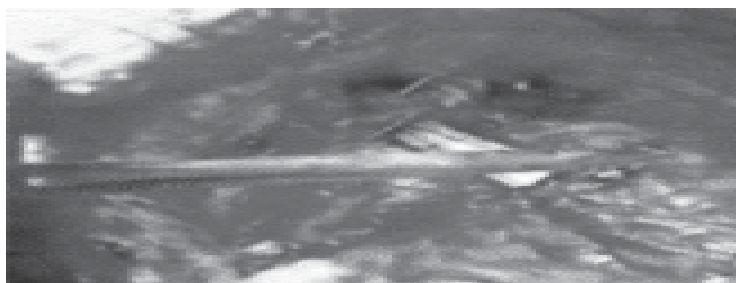


Fig.-2: Dissection of the prostate from the bladder neck, removal of the prostate and vesico-urethral anastomosis in progress.

retrospectively to assess continence and over all results after radical retropubic prostatectomy.

Results

The mean age was 54.5 years. Mean preoperative PSA was 13.5 and mean Gleason score was 5.8. Pre operatively all patients had low libido and significant erectile dysfunction. Mean operating time taken 1.5hours. Mean operative blood loss was 250ml.

Incontinence was observed in 15 (12.09%) patients in the immediate post operative period which was improved over the course of mean 3 month time in all the cases except one case who eventually recovered in 9 months time.

Erectile dysfunction was present in 72 (58.06%) before the operation. All patient complained erectile dysfunction early post operative period. Out of 52 patient who were sexually potent before surgery were evaluated by EF questionnaire ; 43 (82.69%) patients were satisfied with the sexual function at three months after surgery. 5 patients was not bothered for the ED. Rest of the patient was given sildenafil citrate 50 mg to 100 mg before sexual intercourse and all showed a good response.

Sexual function before and after radical prostatectomy

Erectile function before operation n=124		
Potent	n=52	58.06%
ED	n=72	42.93%
Erectile function after operation n=52		
Potent	n=43	82.69%
ED	n= 09	17.30%

The mean follow up period was 48 months and found to have bladder neck stricture in 13 (10.48%) cases which was incised with urethrotome and was placed in self dilation programme.

Staging of the cancer clinically T2 (n=1 54)

Margin positive	n = 36	29.3%
Lymph node positive	n=18	23.68%

The margins of the resected specimen was found to be positive for malignancy in 36 (29.03%)cases. Alt patient

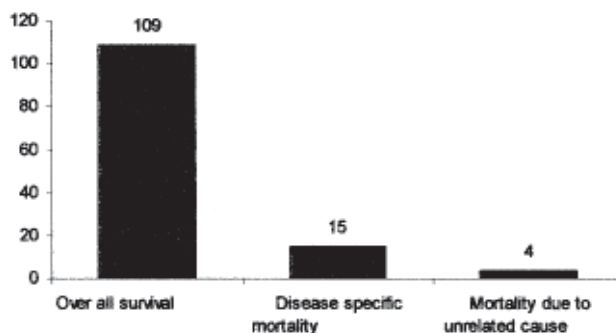
with margin positive for malignancy and was placed on radiation therapy for effective control of local disease. In 76 (61.29%) cases lymphadenectomy was performed and out of these cases 18 (23.68%)cases was found to be positive for metastasis. The quality of life was assessed in all patient and was found to be at a satisfactory level in all patients. Over all survival was estimated 87.90%. Out of 124 patients 109 patients are still alive and 15 patient died of which 4 were due to unrelated cause. 11 patient died with progression of the disease.

Discussion

The method presented herein, we consider that the outcome of radical prostatectomy may lead to a better early continence and increased overall continence if careful dissection of the prostatic apex with avoidance of injury to the sphincter and continence nerves, careful SV dissection, bladder neck preservation and placing of the posterior plication suture at the bladder neck. Each of these critical steps are important to achieve overall better continence rate.

Mean follow up period 48 months (n=154)

Overall survival	n=109	87.90%
Disease specific mortality	n= 15	12.09%
Mortality due to unrelated cause	n= 04	3.22%



The posterior pubo-urethral ligament (PPL) is a pyramidal fascia that extends from the undersurface of the pubic symphysis to the anterior portion of the proximal membranous urethra and the prostatic apex⁴⁻⁷. The dorsal vein complex passes between the pillars of this structure. In a small series, Poore et al, reported an improved early return of continence by using a PPL sparing procedure in 25 men, compared with a control group of 18 men who had a standard RRP. The median time for return of continence in these groups was 6.5 and 12 weeks, respectively⁴⁻⁶. Although it is truly divided,

we refer to this procedure as 'relative' sparing of the PPL, as the ligation is closer to the prostate, leaving the portion of the PPL under the pubic symphysis intact. In addition, ligating the PPLs away from their insertion into the pubic symphysis may prevent inadvertent injury of the continence nerves (pudendal and pelvic nerve branches)⁷⁻⁹. Although not used in our technique, incorporating the anastomotic sutures into this complex of tissue might further serve to support the anastomosis.

The importance of an intact and functional external urinary sphincter after prostatectomy cannot be overemphasized. In the incontinent patient, urodynamic studies show sphincter deficiency as the sole contributing factor and in combination with detrusor instability¹⁰. We obtain control of the dorsal vein complex by developing a plane between the urethra and dorsal vein complex. After ligating and dividing the dorsal vein complex, there is clear visualization of the prostatic apex, urethra and rhabdo sphincter. This is partly because of the gentle earlier dissection by the sucker tip after incising the endo pelvic fascia. Others have suggested the use of finger dissection, which similarly separates the rhabdo sphincter fibers from those of the levator ani muscle. The use of diathermy on a high power setting may have a theoretical chance of trauma to the sphincter/continence nerves. Our results do not support a negative effect; this makes anatomical sense, as the continence nerves/ sphincter are well below.

The bladder neck reconstruction and perfect eversion of mucosa ultimately serves to preserve the bladder neck function and prevents development of stricture at bladder neck. Numerous previous reports show that preserving the bladder neck does not increase the likelihood of positive bladder neck margins. This 'internal' sphincter may or may not be important in early continence after RRP and this issue has been controversial; it was stated that the bladder neck alone can maintain continence. In most instances, after a successful bladder neck peel, filling the bladder with sterile saline can show that the bladder is 'continent' at a capacity of 700 ml, with no leak^{5,6,12}. Although the scientific validation or the clinical significance of 'continent on the table' is unknown, we think that bladder neck sparing might improve early continence. This may be particularly true in those men where the external sphincter or the nerves that supply it are inadvertently traumatized. Recently, in a three armed study comparing the effects of bladder neck sparing, PPL sparing, and a combination of the two, Deliveliotis

et al⁸, reported the significance of the bladder neck sparing procedure. When comparing patients having bladder neck sparing or not, the former had significantly better earlier continence. The results of this study were statistically significant. The long term continence at 12 months was not significantly different among the three groups. These results might indicate that the contribution of bladder neck sparing could be greater than relative Pubo Prostatic ligaments sparing in the return of early continence. The use of a posterior placating suture which incorporates the posterior lateral edges of the endopelvic fascia and reinforces the bladder neck may be also useful. Whether or not this leads to an increased proximal urethral length is debatable. This step is similar to that recently described by Walsh^{12,13}. In Walsh's intussusceptions of the reconstructed bladder, posterior and anteriorly, 20 polyglyconate sutures are placed to secure the classic 'Tennis racket' closed bladder neck. The continence was 82% vs 54% in an earlier series of 64 men who had not had this bladder neck intussusceptions. The success of this variation may partly be a result of our use of the bladder neck sparing procedure vs the classic technique used by Walsh^{12,13}.

Others have described the use of various tube formations of the anterior bladder neck, with a statistically significant return of early continence. We consider that the bladder neck preservation may be an important step to achieve continence. However, recent studies showed no difference in early return of continence when comparing bladder neck preservation, tennis racket reconstruction and anterior bladder tube reconstruction^{9,10,11,12,13}. This adds to the controversy about the benefits of bladder neck sparing. Radical Retropubic Prostatectomy in this series was undertaken by one surgeon in 124 consecutive patients, ensuring a more homogenous technique. The follow-up of all patients up to 48 months helped to assess the long term results.

Conclusion

Continued advances in the understanding of the anatomy of the prostate, urethra, external sphincter and continence nerves, the morbidity of incontinence after RRP has dramatically decreased. In the last decade, published reports have focused on techniques that help to increase early continence. Importantly, in most contemporary series with acceptable definitions of continence, continence rates are typically >92% at 1 year. This should be reassuring for the patient considering RRP as a means of definitive therapy for prostate cancer. In the present series of 24 consecutive

patients, the overall continence rate was 100% at 15 months; compared with other recent series, this rate is favorable. Each step of the procedure is important in both early and long term continence. Although the independent contribution of each step to continence might be ill defined, the summation of steps helps to ensure a gradation of protection of continence. A randomized prospective study would be required to critically assess each step of the procedure. The ultimate decision of the technique used for Radical Retropubic Prostatectomy will probably be determined by the surgical training and comfort of the surgeon.

Acknowledgement

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DOES RESIDUAL PROSTATIC WEIGHT RATIO PREDICT THE OUTCOME AFTER TRANSURETHRAL RESECTION OF PROSTATE FOR BENIGN PROSTATIC HYPERPLASIA?

MS ISLAM¹, AKMK ALAM², MA SALAM¹

Abstract

Objective: To assess residual prostatic weight ratio, a variable for evaluating clinical outcome after TURP.

Patients and methods: From January 2005 to April 2007, 239 men, mean age 66.41 years (range 52-84 years) with symptomatic benign prostatic hyperplasia were evaluated using AUA symptom score, maximum and average urinary flow rate (Q_{max} and Q_{ave}) and post voidal urine volume (PVR). Out of 239 patients 125 were selected as per inclusion criteria AUA symptom score >7, maximum flow rate <10 ml/sec. PVR >100 ml and age specific serum prostate specific antigen (PSA) within normal limit. Patient with carcinoma prostate, previously operated prostate, chronic retention of urine, neurological condition that affect bladder function, causes of bladder outflow obstruction other than benign prostatic hyperplasia, BPH (e.g. stricture urethra) and vesical stone were excluded. In all these cases transrectal ultrasonography (TRUS) was done before transurethral resection of prostate (TURP) to evaluate prostate size. The estimated total prostate weight was calculated with prolate spheroid formula as $0.52 \times \text{length} \times \text{width} \times \text{height} \times \text{specific gravity of the prostate (1.01)}$. The residual prostatic weight ratio (RPWR) was calculated as the prostate weight after TURP divided by preoperative weight, where value after TURP was the preoperative weight minus that of TURP specimen. The clinical outcome was evaluated by the difference (") in AUA symptom score, Q_{max}, Q_{ave} and PVR before and 12 weeks after operation.

Results : The mean (SD) RPWR, " AUA score, " Q_{max}, " Q_{ave} and " PVR was 51.68 (9.16)%, 15.59 (5.04), 14.19 (5.05) ml/sec, 6.83 (2.71) ml/sec and 122.6 (43.3) ml. respectively. There was a positive correlation between RPWR and decrease in AUA score and PVR ($r=.880$ and $r=.688$ respectively, $p<0.05$), and a negative correlation between RPWR and increase in Q_{max} and Q_{ave} ($r= -.327$ and $r= -.357$ respectively, $p<0.05$).

Conclusions: TRUS is a useful imaging procedure for determining prostate volume and prostate weight before

TURP. The smaller the RPWR after TURP, the better the clinical outcome.

Keywords: Prostate, benign prostatic hyperplasia, transrectal ultrasonography, transurethral resection, clinical outcome.

Introduction

LUTS are common affliction of middle and old age in men; autopsy studies show that about 70% of men over 70 years have histological evidence of BPH¹. The prevalence of clinical BPH is 40-50% for men older than 70 years^{1,2}. There is evidence that BPH progresses when untreated. Prostate volume increase steadily by 1.6% per year³. Men older than 40 years showed that peak urinary flow rates declined by 2.1% per year⁴ and experienced a gradual increase in prostate symptom severity [5]. Many methods have been used to determine prostate size, e.g. DRE, urethrocystoscopy, cystourethrography, urethral pressure profile^{6,7,8}, but they give poor result compared to imaging of the prostate. TRUS has been documented as the most accurate way to calculate the size of the prostate^{9,10}. There is a weak correlation between prostate volume and AUA symptom score, urine flow and detrusor pressure at peak urine flow^{11,12}. Adenoma or transition zone volume has a significantly stronger correlation with above parameters¹². TURP is still considered as the gold standard surgical treatment¹³ and is the most popular operation for BPH; it constitutes 38% of the major surgical procedures performed by American urologists, with a subjective success rate of 80%¹⁴. Complete resection of prostate was a popular concept during the development of transurethral resection of the prostate, actually complete resection of the prostate is not possible, only adenoma in the transition zone is resected at TURP^{15,16,17}. There is a negative correlation between resected prostatic tissue weight after TURP and international prostate symptom score¹⁸. Better clinical result after TURP correlates significantly with the completeness of resection of obstructing adenoma thus less the residual prostatic weight ratio¹⁹. This study is

designed to show that greater the amount of prostatic tissue resected during TURP in a particular size of the gland smaller the residual prostatic weight ratio after TURP and smaller the residual prostatic weight ratio better is the clinical outcome.

Patients and methods

From January 2005 to April 2007, 239 men, mean age 66.41 years (range 52-84 years) with symptomatic benign prostatic hyperplasia admitted in Bangabandhu Sheikh Mujib Medical University Hospital and in a private hospital in Dhaka city were evaluated using AUA symptom score, maximum and average urinary flow rate (Qmax and Qave) and post voidal urine volume (PVR). Out of 239 patients 125 were selected as per inclusion criteria, AUA symptom score >7, maximum flow rate <10 ml/sec. PVR >100 ml and age specific serum prostate specific antigen (PSA) within normal limit. Patient with carcinoma prostate, previously operated prostate, chronic retention of urine, neurological condition that affect bladder function, causes of bladder outflow obstruction other than BPH (e.g. stricture urethra) and vesical stone were excluded. In all these cases trasrectal ultrasonography (TRUS) was done before TURP to evaluate prostate size. TRUS performed with 7 mHZ probe in both transverse and sagital planes. The estimated total prostate weight was calculated with prolata spheroid formula as 0.52 x length x width x height x specific gravity of the prostate (1.01). All TURP were performed under spinal anaesthesia using Storz 24Fr. resectoscope with tungsten cutting wire loop. During the procedure resected tissue was collected in a container filled with normal saline. After the the procedure all chips were soaked with tissue paper to remove water added during operation. Then tissues were weighted in an electronic balance and measurements

were recorded. The residual prostatic weight ratio (RPWR) was calculated as the prostate weight after TURP divided by preoperative weight, where value after TURP was the preoperative weight minus that of TURP specimen. The clinical outcome was evaluated by the difference (Δ) in AUA symptom score, Qmax, Qave and PVR before and 12 weeks after operation. Correlation analysis and paired *t*-test were used for statistical assessment and considered significant at *p*<0.05.

Results

A total 125 patients were selected for TURP. Twenty five patients were excluded as saccules and diverticula found cystoscopically in 11 cases, carcinoma prostate detected histopathologically in 5 cases and 9 patients failed to attend follow up at 12 weeks. Finally data of 100 patients were available for analysis. Estimated mean (SD) prostate weight (preoperative) was 55.38 (15.79) grams, the resected specimen weight 26.78 (9.82) grams. The mean (SD) preoperative AUA score, Qmax, Qave and PVR was 21.49 (4.78), 6.59 (2.16) ml/sec, 3.27 (1.18) ml/ sec and 161.5 (38.54) ml respectively. The mean (SD) postoperative AUA score, Qmax, Qave and PVR at 12 week was 5.90 (3.61), 20.79 (4.80) ml/ sec, 10.37 (2.37) ml/ sec and 38.90 (31.59) ml respectively. Improvement of all parameters are statistically significant at 12 week. The mean (SD) RPWR, " AUA score, " Qmax, " Qave and " PVR was 51.68 (9.16)%, 15.59 (5.04), 14.20 (5.05) ml/sec, 7.10 (2.71) ml/sec and 122.6 (43.3) ml. respectively. There was a positive correlation between RPWR and decrease in AUA score and PVR (*r*=.880 and *r*=.688 respectively, *p*<0.05), and a negative correlation between RPWR and increase in Qmax and Qave (*r*= -.327 and *r*= -.357 respectively, *p*<0.05).

Table-I
Outcome parameters: baseline and at 12 weeks

Parameters	Baseline Mean (SD)	At 12 weeks Mean (SD)	Difference from baseline at 12 weeks Mean (SD)	<i>P</i> value
AUA symptom score	21.49 (4.78)	5.9 (3.61)	15.59 (5.04)	<0.05
Qmax (ml/sec)	6.59 (2.16)	20.79 (4.80)	14.20 (5.05)	<0.05
Qave (ml/sec)	3.27 (1.18)	10.37 (2.37)	7.10 (2.71)	<0.05
PVR (ml)	161.5 (38.54)	38.9 (31.59)	122.6 (43.3)	<0.05

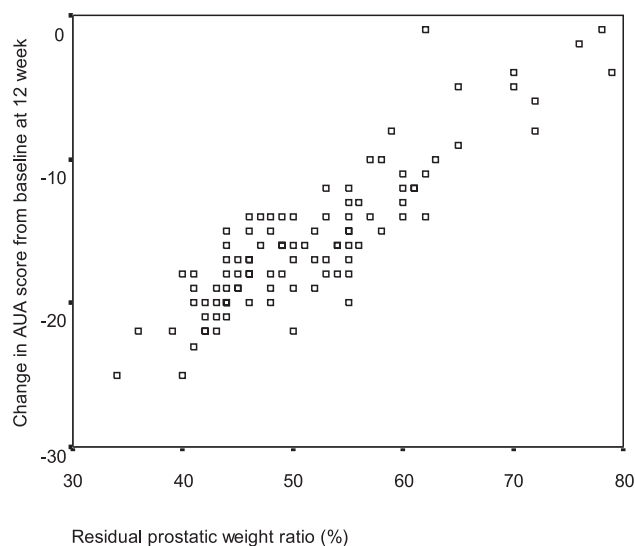


Fig-1: Correlation between residual prostatic weight ratio and change in AUA score from baseline at 12 weeks.

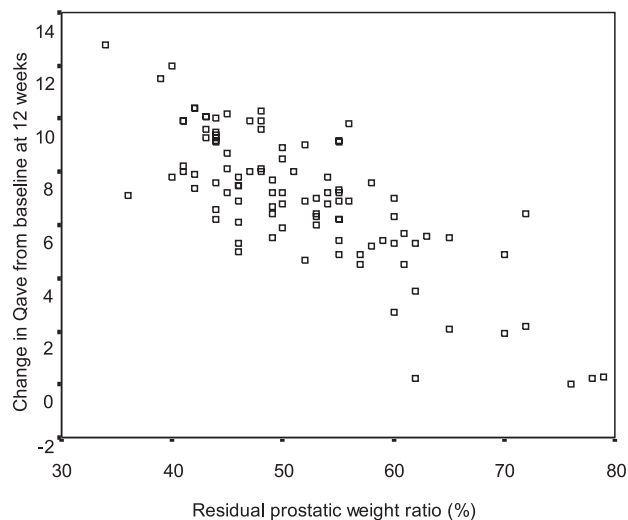


Fig-3: Correlation between residual prostatic weight ratio and change in Q-ave from baseline at 12 weeks.

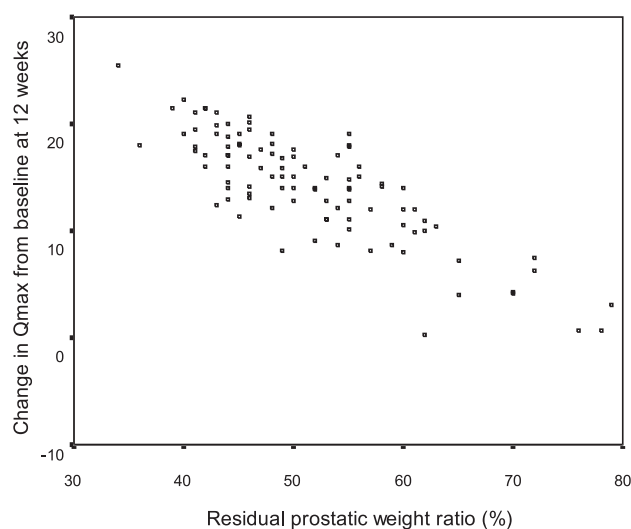


Fig-2: Correlation between residual prostatic weight ratio and change in Qmax from baseline at 12 weeks.

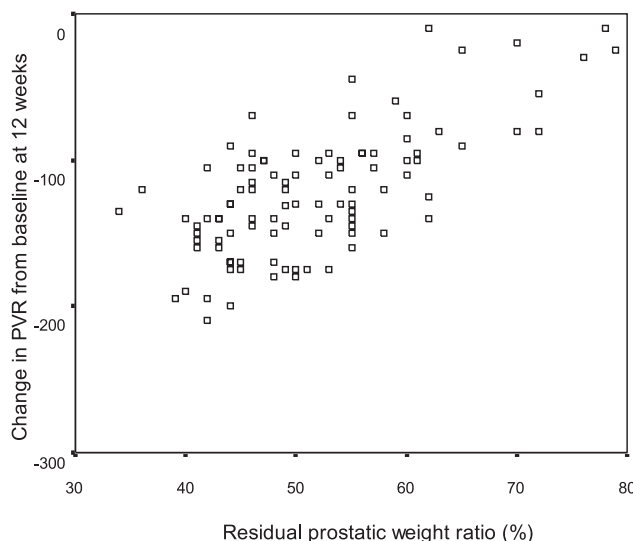


Fig-4: Correlation between residual prostatic weight ratio and change in PVR from baseline at 12 weeks.

Discussion

The clinical need to test new variable and desire to predict outcome is the demand of time for management of BPH by TURP. Amount of tissue resected during TURP does not predict the outcome as size of symptomatic gland varies from man to man¹⁸. As obstructing adenoma which is to be removed during TURP, larger gland with large adenoma needs more tissue resection¹⁵.

Estimating prostate size before TURP is important to plan surgery because most patients with BPH are elderly

and at risk of surgery e.g. TURP. For accurate estimation of prostate size TRUS is well established^{9,10}. TRUS is cheap, user friendly, noninvasive and equally as accurate as MRI²⁰. There are many methods of calculating prostate volume by ultrasonography e.g. step-section planimetry, elliptical volume formula, spherical volume formula and prolate spheroid formula^{6,20,21}. Terris *et al.*²¹ reported that prolate spheroid formula provided the closest estimate of weight in gland of less than 80 grams and this formula is used in this study to estimate prostatic weight. Green *et al.*¹⁵ reported that weight of

resected tissue is less than the actual resected tissue weight due to shrinkage of tissue during electroresection. In another study by Chen *et al.*¹⁹ estimated weight of adenoma by TRUS was similar to the weight of surgical specimen after TURP. In this study resected tissue weight is considered as the actual weight of resected prostate.

Morphological changes take place in the resection cavity after TURP. Hastak *et al.*²² suggested that normal prostatic tissue that is compressed by adenoma gets released like a sponge and occupies some of the resection cavity and organized blood clots and new granulations in the resection cavity may obliterate the space. As complete resolution needs 12 weeks, so patients were evaluated at 12 week.

Correlation between prostate volume and AUA symptom score, urine flow and detrusor pressure at peak urine flow is not strong^{11,12}, but volume of adenoma has a significantly stronger correlation with above parameters¹². Chen *et al.*¹⁹ showed that there is a negative correlation between residual prostatic ratio and improvement of Qmax, Qave and AUA symptom score from baseline at 16 weeks after TURP. In another study conducted by Thukanen *et al.*²³ where mean prostate volume (55ml) was similar in both TURP and laser group but after surgery mean residual prostate volume was much smaller in TURP group (29ml) than that of laser group (49ml) thus less the residual prostatic weight ratio in TURP group. There was greater improvement of Qmax, Qave and PVR in TURP group 3 months after surgery.

In the present study RPWR 12 weeks after TURP provide a good estimate of clinical result, the correlation of RPWR with all four outcome variables suggested that the less the RPWR, the greater the improvement in outcome variables. This was regardless of prostate size or patient's age. This is possibly due to completeness of resection of obstructing adenoma which correlates significantly with better clinical outcome.

Conclusions

TRUS is a useful imaging procedure for determining prostate volume and prostate weight before TURP. All four outcome parameters are useful to evaluate the result of operation. Greater the resected prostatic tissue weight during TURP the smaller the RPWR. The smaller the RPWR after TURP, the better the clinical outcome.

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EXPULSION RATE OF DISTAL URETERAL AND JUXTAVESICAL CALCULUS WITH TAMSULOSIN - A COMPARATIVE STUDY

Ashraf Uddin Mallik

Abstract:

Background: The presence of specific adrenoreceptor subtype alpha-1 a, alpha-1 d in the distal part of the ureter, a finding supporting the interesting results with the use of tamsulosin in the expulsion of distal ureteric calculi¹⁻³. Many articles have concerned the positive result of small ureteric calculi expulsion with the use of adrenoreceptor blocking agents like tamsulosin, which is randomly used for the treatment of urinary symptoms for BPH and other causes. In many reports it was suggested that the expulsion rate is more common among patients with calculi, at vesicoureteric junction and hinted that such patients with cardiovascular risk is at greater benefit for stone expulsion⁴⁻⁶. With the aim of this, we performed a randomized, prospective study to assess and compare the expulsion rate of calculi at distal ureter and vesicoureteric junction with the use of tamsulosin.

Materials and Methods:

Patient population: Between September 2005 and December 2007 a total of 36 patients with lower ureteric calculi and calculi at vesicoureteric junction with average stone size 8.6 mm (ultrasound measurement) who fulfilled the criteria included in this study. All 36 patients had undergone initial evaluation for criteria fill up and final diagnosis. Diagnostic criteria were clinical symptoms, relevant blood tests, urinalysis, USG of KUB, plain x-ray KUB and occasional IVU. The exclusion criteria for this study were if the patient had renal failure, if the calculi present in upper ureter, if the stone size is big and impacted in the ureter, if the calculi are present inside ureterocele.

Study protocol: All the subjects after final diagnosis enrolled in this study was divided into 2 groups. Group I having distal ureteral calculi (18 patients) and Group-II (18 patients) having calculus at the vesico-ureteric junction. Every patient received tamsulosin 0.4 mg/day orally for 4 weeks, steroid 5 mg orally 2-3 times/day for 10 days only and an antibiotic. If there was ureteric colic, we added NSAID and other symptomatic medications. Time of expulsion was recorded asking

patients and expulsion was confirmed with USG and x-ray KUB.

All the subjects were evaluated with USG of KUB, plain x-ray KUB and urinalysis after 1 cycle of treatment. When there is hydronephrotic change with calculi, subjects were given another cycle of treatment for more 1 month.

Results:

We had 26 male and 10 females with age range 10 to 70 yrs. Total expulsion rate was 70.58 %. The stone expulsion rate in Group I was 14.70%, whereas in Group II stone expulsion rate was 100%. The difference in Group II with respect to Group I was significant. Average expulsion time was 7.5 days. Average stone size was 8.6 mm (5.9 mm to 11.3 mm). One patient in group-I, after 1st cycle of 4 weeks medication, stone came down and in 2nd cycle stone expelled out. No patient required intervention for stone extraction in Group-II.

Table-I
Patients characteristics

Total no. of pts.	36
Male	26
Female	10
Pts. no. in Group I	18
Pts. no. in Group II	18
Age ranged	10-70 yrs. Mean 40 yrs
Duration of the study	Sept. 2005 to Dec. 2007
Stone size	5.9 mm to 11.3 cm (mean 8.6 mm)

Table-II
Results

Total expulsion rate	70.58%
Expulsion rate in Gr. I	14.70 %
Expulsion rate in Gr. II	100%
Expulsion time	5-10 days

Discussion:

Spontaneous passage of ureteral stones depends on stone size and site, internal anatomical structure of the ureter and a history of spontaneous expulsion, all these are unmodifiable factors^{7,8,9}. The possible causes of stone retention into the ureter are spasm, edema, ureteral infection and presence of adrenoreceptor alpha 1 a and alpha 1 d, all these are modifiable factors¹⁰. The goal of adrenoreceptor blocking therapy with tamsulosin is to prevent modifiable factors and control painful symptoms until stone expulsion^{10,11}. Although, there are no any specific guidelines, the concomitant administration of spasmolytic drugs, antiedemics and antibiotics are recommended by several studies^{10,11,12}. In all patient population of our study underwent adrenoreceptor blocking drug, tamsulosin, antibiotics, dexamethasone, which is a steroid and antiedemic agent showing good efficacy and no side effects¹¹. In many other studies several drugs, such as calcium

antagonist, glyceryl trinitrate have been using as spasmolytic for expulsion of ureteral stones¹⁰⁻¹³. In our study we used tamsulosin, steroid, antibiotics and NSAID for lower ureteral calculi and calculi at juxtavesical junction and compared the expulsion rate. In our study the randomization design did not imply any stratification of patients by gender or age, since to knowledge there is no study in the literature that have shown any difference in stone expulsion and difference in pain tolerance between the 2 sexes. Furthermore, only location of stones were affected for stone expulsion in our study population. Marlin et al showed that adrenergic receptors in the human ureter appear to be quantitatively predominant, as in the animal ureter¹⁴. Several other studies have focused on the role of the adrenergic receptors in ureteral physiology. The induction of ureteral contraction by adrenergic agonist is dose dependent¹⁵. The adrenergic agonist, noradrenalin induces increasing ureteral peristaltic frequency and increasing muscular tone until causing complete ureteral obstruction (spasm) at high doses. Therefore, adrenergic stimulation decreases the volume of urine flow passing through the ureter. The adrenergic blocking drugs such as tamsulosin results in decreased ureteral peristaltic amplitude and frequency with a consequent loss of intraureteral pressure and for which an increase in fluid transport ability^{16,17}. Further studies revealed a prevalence of the alpha 1 d adrenoreceptor subtype in the human ureter¹⁸. Therefore it is possible that the effect of tamsulosin on the obstructed ureter is to induce an increase in the intraureteral pressure gradient around

the stone that is an increase in the urine bolus above the stone and an increase in intraureteral pressure below the stone in association with the decrease in basal and micturition pressure even at the bladder neck. For these reasons there would be a stronger urge to expel the stone. Moreover, the decrease frequency of phasic peristaltic contractions in the obstructed ureteral tract induced by tamsulosin might determine a decrease in or the absence of the algogenic stimulus, as in our study. In our study we compared the expulsion rate of lower ureteral stone and stone at the juxtavesical junction.

To our knowledge there is no study that compared the expulsion rate of lower ureteral calculi and calculi at juxtavesical junction. A conservative treatment for expulsion of calculi in lower ureter upto 11.3 mm may be proposed for longer than 4 weeks, provided stones are not impacted, renal function not impaired, infection and intractable pain does not occur^{19,20}. According to this study the expulsion rate may be expected to be upto 100% for stone smaller than 11.3 mm and ureteral stone site¹⁹. Therapy for expulsion of juxtavesical stone was very effective (100%) in all patients in compare with stone at lower ureter. The stone size were more or less same in both groups. This approach was good for home patient management and a loss of fewer working days. Others have observed that by adrenergic blocking agents for conservative approach to ureteral stones is associated with lower cost compared with any invasive procedure only if it is successful. Thereby, therapy with tamsulosin provided an advantages even in terms of cost, preventing hospitalization.

Conclusions

Our study showed a potentially important role of tamsulosin for conservative expulsive therapy of lower ureteral stones. Specially, expulsion rate is higher for juxtavesical ureteral calculi than lower ureteral stone, in short time, allowing complete home treatment.

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CASE REPORT

ADENOCARCINOMA OF URINARY BLADDER: A CASE REPORT

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Adenocarcinoma of urinary bladder is an extremely uncommon tumor responsible for 2% of all bladder tumour. They tend to be locally aggressive tumors diagnosed at an advanced stage (85%) with a uniformly poor prognosis. Adenocarcinoma of bladder are mucus secreting and may have glandular, colloid or signet ring patterns. Primary adenocarcinoma often arise along the floor of the urinary bladder, adenocarcinoma arising from the urachus occur at the dome. Five years survival is usually < 40%, despite aggressive surgical management.

Case report:

A 35 years young lady from Gopalganj admitted in local hospital with complaints of pain in right iliac fossa for one day. She had also complaints of anorexia during that period of time. She gave history of recurrent urinary tract infection for couple of years. With above complaints local consultant diagnosed her as a case of acute appendicitis. During operative procedure he found a mass originating from bladder which was not adherent with adjacent structure. A biopsy was taken from that mass. Appendicectomy was done.

CT scan reveals a mass originating in dome of bladder with no perivesical invasion. Biopsy report revealed adenocarcinoma originating from bladder. With this diagnosis patient referred to department of urology BIRDEM for further management. As the recommended approach is radical cystectomy but patient did not agree to sacrifice her bladder. So, partial cystectomy was planned along with free margin. Frozen section biopsy was done to ensure tumour free margin.

Operation was performed under general anesthesia. Cystoscopy was done first to see the exact position and extension of the tumour. An exophytic growth of 1.5 cm was found arising from dome of bladder. Rest of the bladder mucosa appeared normal. Abdomen was opened by lower mid line incision. After that a mass was identified which was originating from dome of bladder. Adjacent structure was free from growth. Wide resection was done along with median umbilical ligament and 1 cm

bladder tissue around the tumour. Frozen section biopsy was positive for malignancy & resection margin was tumour free.

Post operative period was uneventful. Wound was healthy. No leakage.

Patient was discharged on 10th POD from the hospital and referred to oncologist for chemotherapy. Cystoscopy was advised 3 months later.

Patient received systemic chemotherapy. Three months after operation patient came for follow up; she had no complaint excepting mildly increased urinary frequency.

Discussion:

Adenocarcinoma of bladder is an extremely uncommon tumour accounts for 1-2% of bladder cancer¹. It usually arises in the fundus of bladder at the site of urachal remnant. Occasionally primary adenocarcinoma arises at other site as has been associated with metaplastic changes induced by irritation, infection and obstruction, which often produce a premalignant stage of cystitis glandularis². Most of the patient presents with haematuria or recurrent urinary tract infection³. Patients with exstrophy of the bladder have had a high risk of development of adenocarcinoma. Recommended management generally consists of 2000 rads of pre operative radiotherapy followed by radical cystectomy and urinary diversion⁴.

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ABSTRACT FROM CURRENT LITERATURE

What Should Urologists Know About Osteoporosis?

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ONE generally associates osteoporosis with women's health but it is a condition that affects more than 2 million men. This number is predicted to increase in the coming decades. It is a natural aspect of aging and is accelerated by androgen deprivation therapy (ADT), the most prevalent form of medical treatment for prostate cancer. The absence of estrogens, a key feature in bone loss, occurs in general male hypogonadism and is worsened by ADT. Therefore, an average loss of bone mineral density (BMD) of 0.5% per year can increase by 4% to 13% in men treated with ADT. The principal consequence of this process is an increased fracture risk and the attendant complications.

Fractures tend to be of the spine, hip and wrist. While vertebral fractures are generally subclinical, they are associated with a 50% chance of another fracture in 1 year and excess mortality up to 20%. In hip fractures an excess mortality rate of 10% to 24% may occur and this rate is higher in men (31%) than in women (17%). In general skeletal fractures have a significant negative correlation with overall survival in men with prostate cancer independent of pathological disease stage.

It is estimated that 2 million men receive treatment with a gonadotropin-releasing hormone agonist. The fracture rate for these patients averages 5% to 8%. Fracture prevalence increases with time and can be as high as 20% after 4 years of ADT, increasing to 70% in patients 15 years after orchiectomy. These fractures are not just the consequence of metastatic disease. In a claims based cohort study of men with nonmetastatic prostate cancer the rate of any clinical fracture (including hip and femur fractures) was significantly higher in men receiving gonadotropin-releasing hormone agonists than in controls.

In general slim white males are most at risk for skeletal fractures while black men and those with a greater than normal body mass index are at less risk. Other clinical factors associated with osteoporosis include alcoholism, tobacco use and gastrointestinal disorders. The principal method of evaluating bone mineral density

is based on dual energy x-ray absorptiometry. Bone mineral density alone is not the only factor in defining fracture risk or bone strength because dense bone may be fragile as with exogenous fluoride supplementation. Criteria for BMD have been developed for women but are regularly applied to elderly men. While problematic, the criteria correlate well with increased fracture risk in men.

If we have sophisticated diagnostic methods for osteoporosis and clinical parameters to identify patients at greater risk, how is it that we remain relatively ignorant of this condition and are generally therapeutic nihilists for a condition exacerbated by one of our cardinal therapies for prostate cancer? Such a posture is even more striking as a large body of research, only cursorily mentioned here, has percolated through our literature in recent years. One answer to this question beyond the longitudinal course of this condition is the urologist's perceived notion of the lack of good treatments for this condition. Oral bisphosphonates have been regarded as generally ineffective in men and can have significant gastrointestinal toxicity. Intravenous bisphosphonates are currently a useful adjuvant in metastatic disease to prevent serious adverse bone events but have not been demonstrated to reduce fractures in men treated with ADT. An additional concern with these agents is the rare side effect of osteonecrosis of the jaw.

The data reported by Smith et al in this issue of *The Journal* (page 2670) expand on the phase III trial recently reported on a newer approach to fracture reduction.⁸ Signaling through the receptor activator of the nuclear factor- κ B ligand is a major pathway in the differentiation and activation of osteoclasts. It is a principal pathway for osteoclast function and survival. The subcutaneous administration of a human monoclonal antibody every 6 months against this receptor activator resulted in a significant increase in lumbar spine BMD and a significant decrease in the incidence of new vertebral fractures at 36 months. This prespecified subgroup analysis demonstrates a similar significant increase in BMD in all groups including those at greater risk for fracture such as older men and those with lower baseline BMD or high levels of metabolic turnover.

Another approach to fracture reduction has been through the use of selective estrogen receptor modulators.

Raloxifene is approved to prevent and treat osteoporosis in women, and oral toremifene has been shown to increase BMD in men on ADT as well as reduce fractures in this population.

The introduction of effective therapies for fracture reduction in men on ADT should clearly change the perspective and role of urologists in the management of this condition. Up to this point we have demonstrated a passive ignorance of bone health and have generally regarded therapy for osteoporosis in our male patients as a handoff to the general practitioner. In our growing role as the principal physicians for male health issues this perspective should change. With the potential of effective agents for osteoporosis it is reasonable to assume that we should participate in addressing a condition exacerbated by the treatment of our most common cancer. Given the growing body of literature on the nature and treatment of osteoporosis in men urologists should know a lot more than they currently do about this condition. Thus, this is another clinical domain that should be added to our realm.

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Are all Urethral Catheters Created Equal?

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Although catheterization traces its historical roots approximately 5,000 years, innovations in catheter design remain sparse and clinical evidence comparing various types of commercially available catheters is limited.¹ Intermittent catheterization was advocated following spinal cord injury as early as 1901 and after laminectomy in 1913.^{1,2} Nevertheless, indwelling catheterization remained the preferred technique for urinary drainage during World War I and World War II, despite its failure to prevent urosepsis, often resulting in death for patients with spinal cord injuries.

Intermittent catheterization was used in only a few institutions during the 1940s and 1950s. Those who advocated its use promoted a strict aseptic technique, and recommended using sterile gloves, a gown and a mask.³ Intermittent self-catheterization did not gain widespread use until the 1970s when Lapides et al applied the technique of clean intermittent catheterization

to an able-bodied woman with recurring urinary tract infections and urinary incontinence.⁴ This experience not only revealed that self-catheterization was feasible, it also demonstrated that atraumatic catheter insertion was more important for the prevention of complications than use of strict sterile technique. At the time intermittent catheters were typically constructed of polyvinyl chloride or vulcanized rubber, and a water based lubricating gel was used to reduce friction and urethral trauma during insertion.

The development of hydrophilic catheters in the early 1980s represented the first attempt to overcome the initial problems associated with intermittent self-catheterization, including discomfort and urethral trauma associated with catheter insertion, adherence to catheterization schedules (especially when intermittent catheterization persisted over a period of months to years) and recurrent symptomatic urinary tract infection. These catheters use a water activated hydrophilic surface that reduces the friction coefficient associated with insertion by as much as 95%. Several brands of hydrophilic catheters are now available. They are typically made of polyvinyl chloride and all are intended for onetime use.

For the first time since Lapides et al popularized the concept of clean intermittent catheterization, the development of the hydrophilic catheter raised the argument that all catheters might not be equal. At least 2 randomized clinical trials provided evidence favoring the use of hydrophilic catheters.^{5,6} Compared to standard catheters hydrophilic catheters reduce the discomfort associated with catheter insertion and they promote adherence to prescribed catheterization schedules. Some clinicians also argue that onetime use of a sterile catheter reduces the risk of recurrent symptomatic urinary tract infections. Nevertheless, a systematic review of 13 randomized clinical trials⁷ found insufficient evidence to conclude that onetime use of sterile catheters was more effective than repeated use of plastic or rubber catheters as originally advocated by Lapides et al.⁴ The routine use of hydrophilic catheters in the United States was further constrained by Medicare reimbursement policies that limited reimbursement for new catheters and clearly favored their reuse.⁸ However, intermittent catheterization practice patterns shifted significantly in April 1, 2008 when the Centers for Medicare & Medicaid Services changed their reimbursement policy, enabling recipients to use a sterile catheter with each insertion. This policy removed a significant barrier to the use of hydrophilic catheters,

which are designed for single use, and renewed the question of whether this design element rendered them superior to standard catheters.

Although the change in Centers for Medicare & Medicaid Services reimbursement policy favored the use of a new catheter with each insertion, it has also resulted in a potentially negative environmental impact associated with the manufacture, sterilization, use and disposal of polyvinyl chloride catheters in unprecedented numbers. In this issue of *The Journal* Witjes et al (page 2794) reported the results of a randomized clinical trial comparing patient experience and adverse events associated with a hydrophilic polyvinyl chloride catheter versus one constructed of d-2-ethylhexyl phthalate. Their findings are clinically relevant because they provide evidence that hydrophilic catheters can be constructed from a more environmentally friendly material than polyvinyl chloride without sacrificing efficacy or producing more adverse events. The principal limitation of the study is a common one for the collective evidence base in this area of care. Specifically we lack objective outcome measures for evaluating the efficacy of specific catheters. From a clinician perspective the incidence of symptomatic urinary tract infection is arguably the most valid long-term outcome. However, existing research demonstrates that consensus about the definition of a symptomatic or clinically relevant infection remains elusive. Surprisingly few studies have evaluated objective outcomes evaluating the short-term efficacy of intermittent catheters, such as efficiency in evacuating urine from the bladder when inserted by patients. From the patient perspective the incidence of urinary tract infections and post-catheterization residual volumes are less important than the discomfort associated with catheterization, the effort and skill needed to complete catheterization at home and public toilets, and issues related to maintaining privacy when completing catheterization. These issues may be best measured by a valid and reliable questionnaire such as the one the authors use for this study or it may be more accurately reflected in adherence to an ongoing intermittent self-catheterization schedule. Additional higher quality randomized clinical trials are needed to resolve these persistent questions before we can truly determine whether the various urinary catheters are truly equal or whether some design features provide clinically relevant benefits for our patients.

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Hand Assisted Retroperitoneoscopic Nephroureterectomy With the Patient Spread-Eagled: An Approach Through a Completely Supine Position

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Purpose: We evaluated the feasibility of hand assisted retroperitoneoscopic nephroureterectomy for transitional cell carcinoma of the upper urinary tract with the patient completely supine (spread-eagled).

Materials and Methods: From October 2006 to January 2008 hand assisted retroperitoneoscopic nephroureterectomy with open bladder cuff excision was performed in 32 patients with upper tract transitional cell carcinoma. The patient was placed supine with the legs extended and abducted at 45 to 60 degrees, and the arms stretched out to the sides in the spread-eagle position. The patient was secured to the operation table with 3-inch tapes to permit lateral table tilt. The operation was completed via a 7 or 8 cm Gibson incision plus 2 laparoscopic ports.

Results: All procedures were successful. The mean time needed for hand assisted retroperitoneoscopic nephroureterectomy and bladder cuff resection was 137.6 minutes. Mean estimated blood loss was 200 ml. Simultaneous transurethral endoscopic procedures were performed in 8 patients. Time to oral intake was 2.1 days and time to ambulation was 2.0 days. No specific complication was related to the position. All patients recovered to normal daily activity uneventfully.

Conclusions: Hand assisted retroperitoneoscopic nephroureterectomy with the patient completely supine is feasible and safe. The completely supine position has several advantages, including ease of patient positioning and the ability to perform simultaneous endoscopic procedures. It not only decreases the time and cost of changing position, but also avoids potential risks associated with the lateral decubitus position. Bowel interference with the visual field and mechanical bowel injury are not a concern using this approach.

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Vesicoureteral Reflux, Urinary Tract Infection and Renal Scarring: Sorting it All Out

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The role of vesicoureteral reflux in renal scar formation remains a controversial topic in pediatric urology. Ever since the term reflux nephropathy was introduced by Bailey in 1973 clinicians have focused their efforts on the detection and treatment of reflux in the belief that correction would prevent renal injury.¹ To make sense of this topic we have to start by asking what we know. The relationship between infection and scarring is unquestionable. Ransley and Risdon demonstrated that sterile reflux in the absence of increased bladder pressure does not lead to scarring.² Furthermore, congenital reflux injury in males born with high grade reflux in the absence of infection is most likely due to dysplasia or hypoplasia rather than scarring. Placing reflux aside should scar formation be the end point on which clinicians focus? If scarring is important why should we care about it, can we detect it and, more importantly, can we prevent it? The literature suggests that scarring is a cause of hypertension and end stage renal disease, and that the incidence and occurrence depend on the degree of parenchymal damage, the number of kidneys affected and the age of the patient. The association between scarring, hypertension and end stage renal disease is confounded by poor study design and in some cases by the inability to separate dysplasia from scarring.³ This leads to the question of whether scarring can be accurately differentiated from dysplasia. The appearance of scarring is most often categorized by a generalized loss of parenchyma, the globally small kidney or focal loss of parenchyma.⁴ The latter pattern is traditionally attributed to acquired scarring in the presence of reflux. Whether these patterns are due to an improper interaction between the ureteral bud and the surrounding metanephric mesenchyme, increased back pressure on the developing kidney, or just infection in the presence or absence of reflux is not clear. The theory of Mackie and Stephens can account for the simultaneous occurrence of reflux and dysplasia.⁵ Reflux is explained by a laterally positioned ureteral bud, and this lateral position may also lead to a mismatch between the bud and the metanephric mesenchyme resulting in dysplasia. However, Nguyen et al argue that the ureteral bud dysplasia theory may not

completely explain a focal pattern of renal functional defects.⁶ They believe that this pattern could be due to the segmental pyelotubular backflow of sterile urine. The reflux of urine, particularly if associated with increased intravesical pressure in the developing fetal bladder, may induce focal effects in the developing kidney. If these changes occur early in renal development, normal growth and differentiation may be affected, similar to what is seen in obstruction. Thus, as suggested by the original theory of Mackie and Stephens, it is likely that some of the previously mentioned patterns of scarring are due to aberrant genetic signaling which leads to associated reflux, with reflux as a marker of dysplasia rather than a cause.⁵ Conversely, as argued by Nguyen et al intrarenal reflux, particularly if associated with increased bladder pressure, may lead to dysplastic changes early on.⁶ Whether the etiology is high pressure reflux or ureteral bud dysplasia the end result is a similar developmental defect. Whether focal scarring is due to dysplasia, reflux, infection or a combination of reflux and infection it would be important to differentiate dysplasia from scarring acquired during infection. Dimercapto-succinic acid (DMSA) renal scintigraphy allows for the detection of focal and global scarring as well as the determination of renal function.⁷ The diagnosis of dysplasia is a histological diagnosis and may be inferred from a combination of imaging modalities. Recently magnetic resonance (MR) urography has shown promise in differentiating dysplasia from acquired scarring.⁸ Dysplasia is thought to be characterized by an increase in single nephron glomerular filtration rate (GFR) (due to a reduction in functioning nephrons). Dynamic contrast enhanced MR urography has the ability to measure the GFR per milliliter tissue which is believed to be a surrogate for single nephron GFR. In addition to a loss of corticomedullary differentiation and cystic change this is highly suggestive of dysplasia. In contrast, focal scarring on MR imaging is characterized by perfusion defects seen after administration of a contrast agent.⁸ A disadvantage is the need for patient sedation and the higher cost associated with MR urography. If the goal is to focus on kidney injury rather than reflux, an alternative initial evaluation may include the top down approach to urinary tract infection (UTI).⁹ The standard assessment for a febrile UTI includes a renal bladder ultrasound and voiding cystourethrogram (VCUG). In the top down approach the DMSA scan is substituted as the initial study. If scarring is seen then voiding cystourethrography can

be performed to identify reflux. This may decrease the number of VCUGs performed. However, before changing the algorithm there needs to be a consensus regarding the next step should the DMSA scan be normal. Furthermore, how do we address a second febrile UTI after a negative DMSA scan? We know that up to 50% of patients evaluated for pyelonephritis who have a normal VCUG and sonogram will have another urinary tract infection. 10 Should clinicians assume that a second or third UTI will not lead to scar formation? How many times do we need to obtain a scan to be sure no injury has occurred? Finally, how can we use this information to prevent scarring in a normal kidney or further scarring once identified? According to the original premise the answer is that in the absence of previous dysplasia if you prevent infection you prevent scarring. The literature suggests that neither active treatment of infection nor prophylactic antibiotic use is completely effective in preventing scarring. In some cases these studies are flawed due to the method of scar detection. There are those who suggest that prompt treatment of infection in less than 36 hours reduces the risk of scarring. Identification and treatment of infection during this window may be efficacious but may also be impractical in some settings. If we cannot prevent infection can we at least mitigate the consequences? If reflux is not a cause of acquired scarring it is likely a factor that promotes ascending infection, especially in kidneys that are susceptible to infection. The role of reflux in promoting the extent of infection and subsequent scarring is still unclear. As other previously published articles have asserted, in this issue of *The Journal* Oh et al (page 2167) suggest an association between reflux grade and subsequent infection.¹¹ In other words, in the presence of high grade reflux kidneys are more susceptible to breakthrough infection or an acute defect on DMSA scan. However, once acute parenchymal infection (pyelonephritis) has been documented by DMSA scan there seems to be no correlation between reflux grade and subsequent scarring, further suggesting that reflux is associative rather than causative. The risk of infection and subsequent scarring is a multifactorial process, and most likely relates to other factors such as bacterial virulence and host susceptibility. Until we fully understand the roles of these other variables complete prevention of upper tract infection and scarring is unlikely.

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Bladder and Upper Tract Urothelial Cancer

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Purpose: While there are data available indicating the incidence and prevalence of bladder and upper tract urothelial cancer, population level data on resource use, costs and patterns of care for these cancers are limited. We quantified the economic impact of caring for patients with bladder and upper tract urothelial cancer, and determined the primary drivers for such costs in the population in the United States.

Materials and Methods: The analytical methods used to generate these results have been described previously.

Results: An increasing proportion of patients with bladder and upper tract urothelial cancer were being treated in the outpatient setting. Most care was provided by urologists and visit frequency was directly related to disease stage. Only a small proportion of patients potentially eligible for chemotherapy, ie those with advanced disease, sought specialized care from oncologists. Office based diagnostic tests such as cytology were not commonly done, although a substantial number of patients with bladder cancer underwent cystoscopy. The use of excretory urography in these patients was decreasing, while the use of computerized tomography was increasing. Ileal conduits were the most frequently performed type of urinary diversion following cystectomy. The cystectomy rate remained unchanged for a decade. Intravesical therapy was done infrequently in patients with bladder cancer. Annual costs for treating bladder and upper urinary tract cancers were \$1 billion and \$64 million, respectively, in 2000. These costs represented a \$164 million increase over 1994 levels, which outpaced inflation.

Conclusions: The costs of treating bladder cancer increased steadily during a 6-year period despite a decrease in inpatient care. Coupled with a lack of substantial change in transurethral resection and cystectomy rates, this suggests that the primary cost drivers are increased outpatient testing, e.g. computerized tomography and cystoscopy, and an increase in the number of diagnosed cases. Greater focus on selective use of testing modalities, preventive

care such as smoking cessation and earlier identification of patients at risk may help curtail further expenditure with regard to managing bladder and upper urinary tract cancers.

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Ureteropelvic Junction Obstruction

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Purpose: We quantified the burden of ureteropelvic junction obstruction in the United States by identifying trends in the use of health care resources and estimating the economic impact of the disease.

Materials and Methods: The analytical methods used to generate these results were described previously.

Results: Inpatient hospitalization rates were highest in children younger than 3 years. Most patients were male and hospitalizations occurred almost exclusively at urban centers. Patients with a primary diagnosis of ureteropelvic junction obstruction between 1994 and 2000 had an overall decrease in the age adjusted rate of inpatient hospitalization from 1.1/100,000 to 0.8/100,000. Physician office visits by Medicare beneficiaries with ureteropelvic junction obstruction as the primary diagnosis showed stable overall age adjusted rates during the reported years. Between 1999 and 2003 mean inpatient length of stay and cost per child hospitalized with the primary diagnosis of ureteropelvic junction obstruction was 2.9 days and \$7,728, respectively. Average length of stay decreased more for children than for adults but total inpatient spending remained stable at about \$12 million.

Conclusions: The majority of ureteropelvic junction obstructions are diagnosed in the perinatal period. Surgical intervention for pediatric patients has decreased with time, while there has been an increasing trend toward the conservative management of this condition.

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Upper Tract Urothelial Recurrence Following Radical Cystectomy for Transitional Cell Carcinoma of the Bladder: An Analysis of 1,069 Patients with 10-Year Followup

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Purpose: Risk factors for upper tract recurrence following radical cystectomy for transitional cell carcinoma of the bladder are not yet well-defined. We reviewed our population of patients who underwent radical cystectomy to identify prognostic factors and clinical outcomes associated with upper tract recurrence.

Materials and Methods: From our prospective database of 1,359 patients who underwent radical cystectomy we identified 1,069 patients treated for transitional cell carcinoma of the bladder between January 1985 and December 2001. Univariate analysis was completed to determine factors predictive of upper tract recurrence.

Results: A total of 853 men and 216 women were followed for a median of 10.3 years (maximum 18.5). There were 27 (2.5%) upper tract recurrences diagnosed at a median of 3.3 years (range 0.4 to 9.3). Only urethral tumor involvement was predictive of upper tract recurrence. In men superficial transitional cell carcinoma of the prostatic urethra was associated with an increased risk of upper tract recurrence compared with prostatic stromal invasion or absence of prostatic transitional cell carcinoma ($p < 0.01$). In women urethral transitional cell carcinoma was associated with an increased risk of upper tract recurrence ($p < 0.01$). Despite routine surveillance 78% of upper tract recurrence was detected after development of symptoms. Median survival following upper tract recurrence was 1.7 years (range 0.2 to 8.8). Detection of asymptomatic upper tract recurrence via surveillance did not predict lower nephroureterectomy tumor stage, absence of lymph node metastases or improved survival.

Conclusions: Patients with bladder cancer are at lifelong risk for late oncological recurrence in the upper tract urothelium. Patients with evidence of tumor involvement within the urethra are at highest risk. Surveillance regimens frequently fail to detect tumors before symptoms develop. However, radical nephroureterectomy can provide prolonged survival.

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PROGRESS IN URINARY STONE MANAGEMENT IN BANGLADESH

AKM Anwarul Islam

Abstract

Urinary stone disease is the third most common urological problem in the world next to urinary infection and BPH. Bangladesh is an endemic area for stone disease. Although there is no available epidemiological data regarding prevalence of urinary stone disease in our country, it is obviously very common and every urologist has to encounter various problems related to stone quite frequently.

Bangladesh is a country where evidence based medicine struggles against illiteracy and poverty of large population, Homeopathy and Ayurvedee medicine, where efficient and appropriate manpower is inadequate and the management system is such that one has to put a lot of effort to achieve something and therefore improvement is difficult. However, so far the stone disease is concerned, most of these negative factors have been over come although slowly. The most remarkable improvement is perhaps in the field of skilled manpower development.

Over the past couple of decades, the management of urinary stone disease has advanced dramatically over other urological disorders. The advancements are related primarily to stone fragmentation and removal (PCNL, ESWL, URS). Introduction of finer semirigid and flexible ureteroscope and nephroscope and their accessories, newer fragmentation devices for contact lithotripsy including LASER have revolutionized the stone management in terms of efficacy and safety. But all of these are the stories of the developed centers. Is Bangladesh keeping pace with these sophisticated urological developments in stone management?

First ESWL machine started working at the then IPGMR in February 1993 with Siemens third generation lithotripter, Lithostar plus. Now 6 ESWL machines are working in government level hospitals and 7 in private level in different parts of the country. Ureteroscopy of lower urinary tract is considered to be the natural extension of cystoscopy. So with minimal armamentarium, but ensuring safety, the young roaming

urologists has been playing an important role in avoiding open ureterolithotomy in peripheral hospitals. Percutaneous access to the upper urinary tract is the cornerstone of endourologic technique. In Bangladesh, at present, PCNL is quite commonly done in government and private level hospitals in Dhaka. However, like other developing countries a vast majority of population is out of reach of modern facilities, either due to limited number of enriched centers or due to financial constrains. Open surgery will still be playing an important role in the treatment of stone disease in our country.

Several articles published in different Journals and research paper of thesis and dissertation related to ESWL, URS, PCNL has been evaluated and data presented.

Urinary stone disease is the third most common urological problem in the world next to urinary infection and BPH. Bangladesh is an endemic area for stone disease. Although there is no available epidemiological data regarding prevalence of urinary stone disease in our country, it is obviously very common and every urologist has to encounter various problems related to stone quite frequently.

Bangladesh is a country where evidence based medicine struggles against illiteracy and poverty of large population, Homeopathy and Ayurvedee medicine, where efficient and appropriate manpower is inadequate and the management system is such that one has to put a lot of effort to achieve something and therefore improvement is difficult. However, so far the stone disease is concerned; most of these negative factors have been over come slowly. The most remarkable and the key improvement is perhaps the skilled manpower development, which made it possible to disseminate urological service in private hospitals of periphery, where government could not place any specialist.

During last three decades, the management of urinary stone disease has advanced dramatically over other urological disorders. It is not only that understanding

about the etiopathogenesis has improved, but treatment modalities as well. The most are related primarily to stone fragmentation and removal (PCNL, ESWL, URS). Introduction of finer semirigid and flexible ureteroscope and nephroscope and their accessories, newer fragmentation devices for contact lithotripsy including LASER have revolutionized the stone management in terms of efficacy and safety. But all of these are the stories of the developed centers. Is Bangladesh keeping pace with these sophisticated urological developments in stone management?

In Bangladesh until 1993 open operative procedure was the only treatment for stone disease. In February 1993, a 3rd generation ESWL machine was set in former IPGMR. After about three years, some of our enthusiastic fellows started URS and ICPL in private hospitals. It is now being practiced in most of the centers having urology department and in private hospitals. PCNL was late to start with, but now it is being practiced in several centers. Laparoscopy is also being practiced with encouraging success.

ESWL:

Extracorporeal shock wave lithotripsy (ESWL) was introduced in the mid 1980s and today represents the most common mode of therapy for renal calculi. In Bangladesh, the first ESWL machine started working at the then IPGMR in February 1993 with Siemens third generation lithotripter- Lithostar plus. It has not only benefited a lot of patients, but also helped in building up positive attitude among general population towards non invasive and minimally invasive techniques in treating urinary stone disease. Initially small stones were selected for ESWL but with increasing experience, now, larger renal stones and selected ureteric, VUJ and vesical stones are broken successfully. Careful selection of cases, accurate targeting and multiple sessions produce good results. Now about 13 ESWL machines are working in different centers 6 in government and 7 in private level hospitals in different parts of the country. Several articles related to ESWL were published in different urology & nephrology Journals.

Ureteroscopy:

Ureteroscopy of lower ureter is considered to be a natural extension of cystoscopy. Previous concept of mandatory C-arm facility for URS is no longer strictly followed. Availability of narrow ureteroscopes and/or passing the scope in between 2 guide wires, have made the balloon dilatation of the ureter not mandatory. The pneumatic

lithotripsy, though not very powerful, is safe and least costly among the energy sources. Therefore, minimal armamentarium and safety measures allow roaming urologists to work with credit in peripheral hospitals avoiding open surgical procedures.

However, the access to the upper and sometimes in mid-ureter by ureteroscope and contact lithotripsy needs careful attention and safety measures mentioned earlier should be strictly followed and be done in well equipped centers, where ureterolithotomy have almost been completely replaced. Fine semirigid ureteroscope, newer fragmentation devices like pneumatic and LASER lithotripsy has been proved very effective and safe.

In absence of these facilities, in peripheral hospitals open ureterolithotomy is a common operation for general surgeons and urologists there.

Cystolitholapexy:

Vesical calculus often present with retention. History of gravelluria or sudden retention in an otherwise normal young man strongly suggest retention due to stone. Push back into the bladder and catheterisation may temporarily relief, but the stone is to be removed. Stone punch is one of the basic endourological armamentarium which may be carried by a roaming urologist into a peripheral hospital to remove the stone, or the patient may come to an appropriate center if he wants to avoid open lithotomy.

Roaming urologists:

Skilled manpower development (MS/FCPS in urology), as mentioned before, is the key of progress in providing urological service. About 5-6 specialist urologists are produced each year, but they remain under-utilised in government level hospitals. For private practice they move into some area far away from major cities in week end. Sometimes some basic urological armamentarium is used in these hospitals, and if skillfully and rationally applied, the patients get service near his door.

Percutaneous stone surgery:

Over the last 25 years, the management of upper tract renal calculi has undergone radical changes. Today's urologists are unlikely to perform many open procedures for stone disease. Percutaneous access to the upper urinary tract is the cornerstone of endourologic technique. The first "nephroscopes" were actually cystoscopes modified to avoid trauma to the renal pelvis. In the early 1980s, specially designed rigid nephroscopes were produced.

In Bangladesh, it was quite late to start the procedure until the availability of C-arm facilities in 2001 in DMCH and in 2003 in BSMMU. Workshops on PCNL in the 2nd and 3rd international conference in 2000 and 2002 and later another isolated workshop at BSMMU in 2003 increased the enthusiasm that led to regular start in 2004. PCNL has a longer learning curve, potential complications may be grave and therefore longer supervised training is mandatory. Moreover, the equipments are costly. So unlike URS, the PCNL could not be disseminated throughout the country and remained in Dhaka city.

Experience of 1st eighty cases at BSMMU showed 80% stone free rate, acceptable morbidity and mean operating time of 121 minutes. With increasing experience the operating time is declining. Energy source was pneumatic and further improvement is expected with more powerful device. Other centers at Dhaka doing PCNL have similar outcome.

Laparoscopy:

The role of laparoscopy in urinary stone disease is limited, but as most of the present day surgeons have laparoscopic experience, learning curve of ureterolithotomy for a relatively large date stone is quite encouraging.

Open stone surgery:

Bangladesh is a densely populated country having 150 millions people living mostly in rural area. Like other developing countries a vast majority of this population is out of reach of modern facilities, either due to limited number of city based enriched centers, or due to financial constrains. Open surgery will still be playing an important role in the treatment of stone disease.

Superiority of extended pyelolithotomy over the conventional pyelolithotomy and nephrolithotomy in the management of large staghorn and multiple renal calculi may not be over emphasized because of the facts that dissection along the Gil-Vernet plane ensures bloodless operative field, optimum access to the calyces, maximum conservation of renal tissue with minimum morbidity, minimum or no requirement of blood transfusion and shorter hospital stay. Anatomic nephrolithotomy is sometimes a better or only option in terms of stone clearance and avoidance of subsequent endourological procedure. But these surgeries are also quite demanding. They need experience, training, and some technical supports to achieve maximum stone clearance and preserve renal function. The qualified and

trained urologists and general surgeons posted in Medical Collage Hospitals of old districts are likely to be capable of doing such operations and can cover a large rural area, but not infrequently such procedures end up in poor outcome.

Ureterolithotomy and cystolithotomy are the commonly performed operations in peripheral hospitals.

Lucent stones:

The facilities needed to diagnose, evaluate and manage a lucent or semilucent stone is often not available other than in the advanced urology centers. In Bangladesh the problem is not uncommon and may be increasing perhaps due to changing diet habit and employment in middle east countries. Stone dissolution therapy is often rewarding. ESWL under sonographic localisation is an option with Lithostar plus. Open surgery can usually be avoided using endourological procedures in combination with medical therapy.

Stone with renal failure:

Calculus anuria is a grave complication of urinary stone disease and a urological emergency. Percutaneous nephrostomy is the standard practice. But supportive facilities have not yet developed even in the known centers. Lack of proficiency in using USG by the urologists have made them sonologist dependent. Ureteroscopic manipulations may overcome the initial crisis. The patients may need dialysis before definitive treatment. The proper diagnosis, evaluation and management are difficult and need early shifting to the well equipped centers.

Investigations for urinary stone disease:

Refinement in preexisting investigations including plain X-ray, IVU, USG, etc. has remarkably improved the evaluation of stone disease. Even in district level private hospitals, good quality pictures are commonly seen. Availability of non ionic contrast material has played an important role in safety.

Non-contrast CT and CT-uogram is also sometime asked by urologists. Renal angiogram may occasionally be required in difficult PCNL to plan access by visualising vascular pattern in relation to the stones. Renovascular interventional facilities are considered a prerequisite for PCNL to tackle any possible post PCNL bleeding. In Bangladesh, the facilities are available in or around specialised centers and thoughtful and rational use of them can be helpful to the patient. Nuclear imaging are readily available tests in almost all government medical colleges.

Biochemical tests for stone disease of serum and urine and stone analysis is a very important part of medical treatment especially for recurrent problem. In the field of medical investigation including for stone disease, Bangladesh has developed remarkably.

Future

Skilled manpower development and making technology available are the basic prerequisites for development. Our goal is to make open surgery as limited as possible and to spread the benefits of science towards the door of rural people. Government has got a lot of things to do, but let us do our parts ethically and masterly.

Yearly scientific conference including the international conferences are regularly going on since it started in

1990. These meetings were successful in exchanging views and ideas, especially in generating tremendous enthusiasm among the young urologists. Isolated workshops have also been organized with national and international faculties. Urology research is going on especially as a part of thesis and dissertation of MS (urology) and FCPS (urology) students. The Bangladesh Journal of Urology is also playing an encouraging role in urological research and development.

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