Abstract:
Genitourinary tuberculosis is the second most common type of extrapulmonary tuberculosis following lymphnode TB. Tuberculosis can involve any part of the urinary tract with ureteric strictures contributing to a significant cause of obstruction and renal failure. Nearly six decades following the first description of ileal replacement of ureter, this procedure is still feasible when all other modalities seem impossible. We report a 38 year old lady diagnosed to have genitourinary tuberculosis with a pipe stem ureter and a hydronephrotic salvageable kidney who underwent this rare procedure with a successful outcome.

Keyword: GUTB, IVU, CECT, Nephrostogram

Introduction:
Genito urinary tuberculosis is the second most common type of extra pulmonary tuberculosis with 90% cases occurring in developing countries. Ureteric strictures in genitourinary tuberculosis can affect any part of the ureter with lower ureteric strictures being the commonest site.1 Ureteric strictures if left untreated lead to loss of ipsilateral renal function. A salvageable kidney in genito urinary tuberculosis in this era of multi drug resistance is uncommon and this case is being reported for the rarity of the procedure being performed for a tubercular ureteric stricture.

Case report:
38 year old lady presented with severe irritative lower urinary tract symptoms with urgency and increased nocturnal frequency of one month duration. Patient had no other comorbidities but gave a history of significant weight loss in last 3 months. There was no history of evening rise of temperature or contact history with tuberculosis. Routine urine examination revealed +++ proteinuria, 20-30 RBC/hpf and plenty of pus cells. Urine culture grew Acinetobacter. 3 samples of urine for AFB were negative. Urine for malignant cytology was normal. ESR was raised (48mm/hour) and renal parameters were normal. Chest X-ray and X-ray KUB did not reveal
any significant abnormalities. Sputum for AFB and Mantoux were also negative. Ultra sound of the abdomen revealed moderate hydronephrosis of the right kidney with cortical thickness of 1 cm with thickened bladder wall and post void residual urine of 40 ml (Figure 1 and 2).

Figure 1: USG right Kidney showing hydronephrosis
Figure 2: USG showing thickened bladder wall

Intravenous urogram (Figure 3,4,5,6) done revealed non visualization of the right kidney with normal left kidney and collecting system. Left ureter was traceable till the bladder. Bladder capacity was relatively preserved and delayed films did not reveal any excretion from the right renal system.

Figure 3: IVU 3 min film Figure 4: IVU 15 mins film
Figure 5: IVU Full bladder Figure 6: IVU 24 hrs film
In view of non visualization of the right kidney a CT scan of the abdomen was done which showed right hydronephrosis with dilated pelvis and thickening of the pelvic wall and upper ureter (Figure 7).

**Figure 7: CT KUB showing dilated pelvis and hydronephrosis**

On the basis of radiological findings patient was started on anti tuberculous medication. Cystoscopy revealed a red glow and ureteric orifices could not be visualized. Biopsy of the bladder mucosa revealed granulomatous lesions. Stenting could not be done. Percutaneous nephrostomy was placed in the right collecting system. The output from the PCN was around 1000-1200 ml/day. PCN fluid analysis done showed that the kidney was salvageable. Following intensive phase of ATT cystoscopy was repeated. The red glow had resolved and bladder capacity was 260 ml. Right ureteric orifice could not be identified.

The ureter was not visualized even in the antegrade study (Figure 8) and follow up CECT (Figure 9). Ileal ureter replacement of the right ureteric stricture was planned and a barium meal follow through study showed no abnormalities in the small bowel.

**Figure 8: Antegrade study Figure 9: Reconstructed images of CECT KUB**

**Procedure:**

Laparotomy with a midline vertical incision skirting around the umbilicus was done. Ascending colon was mobilized along the white line of Toldt to expose the right kidney and ureter. Gerotas fascia was opened to further reveal the thickened pelvis. The entire ureter was thickened and cord like (Figure 10). 15 cms of ileum 10 cms proximal to the ileo caecal junction was isolated with its mesentry and ileo-ileal anastamosis done in four layers using 3 '0' vicryl. The right ureter was mobilized completely and excised (Figure 11, 12). Ileal segment was anastamosed to the renal pelvis and bladder in an isoperistaltic fashion (Figure 13, 14).
Post operative period:
The abdominal drain was removed on the 12th day and urethral Foleys was removed on the 17th postoperative day. A nephrostomogram was done 3 weeks following the procedure and revealed good drainage of contrast via the ileal ureter into the bladder with no extravasation (Figure 15). The nephrostomy tube was removed on the 23rd postoperative day. Patient was continued on anti tuberculous medication.
Histopathological examination revealed extensive mucosal ulceration and multiple granulomas surrounded by lymphocytes, plasma cells fibroblasts along with giant cells and was reported as TB ulcer ureter (Figure 16).

Discussion:
Strictures of the ureter in genito urinary tuberculosis is common. Management options range from simple double J stenting if detected early, various endoscopic procedures like balloon dilatation, endoureterotomy and open surgical procedures like ileal replacement of ureter. The indications for ileal replacement of the ureter are long ureteric strictures (>5 cm), upper ureteric strictures and multiple strictures in the ureter. This procedure was first described by Shoemaker in 1906 and popularized by Goodwin et al in 1950s. It remains a technically feasible option in patients requiring ureteral reconstruction where other less invasive procedures are considered impossible.

References:

