ROLE OF URETERORENOSCOPY IN BYPASSING THE URETERIC OBSTRUCTION.

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ABSTRACT

OBJECTIVES: To ascertain the efficacy of transurethral ureterorenoscopy (URS) in the management of ureteral obstruction. PLACE AND DURATION OF STUDY: This study was conducted from June 2005 to August 2006 at the Department of Urology and Renal Transplantation, Allied Hospital/Punjab Medical College, Faisalabad. RESULTS: A total number of 198 patients with ureteral obstruction due to any cause were included in the study. Cause of ureteral obstruction was stones in 172 patients, encrusted and upward migrated Double J (DJ) ureteric stent in 06 patients, ureteric tumors in 03 patients and ureteric injuries in 10 patients. Ureteral obstruction was relieved by completely clearing the stone in 98% patients; encrusted and upward migrated ureteric stents were removed in 100% patients. Iatrogenic ureteric obstruction was bypassed in 30% of patients. There was failure to negotiate ureteric orifice by ureterorenoscopy in 07 patients due to oedema at ureteric orifice. There was no significant complication during the procedure. CONCLUSION: Ureterorenoscopy is superior procedure in the diagnosis and treatment of ureteric obstruction due to any cause at any level except the iatrogenic ureteric obstruction where it has limited role.

KEYWORDS: Ureterorenoscopy, Ureteric Obstruction.

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INTRODUCTION

Acute ureteric obstruction can cause marked increase in intrapelvic pressure, leading to compression of medullary blood vessels that results in reduction of blood flow leading to medullary ischemia resulting in apoptosis and necrosis. If the obstruction is not relieved this structural damage will progress to tubular atrophy, interstitial fibrosis and progressive renal tissue loss.

Ureteric obstruction can be in the lumen. Ureter can also be compressed from outside. Stones, strictures, tumors, foreign bodies, blocked stents, iatrogenic ureteric ligations are the common causes of ureteric obstruction where ureterorenoscopy can be applied. The role of use of ureterorenoscopy is evaluated. This procedure can give rise to some complications and even ureteral avulsion in inexperienced hands. Carcinoma of the Prostate, carcinoma of the cervix, mass urinary bladder, retroperitoneal mass, ureteroceles are rare causes of ureteric obstruction.
Urinary obstruction whether unilateral or bilateral needs urgent intervention to drain the urine. Either it is done by percutaneous nephrostomy under ultrasonographic guidance or the obstruction in the ureter is bypassed with ureterorenoscopy.

Percutaneous nephrostomy procedure results in damage to 1–2% of nephron per tract along with other complications like perforation of adjacent viscera, bleeding and infection. Sometimes these tubes are pulled out inadvertently. Contrast studies are generally required to see the level of obstruction.

Ureterorenoscopy gives us direct vision of the obstruction site without puncturing any visera. So complications similar to PCN are not encountered. It is superior due to its diagnostic as well as therapeutic role. Nowadays ureterorenoscopes of small caliber are available which can be used even without anesthesia or mild analgesia. Other adjuvant modalities of treatment like stents, intracorporeal lithotripsy, forceps and scissors can be used through ureterorenoscopes.

MATERIALS AND METHODS

This study was conducted at Department of Urology and Renal Transplantation, Punjab Medical College/Allied Hospital, Faisalabad and Khadija Memorial Trust Hospital Faisalabad from June 15, 2005 to August 31, 2006.

Patients who presented with symptoms and signs of ureteric obstruction due to any cause through OPD or through emergency department were included in the study. Patients were fully evaluated with routine lab test, blood sugar, urea, and serum creatinine along with ultrasonography, X-ray KUB and intravenous pyelography if the renal profile were in normal range. DTPA renal scan was performed in patients with non excretion of contrast material on intravenous urography. Transurethral ureterorenoscopy was performed in hemodynamically stable patients with ureteric obstruction.

This procedure was done in lithotomy position with 8.5 Fr or 6.9 Fr rigid ureterorenoscope. Only mild sedation was given to patients who were unfit for general anesthesia. Ureteroscope was inserted through ureteric orifice with or without dilatation with guidewire. Obstruction site of ureter was properly visualized and guide wire no. 0.038 was tried to push up, to bypass the obstruction. In case of successful passage of guide wire, URS was guided up over it. Adjuvant modalities like intracorporeal pneumatic lithotripsy, forceps, scissors and stents were used as per indications. Percutaneous nephrostomy was done before URS in patients with anuria to stabilize the patients before the retrograde endoscopic procedures. Success of procedure as well as complication of procedure were noted.

RESULTS

There were 172 patients with ureteric obstruction due to ureteric stones. Among them 73% were male and 27% were females. Left and right ureteric stones were present in 54% and 46% respectively. Ureteric stones were present in the lower part of ureter in 63% patients, in mid ureter in 23% patients, in upper ureter in 14% patients and at PUJ in 05% patients. Size of the stone was 0.5 cm to 1 cm in 65.62% patients, 1 cm to 2 cm in 20% patients and 2 cm to 4 cm in 14.37% patients. Radiopaque stones were present in 77% and radiolucent stones were present in 33% of the patients. Bilateral ureteric obstruction was present in 17.5% patients and 10.62% patients presented with anuria. Stones were approached with ureteroscope and fragmentation was done with pneumatic lithoclast. Stones were completely removed in 98% of patients. Double J ureteric stents were passed in 26.87% patients and simple ureteric catheter was placed for 24 hours in 55% patients and 45% patients were sent without ureteric stent. Ureteroscope could not be entered through the ureteric orifice in 1.87% patients and it went in to false passage in 2.5% patients. There was minimum perforation with guide wire at the site of impacted ureteral stone in 9.37% patients. There was obstruction at pelviureteric junction due to stone in 7.5% patients. Obstruction was bypassed in all cases. These patients are still on follow up to see the clearance rate.

There was upward migration of previously placed DJ stents in 3.75% patients. All were removed successfully. Ureteric malignancy was diagnosed as a cause of ureteric obstruction in 1.87% patients. Biopsy was taken and obstruction was bypassed. Ureteric injury was present in 6.25% patients. Among them, cause of injury was gunshot and iatrogenic in 20% and 80% patients respectively. Injury site was bypassed in
10% patient with gunshot injury and the iatrogenic ligation of ureter was successfully dealt in 25% patients and in other 75% patients ureteric reimplantation was done by open technique.

**TABLE-I: DIFFERENT CAUSES OF URETERIC OBSTRUCTIONS AT DIFFERENT URETERIC LEVELS AND SUCCESS RATE OF URS IN RELIEVING THE OBSTRUCTION.**

<table>
<thead>
<tr>
<th>Cause of Ureteric Obstruction</th>
<th>Number of patients</th>
<th>Level of ureteric obstruction (%)</th>
<th>Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PUJ</td>
<td>Upper</td>
</tr>
<tr>
<td>Ureteric Stone</td>
<td>172</td>
<td>05</td>
<td>09</td>
</tr>
<tr>
<td>Encrusted DJ</td>
<td>06</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>Ureteric Tumour</td>
<td>03</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>Ureteric Injury</td>
<td>10</td>
<td>00</td>
<td>00</td>
</tr>
</tbody>
</table>

**DISCUSSION**

With the advancement in the development of presently available small caliber ureterorenoscopes; there is an outstanding break through in the diagnosis and treatment of different causes of ureteric obstruction. Ureterorenoscopes with outer end diameter of 4.0-9.8Fr are in routine use now-a-days. Therefor it is used frequently in the management of the ureteric obstruction due to stones, strictures, tumours and iatrogenic ureteric injuries.

Mugiya et al in 2006 treated 54 patients with ureteric stone having diameter average 15.2 mm with small diameter ureterorenoscopy. He was successful in fragmenting the ureteric stones in 87% patients by a single endoscopic procedure. No complication was recorded in any case.

Fassihudin and Hasnat in 2002 performed ureterorenoscopies in 125 patients. Among them 73.7% were male and 26.3% were females. There was technical failure to negotiate through the ureteric orifice in 8% of the patients. In 118 patients in which there was successful introduction of ureterorenoscope, there were stones in the upper ureter in 4%. in the middle ureter in 13.2% and in lower ureter in 82.6%. Stone clearance rate was 93.8%. Stricture was found in 4% patients. Stripping of mucosa occurred in 2.5% patients.

Sanaullah et al in 2003 studied 30 patients with ureteric stones. Fragmentation of ureteric stones was completed with ureteroscope in 95% of the patients. Toutique and Bagley did 100% stone clearance in 29% proximal, 19% mid and 52% distal ureteric stones in 210 patients. Park et al did retrograde endoscopic stone clearance in 87.8% of patients. He observed 83.6% and 42.1% stone clearance rate with ESWL in case of stone size less than 1cm and more than 1cm respectively. Maheshwari et al reported 100% stone clearance in upper ureter with antegrade approach. The disadvantage of antegrade approach is that it damages the renal tissue when just entering the ureter.

Our study revealed 98% stone clearance rate in the ureter at all levels. So transurethral ureterorenoscopy should be the preferred method to approach and fragment the ureteric stones. Anyhow, the flexible ureteroscope is a better option as compared to rigid one. Its cost and early wear and tear limits its role in our circumstances.

Skellarion et al in 2002 studied 44 patients with iatrogenic ureteric injuries. He did endoscopic ureteric catheterization in 34.1% patients. In remaining 65.9% patients he did open surgical procedures.

Rafique M and Arif MH in 2002 managed all of the 18 patients with gynaecological iatrogenic ureteric injuries with open surgical procedures with good results in all patients. Chitalae et al 2002 studied 43 patients with iatrogenic ureteric injuries and successful endoscopic stenting was possible only in 21% of the patients. Ureteric stenting was possible in 30% of patients in our study.

Alapont et al in 2003 did ureterorenoscopy in 4645 patients for different causes of ureteric obstruction. He did this procedure under mild sedation and on outpatient basis in 53.9% cases, remaining 46.1% cases were done under general anaesthesia. There was ureteral avulsion in 3 cases. We did ureterorenoscopy in 35% patients under mild sedation and analgesia.

**CONCLUSION**

Transurethral ureterorenoscopy is a superb procedure for the fragmentation of the ureteric stones at any level. It is also very useful in managing the ureteric strictures, growths and upward migrated
ureteric stents. Anyhow it has a limited role in managing the iatrogenic ureteric injuries. One should be very careful in inserting and upward movement of the ureterorenoscope to avoid complications. Consequently the ureterorenoscopy has been proved superior in diagnosing and treating the different causes of ureteric obstruction at any level as a single procedure with minimal tissue damage.

REFERENCES


