Abstract: Tuberculosis infliction of extrapulmonary sites occurs in 10 percent of all cases diagnosed with tuberculosis. Genitourinary Tuberculosis accounts for 30 to 40 percent of all extrapulmonary tuberculosis, second only to lymphonodal affection. In developed countries, urogenital tuberculosis occurs in 2 to 10 percent of cases of pulmonary tuberculosis, while in developing countries it occurs in as many as 15 to 20 percent of cases. Bilateral urinary tuberculosis is a rare occurrence in less than 5 percent of all cases of urinary tuberculosis. Tuberculous ureteric stricture leading to obstructive nephropathy is a rare event in the present era of anti-tuberculosis multidrug therapy. Ileal ureteric replacement for ureteric stricture described nearly half a century ago seems to be the last resort in cases of multiple long segment tuberculous ureteric strictures. We report a case of 33 year old lady with bilateral urinary tuberculosis with bilateral salvageable kidneys and pipe stem ureters. Ileal replacement of the right ureter and internal stenting of the left ureter was performed with successful outcome. We report this case for the rarity of the procedure of ileal replacement of ureter in the present era of multidrug anti-tuberculosis therapy.

Keyword: Urinary tuberculosis, Ileal ureter, Nephrostogram

INTRODUCTION: Tuberculosis (TB) remains a worldwide scourge and its incidence appears to be increasing due to various factors, such as the spread of human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS). The insidious onset and non-specific constitutional symptoms of genitourinary tuberculosis (GUTB) often lead to delayed diagnosis and rapid progression to a non-functioning kidney. Due to hematogenous dissemination of TB, there is a potential risk of involvement of the contralateral kidney. Imaging plays an important role in the making of a timely diagnosis and in the planning of treatment, and thus helps to avoid complications such as renal failure. Tuberculosis infliction of extrapulmonary sites occurs in 10% of all cases diagnosed with tuberculosis. Genitourinary Tuberculosis accounts for 30% to 40% of all extrapulmonary tuberculosis, second only to lymphonodal affection. In developed countries, urogenital tuberculosis occurs in 2% to 10% of cases of pulmonary tuberculosis, while in developing countries it occurs in as many as 15% to 20% of cases. Bilateral urinary tuberculosis is a rare occurrence in less than 5% of all cases of urinary tuberculosis.

CASE REPORT: A 33 year old lady presented with complaints of severe irritative voiding lower urinary tract symptoms of urgency and increased frequency for 3 months duration. She had no other co-morbidities and significant past history. Urine examination revealed mild proteinuria(++), no RBCs, plenty of pus cells. Urine pH was acidic. Urine culture revealed no growth and Urine for AFB was negative. ESR was elevated (50mm/hr). Renal parameters were within normal limits. Chest X ray and X ray KUB revealed no significant abnormalities. Sputum for AFB and Mantoux were negative. USG Abdomen showed moderate hydrenephrosis delayed excretion of the left kidney with cortical thickness of 1.6 cm and other findings were normal. IVP revealed hydrenephrosis of left kidney with and moth eaten appearance of the right kidney with changes of ureteritis of right ureter (Figure 1). CECT KUB revealed hydrenephrosis of left kidney with relatively preserved parenchyma of both kidneys (Figure 2). Left PCN was done and followed by Left Antegrade study which revealed pipe stem left ureter and scarred left pelvis (Figure 3). The output from the left PCN was about 1000 ml per day and the PCN fluid analysis revealed that the left kidney was salvageable. Bilateral ureteric stenting was done (Figure 4), and Category I anti tuberculosis therapy was started with based on the radiological findings. The patient was advised regular stent change. She completed 6 months ATT but lost urological follow up.
Figure 1. IVP revealing hydronephrosis of left kidney with and moth eaten appearance of the right kidney with changes of ureteritis of right ureter

Figure 2. CECT KUB showing moderate hydronephrosis of left kidney with relatively preserved parenchyma of both kidneys

Figure 3. Left antegrade study showing pipe stem left ureter and scarred left pelvis

Figure 4. Plain X ray KUB showing bilateral DJ stent in situ

The patient presented 6 months later with severe right loin pain. On evaluation she was found to encrusted right stent and right upper ureteric calculus of 1.2 cm x 0.8 cm with elevated renal parameters (Figure 5). Dialysis was initiated and renal parameters were stabilised. An attempt to fragment the right upper ureteric calculus with ESWL failed. Right PCN was done and there was an average output of about 1200 ml per day PCN fluid analysis revealed that the right kidney was salvageable. Right URSU was done for the right upper ureteric calculus and bilateral stent change done. Bladder capacity was about 300ml. Right antegrade study revealed relatively preserved right kidney with multiple strictures in the right ureter (Figure 6). The patient was taken up for ileal replacement of the right ureter as right kidney was relatively better preserved than the left kidney. The definitive management for left ureter was planned for the next stage. A barium meal follow through study showed no abnormalities in the small bowel.

