

ENDOSCOPIC REALIGNMENT OF COMPLETELY TRANSECTED URETER LEADING TO URETEROCUTANEOUS FISTULA A CASE REPORT

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ABSTRACT

Ureters are retroperitoneal structures and are well protected in the abdominal cavity. Reported incidence of ureteric injuries is 0.5%-10% and iatrogenic factor is the most predominant. Ureteric discontinuity following injury has been traditionally treated by open surgery. With the advent of improved endoscopic instruments and fiberoptics, it is possible to stent these lesions percutaneously or by retrograde instrumentation. We describe a retrograde endoscopic approach to re-establish ureter integrity successfully in a case of a firearm injury resulting in complete transection of the ureter and subsequently formation of an ureterocutaneous fistula.

We illustrate usefulness of Endoscopic approach for the management of ureteric injuries as an alternative to traditional approach.

Keywords: Transection, stent, urinoma, retrograde, iatrogenic, ureter integrity.

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INTRODUCTION

Ureters are retroperitoneal structures and are well protected in the abdominal cavity by the dorsal muscles, vertebral column, abdominal muscles laterally and anteriorly¹. Moreover the ureters are a very small, movable and flexible structures. However despite of being it well protected, ureters are prone to injury.

Ureter injury may be partial or complete and may be the result of blunt, penetrating or iatrogenic trauma.

Incidence of ureteric injury is 0.5% to 10% and iatrogenic factor is most predominant because of its anatomical location in the abdominal cavity^{1,2}. Gynaecological procedures accounts for 50%-75% of iatrogenic ureteric injuries^{1,3}.

General surgical procedures like abdominoperineal resection and endoscopic urological procedures are also contributing to ureteric injuries. Among the rare causes are spontaneous ureter rupture following ureteric obstruction⁴, seat belt injury in paediatric population and firearm injury⁵. Obesity, cancer, hemorrhage, endometriosis, adhesions and an enlarged uterus are important risk factors for ureteric injuries during any pelvic ,

abdominal or retroperitoneal surgery⁶⁻⁸.

Traditional surgical repair of completely transected ureter is considered routine practice but endoscopic realignment of completely transected ureter is innovative and a difficult task which was considered worth reporting.

CASE REPORT

Twenty five years old male with midline abdominal scar mark, left colostomy, a wound with watery discharge over left iliac crest and having poor general health was referred from General Surgery Department.



Figure 1: Ureterocutaneous fistula with ileostomy bag over left iliac crest

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Figure 2: Midline abdominal scar mark and left colostomy

One month before referral, this patient received gunshot injury in his home country (Djibouti). As a consequence he developed multiple intestinal perforations, gastric perforation, mesenteric tear comminuted fracture of left iliac bone and fracture of transverse process of 5th lumbar vertebra. He was operated the same day (in Somalia). Left colostomy was performed with repair of the small bowel, the gastric perforation and the mesenteric tear. Despite surgical measures, patient condition continued deteriorating and the watery discharge started coming out from the bullet tract over the crest of left iliac bone on the 10th post-operative day. Ileostomy bag was attached and patient was advised to consult a Urologist. The patient was brought to UAE and admitted in GMC Hospital for further management.

On admission, he was anaemic Hb 8gm/dl, febrile and with poor general health. Two packed red blood cells transfused and his haemoglobin was raised up to 13.2g/dl. A high protein diet was advised. Antibiotics and *i/v* fluid were started.

Double abdominal contrast C-T Scan was performed. It revealed left ureteric complete transection both ends of ureter were displaced and stenotic with urinoma formation between left Psoas and left Iliac muscles with a fistulous tract extending through the fractured iliac bone to the overlying skin. Distention of the stomach and small bowel was also observed. Air loculi within the left renal collecting system and urinary bladder were also seen.

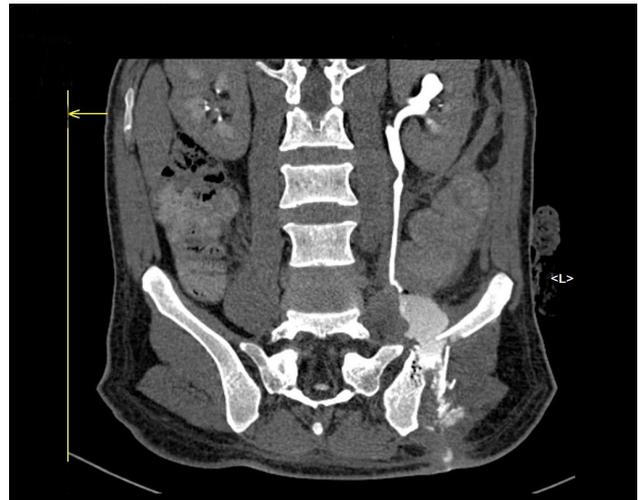


Figure 3: Abdominal CT image showing the transected ureter, the urinoma and the fractured iliac bone



Figure 4: Abdominal CT image revealing ureterocutaneous fistulous tract (arrow)

With the diagnosis of complete ureteric transection and urinoma at the level of L4-L5, multiple treatment options both open and endoscopic were considered. Even options for a worse case scenario like autotransplant and nephrectomy were also considered. Endoscopic realignment was our preferred treatment option because increased morbidity and complications were associated with open surgical procedure.

Patient was planned for surgery and informed consent was taken. We started with cystoscopy and a sensor straight tip nitinol wire with a hydrophilic tip was introduced into the left ureter orifice under fluoroscope control. The floppy tip was positioned in the urinoma. Then the rigid ureteroscope (6.5 Fr at the distal tip) was introduced over the guidewire

into the ureter. Just 7cm proximal to vesicoureteric junction, ureter was stenosed however we continued to push the ureteroscope under vision and over the guidewire very slowly and carefully until we reached the urinoma where we found the curled guide wire. Many soft tissue false passages were identified, however we continued to search for the true passage by using the sensor floppy tip. Fortunately one passage admitted the sensor tip to pass through and it was found curled up in the collecting system. For confirmation ureteric catheter 6 fr. was inserted over the guide wire and retrograde urography was performed monitored by fluoroscope. Renal collecting system was outlined with contrast material. After confirmation of realignment then we inserted the D-J Stent. However it took 2 hours and once we pulled the guide wire during this procedure.

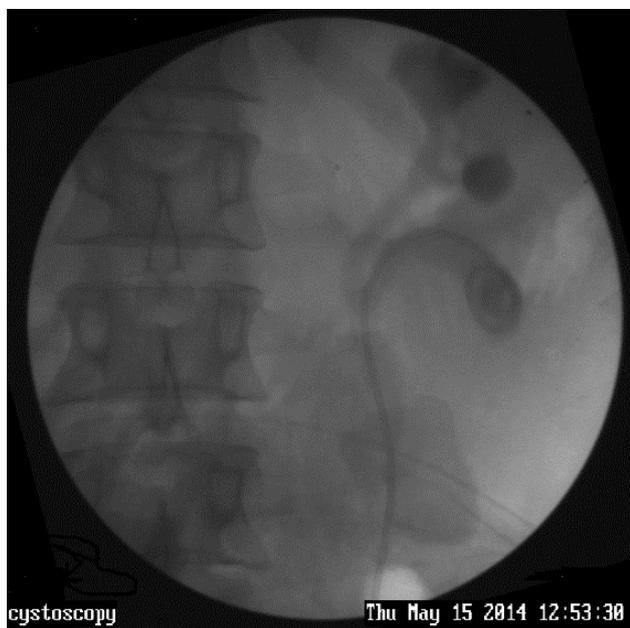


Figure 5: Fluoroscope image showing outlined collecting system and curled guide wire with double J stent.

The post operative period was uneventful. Patient was looking active and healthy on 1st post operative day. The urinary discharge started decreasing immediately after surgery and patient was dry on 2nd post operative day. Patient was discharged on 3rd post operative day with advice of follow-up in urology OPD on monthly basis.

DISCUSSIONS

Ureteric discontinuity following injury has been traditionally treated by open surgery. With the advent of improved endoscopic instruments and fiberoptics, it is possible to stent these lesions retrogradely or percutaneously. The standard method

for the management of ureteric dehiscence or fistula by cystoscopic retrograde or percutaneous antegrade stent insertion have a technical success rate of 10%-40% and 90% respectively⁹.

The patient arrived in our Department with watery discharge over left iliac crest which after further work up was clarified to be a completely transected ureter with urinoma at L4-L5 level, ureterocutaneous fistula and both ureteric ends displaced and stenotic. Different treatment options like retrograde cystoscopy, ureteroscopy and stenting under vision, antegrade percutaneous stenting, ureteroureterostomy, transureteroureterostomy, Ileal substitution of the ureter, autotransplant and even worst option nephrectomy were considered.

Because this patient underwent laparotomy one month before so traditional surgical options were hazardous to practise. In this case we tried retrograde cystoscopy and ureteroscopy and did stenting of transected ureter under vision through urinoma successfully.

To our knowledge only five cases of endoscopic management of ureteric injuries have been reported in literature. A similar technique, retrograde cystoscopy and ureteroscopy has been successfully employed in the management of distal ureteric fistula by De Baere et al, 1995 and Beaghtler M A et al, 1997^{10,11}. Postoak et al, 1997 managed ureteric transection secondary to gun shot wound by combining percutaneous antegrade and cystoscopic retrograde ureteral stent placement¹². Gray et al, 1992 and Hugh et al, 2004 described an intra urinoma rendezvous approach combining percutaneous antegrade- Transconduit retrograde technique of stent insertion to re establish ureteric integrity in case of recurrent ovarian carcinoma (ureterocolic and ureterovaginal fistulae) and operated bladder cancer patients respectively^{9,13}.

It is important to mention here that all these were complicated cases with different mechanism of injury and it was also hazardous to operate traditionally due to previous surgery. However all these were managed endoscopically depending upon the expertise and facility available in the institution.

Ureteric injury is associated with serious and significant morbidity if it remains undetected and untreated. That may result in urosepsis, fistula formation, increased hospital stay, compromise of original surgical outcome, potential loss of renal function, significant deterioration of patient quality of life and psychological disturbance^{3,14}.

Our case was also neglected and overlooked case of ureteric injury. His general health was poor

and he was anaemic also, but after successful stenting postoperative recovery was marvelous and rapid.

We would like to emphasise that appropriate and timely management of these injuries is very important to decrease associated morbidity. We will also illustrate that this procedure offers an alternative approach particularly in patients where traditional surgery is hazardous and associated with complications.

CONCLUSION

Ureteric injury has multivariate etiology but iatrogenic factor is most predominant. Ureteric injury is associated with serious and significant morbidity if not timely and properly managed. Ureteric discontinuity has been traditionally managed by open surgery but endoscopic realignment of completely transected and displaced ureter is difficult and innovative and is associated with rapid and prompt recovery. It is an alternative to traditional approach particularly in patients where traditional surgery is hazardous and associated with complications.

REFERENCES

1. Al-Awadi K. Iatrogenic ureteric injuries, incidence, aetiological factors and effect of early management on subsequent outcome. *International Urology and Nephrology*. 2005;37:235-241.
2. Watterson JD, Mahoney JE, Futter NG, Gaffield J. Iatrogenic ureteric injuries: Approaches to etiology and management. *Canadian Journal of Surgery*. October 1998;41(5):379.
3. Liapis A, Bakas P, Giannopoulos V, Creatsas G. Ureteric injuries during Gynaecological surgery. *Int. urogynaecal J*. 2001;12:391-394.
4. Navneet K and Minocha VR. Ureteric Stricture with perirenal urinoma treated by ureteric replacement with appendix. *Internal Urology and Nephrology*. 2003;35(1):87.
5. Slobogean GP, Tredwell SJ, Masterson JS. Ureteropelvic junction disruption and distal ureter injury associated with chance fracture following a traffic accident. A case report: *Journal of Orthopedic surgery*. 2007;15(2):248-50.
6. Hammad FT, AlQaiwani KM, Shirodkar SS. The role of urologists in the management of urological injuries during obstetric and gynaecologic surgery: *Int.Urogynecal J*. 2010;21:1237-1241.
7. Drake MJ and Noble JG. Ureteric trauma in Gynaecologic surgery. *International Urogynecology Journal*. 1998;9(2):108-17.
8. Tsujinaka S, Wexner SD, DaSilva G, Sands DR, Weiss EG, Nogueras JJ, et al. Prophylactic ureteric Catheters in Laparoscopic Colorectal Surgery. *Tech Coloproctal*. 2008;12:45-50.
9. Anderson H, Alyas F, Edwin PJ. Hugh Anderson et al: Intra- urinoma Rendezvous using a transconduit approach to re-establish ureteric injury: *cardiovasc intervent radiol*. 2005;28:95-97.
10. de Baere T, Roche A, Lagrange C, Denys A, Court B, Isapoff J, Pappas P. Continued percutaneous antegrade and cystoscopic retrograde approach in the treatment distal ureteric fistulae. *Cardiovascular Intervent Radial*. 1995;18:349-352.
11. Beaghler MA, Taylor FC, MC Laughlin KP. A combined antegrade and retrograde technique for re-establishing ureteral continuity. *Tech Urol*. 1997;3:44-48.
12. Postoak D1, Simon JM, Monga M, Ferral H, Thomas R. Combined Percutaneous antegrade and Cystoscopic retrograde ureteral stent replacement: An Alternative technique in cases of ureteral discontinuity. *Urology*. 1997;50:113-118.
13. Gray RJ1, Intriere L, Dolmatch BL, Edson M, Fischer J. Combined retrograde-antegrade ureteral stent passage. Salvage Procedure for ureteral leak. *J Vase. Interv Radial*. 1992;3:557-558.
14. Tsivian M Jr, Tsivian M, Sidi AA, Tsivian A. Uretero-vesico-cervical fistula following a Caesarean section: A unique Case report: *Int. Urogynecal*. 2012;23:1639-1641.