PROCEDURE:
Laparotomy with a midline vertical incision skirting around the umbilicus was made. Ascending colon was mobilised along the White line of Toldt to expose the right kidney and ureter. Gerota’s fascia was opened to reveal thickened pelvis. The entire ureter was thickened and cord like (Figure 7). A 15 cm ileal segment about 20 cm proximal to the ileo caecal junction was isolated with its mesentry (Figure 8) and ileo-ileal anastomosis done with 3’0 vicryl for maintaining intestinal continuity. The entire right ureter was mobilised completely and excised up to the bladder completely and sent for histopathological examination. Ileal segment was anastomosed to the renal pelvis and bladder in isoperistaltic fashion with 5 Fr DJ stent in situ (Figure 9 and 10). Right PCN was retained. Retroperitoneal drain placed and wound closed in layers.

Figure 5. Plain X ray KUB showing bilateral DJ stent in situ with right upper ureteric calculus due to stent encrustation

Figure 6. Right antegrade study revealed relatively preserved right kidney with multiple strictures in the right ureter

Figure 7. I intra-op findings revealed pipe stem right ureter with thickened pelvis

Figure 8. Isolation of ileal segment with its mesentry.

Figure 9. Ileal segment was anastomosed to bladder in isoperistaltic fashion

Figure 10. Ileal segment was anastomosed to the renal pelvis in isoperistaltic fashion with DJ stent in situ

POST OPERATIVE PERIOD:
The post operative period was uneventful and the patient’s renal parameters normalised. Right Nephrostogram performed in the post operative period revealed good drainage of contrast via the ileal ureter into the bladder with no contrast extravasation (Figure 11). Right PCN was removed. The patient is on regular follow up and doing well. Histopathological examination of the right ureter revealed extensive mucosal ulceration and multiple granulomas surrounded by lymphocytes, plasma cells, fibroblasts and giant cells and was reported as Tuberculous involvement of the right ureter.
DISCUSSION:

Figure 11. Right Nephrostogram performed in the postoperative period revealed good drainage of contrast via the ileal ureter into the bladder with no contrast extravasation.

Tuberculosis of the ureter is almost always a direct extension of TB of the kidney. The passage of caseous material rich in mycobacteria leads to tubercle formation within the ureteric mucosa. This usually affects the lower ureter, commonly the ureterovesical junction, less commonly the middle and upper ureter (Shin et al, 2002). Tubercle formation is soon followed by ulceration of the mucosa and subsequent fibrosis and scarring, leading to ureteric stricture disease and obstruction. Lesions extending into the ureteric wall will also initiate a dense fibrosis on the ureteric serosa, leading to encasement of the ureter and angulation by contracted cicatricial bands (Johnson, 1911). Tuberculous ureteric stricture leading to obstructive nephropathy is a rare event in the present era of antituberculosis multidrug therapy.

Ureteric stricture is a feared manifestation of genitourinary tuberculosis. The exact site and length of stricture must be defined with radioimaging (intravenous urography, retrograde, or antegrade pyelography) and renal function be quantified. The treatment of stricture mostly requires some kind of intervention after a brief period of antituberculous medicines. For uncomplicated/simple strictures (short segment, passable, with renal function >25%, good bladder capacity) endourologic option should be used which usually means double-J stenting with or without balloon dilatation. For complicated/complex strictures (long segment, dense fibrosis, with renal function <20%, good bladder capacity) regular surgical options should be considered which usually means ileal ureter/autotransplantation for whole length/multiple strictures. The use of ileal segments for ureteral substitution has become a valuable procedure in reconstructive urology since its first description in 1906 by Shoemaker and later popularization by Goodwin et al in the late 1950s. Although it was initially described for tubercular obstruction, recent decades have seen the indications for its use broaden. Ileal ureter replacement is a technically feasible surgery to be performed in any patient requiring ureteral reconstruction despite a normal contralateral kidney. As such, it is a better alternative than nephrectomy in cases of complex and multiple ureteral strictures. It portends good long-term results for the relief of obstructive uropathy and the preservation of renal function. The associated complications and morbidity of ureteral replacement should be considered in patient selection. The long-term benefits should compare favorably to short-term morbidity. A half century later the ileal ureter remains an excellent solution for an obstructed ureter when other reconstructive measures from within the urinary tract are judged to be impossible.

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REFERENCES: