

# Incidental Discovery of Renal Tuberculosis Post-Nephrectomy for Non-Functioning Kidney: A case report

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## ABSTRACT:

**Introduction:** Extra pulmonary TB (EPTB) constitutes 15–20% of all TB cases and genitourinary TB (GUTB) constitutes approximately 20% of EPTB cases. Urinary TB is often asymptomatic, but continuous infection can gradually impair renal function by causing destruction of renal tissue and fibrosis during the healing process, leading to obstruction, loss of function and over time a non-functioning kidney (NFK).

**Case Summary:** A 28-year-old male came with complaints of pain and lump in the right lumbar region for 4 years. On examination, a firm lump in right lumbar region measuring approx. 8x6 cm. CT Urography revealed a well defined cystic lesion 8x7.7x10cm in size in right renal pelvis communicating with calyces causing gross hydronephrosis with severe thinning of renal parenchyma likely due to pelvi ureteric junction obstruction. 99m Tc-DTPA scan showed no functioning of right kidney. Patient underwent laparoscopic nephrectomy. HPE report was suggestive of tuberculosis. Patient was started on ATT.

**Discussion:** Renal TB is an insidious condition with late onset symptoms, delay in treatment, a high organ destruction rate and therefore an increased incidence of renal failure. About 26.9% of cases present with unilateral non-functioning kidneys. Only half of all patients with renal TB are symptomatic at presentation. Renal tuberculosis presenting as giant hydronephrosis is a rare urological entity. For urogenital tuberculosis diagnosis, imaging techniques are upto 91.4% sensitive. Contrast CT Urography is the most important diagnostic tools for evaluation of anatomic details of the urinary system in tubercular disease. Surgical management is mandated in upto 55% of renal tuberculosis patient.

**Conclusion:** Genitourinary tuberculosis has many clinical and radiological manifestations and present with non specific symptoms, hence diagnosis is usually delayed. Therefore, it is essential to have a high index of suspicion in mind for early detection.

**KEYWORDS:** Hydronephrotic, Laparoscopy, Nephrectomy, Tuberculosis

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## I. Introduction

According to World Health Organization (WHO), the reported number of people who are newly diagnosed with TB was 7.5 million in 2022. Globally in 2022, TB caused an estimated 1.30 million deaths, being the second most common cause of death. Thirty-five TB burden countries accounted for 87% of the world's TB cases in 2022 with India (27%) being number one [1].

Extra pulmonary TB (EPTB) constitutes 15–20% of all TB cases and genitourinary TB (GUTB) constitutes approximately 20% of EPTB cases [2,3]. WHO declared Genitourinary tuberculosis (GUTB) a 'public health emergency' in 1993, and it remains a major concern in developing countries like India [1,4]. Urinary TB is often asymptomatic, if not dealt in time can lead to a non-functioning kidney (NFK). Reconstruction of the urinary tract or sometimes Nephrectomy is often necessary for patients with urinary TB, presents significant challenges [5].

**Case Report** - A 28-year-old male presented to the Surgery OPD with complaints of pain and lump in the right lumbar region for 4 years which had gradually increased in size. It was associated with burning micturition. Other constitutional symptoms included intermittent fever, fatigue and intermittent diarrhea. Patient had no comorbidities with no surgical history. However, patient's mother had Pulmonary TB 24 years back for which she took ATT for 9 months.

On abdominal examination – a firm lump in right lumbar region with well defined margins, which was rounded in shape, non-tender, measuring approximately 8x6cm, non-mobile, no movement with respiration, not fixed to skin and non prominent on leg raising test.

Rest of the systemic examination were unremarkable.

Blood Investigations were within normal limits. Urine routine and microscopy showed few pus cells. Urine culture and sensitivity showed no growth. X-ray chest was normal.

USG showed right sided gross dilatation of PCS with cortical thinning. There was narrowing in pelvis seen. AP diameter of renal pelvis measured 12.6cms.

CT Urography was done which showed a well defined cystic lesion 8x7.7x10cm in size in right renal pelvis communicating with calyces causing gross hydronephrosis with severe thinning of renal parenchyma likely due to right pelvi ureteric junction obstruction (fig1&fig2). 99m Tc-DTPA scan showed no functioning of right kidney and left kidney had GFR 49.4 ml/min.

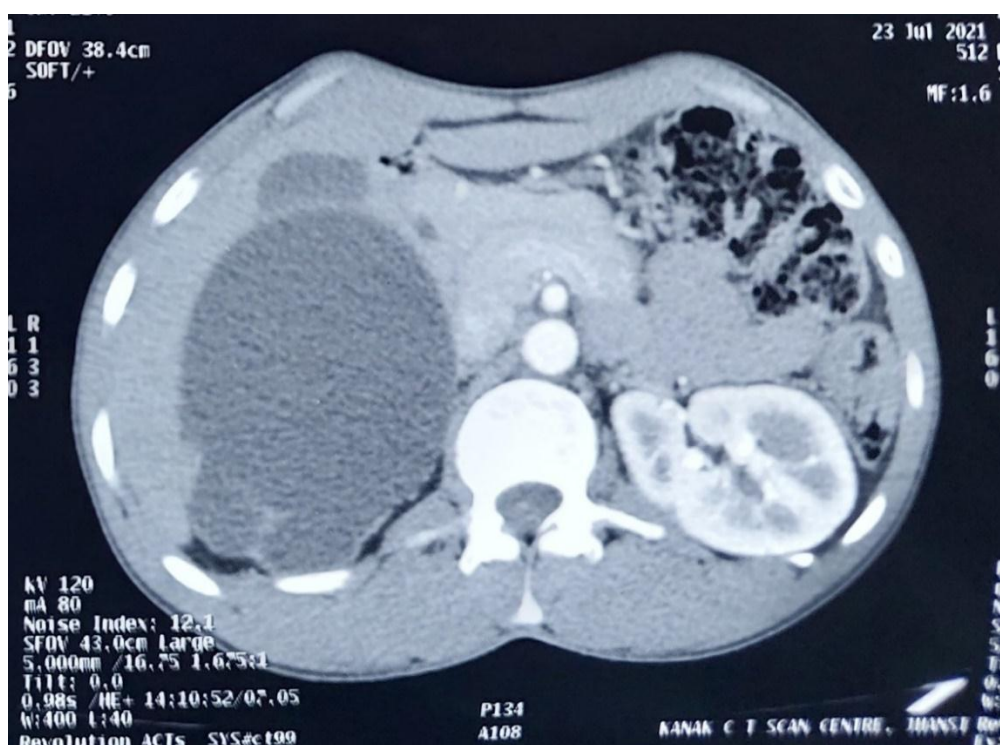


Fig 1. Transverse section of CT Urography showing a well defined cystic lesion 8x7.7x10cm in size in right kidney

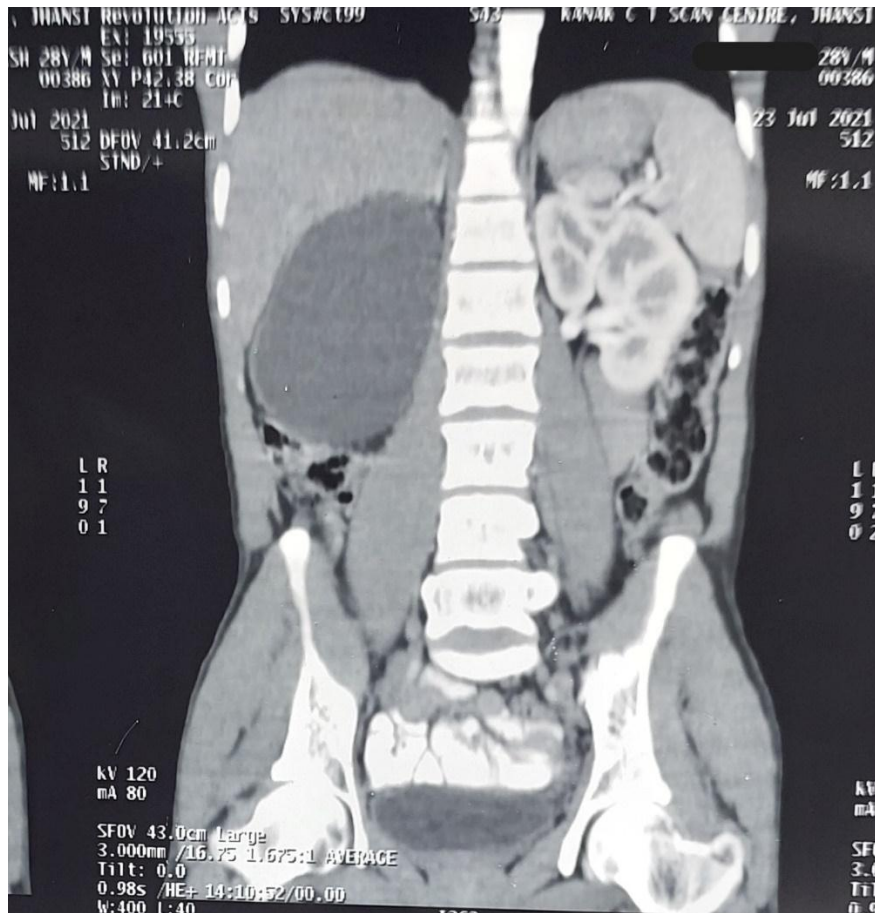


Fig 2. Coronal section of CT showing well defined cystic mass replacing Right Kidney

**Surgical management** – Hence with diagnosis of Right Sided Non Functioning kidney, patient was planned for Laparoscopic Nephrectomy. In left lateral position three ports were inserted. 10mm Camera port was put on right side of umbilicus 2cms above it, 2<sup>nd</sup> port 5mm at right iliac fossa and 3<sup>rd</sup> port 5mm at right subcostal midclavicular region (Fig 3). There was large cystic mass in the right retroperitoneum. After right sided colonic mobilization, mass was found to be extending inferiorly upto L3 vertebral level, superiorly pushing the lower border of liver, medially mass was pushing the duodenum anteriorly and closely abutting the inferior vena cava.



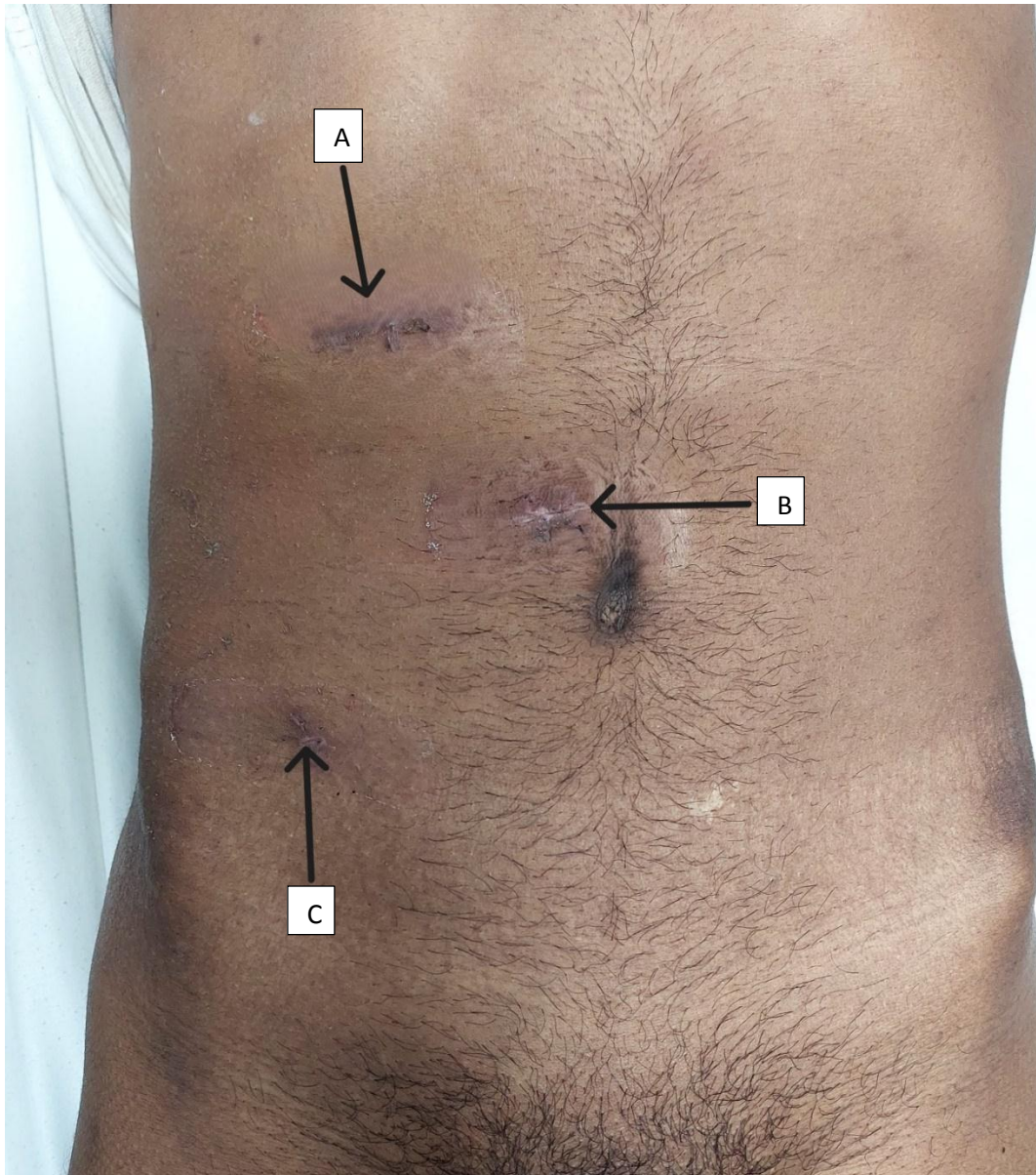


Fig 3. Port placements for laparoscopic nephrectomy  
A)- 5mm working port in right sub-costal region in mid-clavicular line  
B)- 10mm camera port superio-lateral to umbilicus  
C)- 5mm working port in right iliac fossa

Mass was dissected all around, safeguarding the duodenum and IVC. Ureter was identified and dissected off upto to 15cm and traced back to renal pelvis. Cystic fluid was aspirated. Renal vessels were identified and clipped with haemlock separately. Dense adhesions were encountered at the superior pole of the hydronephrotic kidney. Specimen was taken out from subcostal port after extending the incision. Abdominal drain was kept at renal bed. Patient was started liquids orally on day 2 and semisolids subsequently. Drain was removed on 2<sup>nd</sup> POD and patient was discharged in satisfactory condition on POD 4.

HPE report showed marked interstitial fibrosis with dense chronic infiltrate of lymphocytes and plasma cells. Numerous granulomas of epithelioid cells, Langhans giant cells and lymphocytes were identified. Marked areas of glomerulosclerosis along with atrophic tubules were present. No malignant cells were seen. ZN staining was negative. Feature were suggestive of tuberculosis.

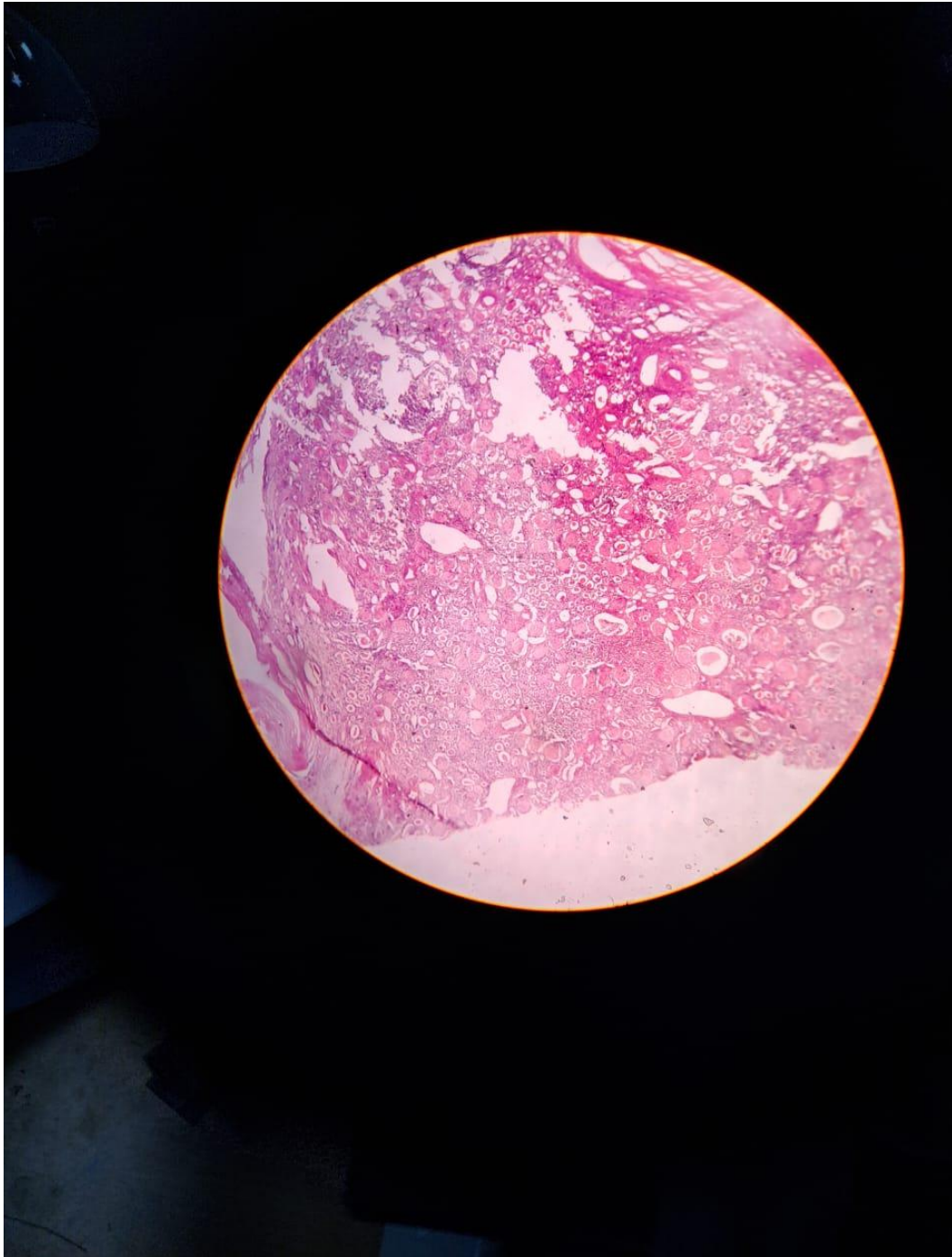


Fig 4. HPE slide showing thyroidisation of tubules which is suggestive of chronic pyelonephritis leading to non-functioning of kidney.

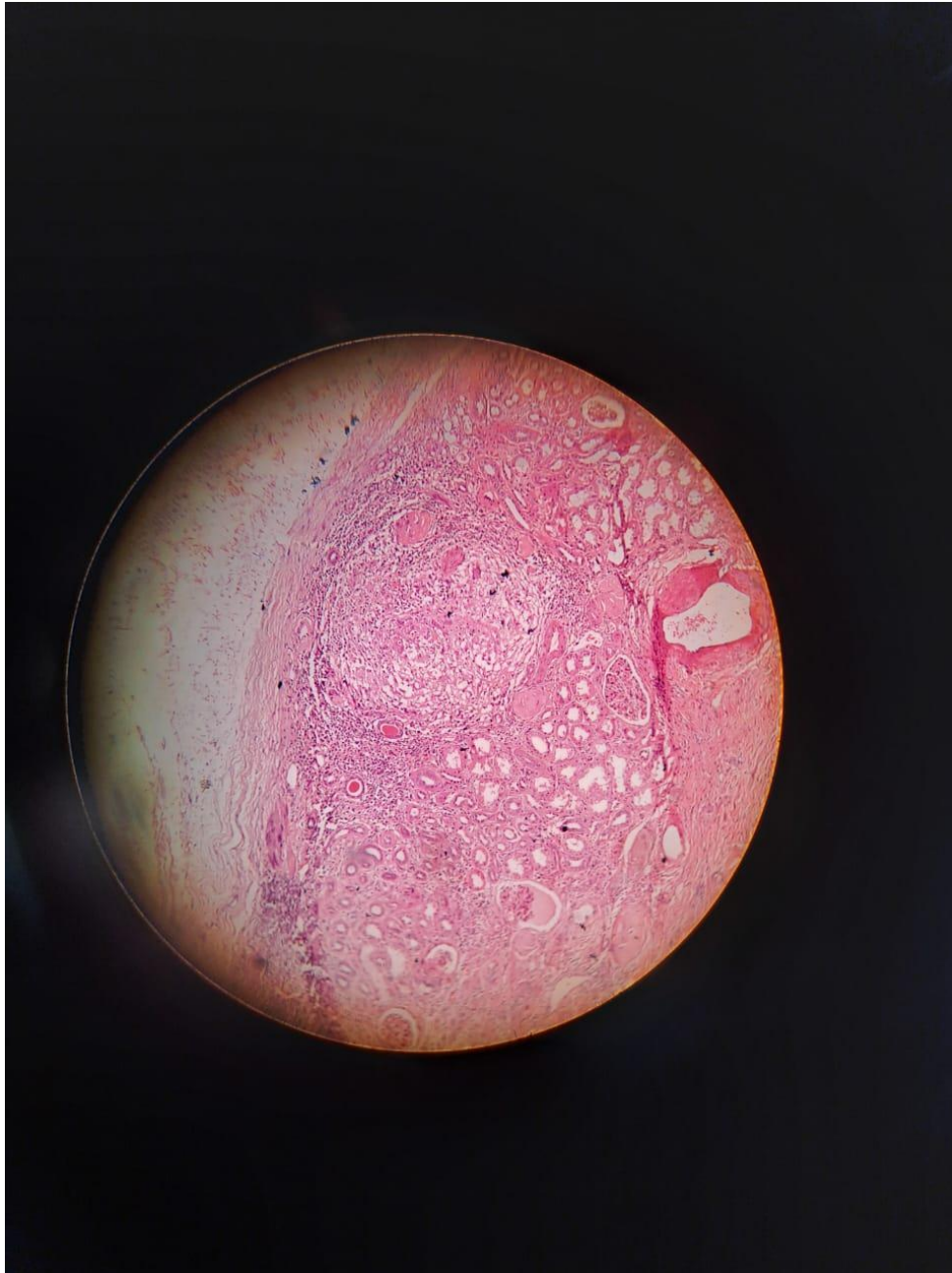


Fig 5 HPE slide showing granuloma in renal tubules (Higher Magnification)

*Ancillary tests done postoperatively ESR 23ml/hr. Mantoux showed 14mm induration. After DOTS registration patient was started on ATT. After 6 months patient has no complaints and is compatible with ATT.*

## **II. DISCUSSION**

Of those with pulmonary TB (PTB), about 2-20% develop urogenital TB.

Renal TB is an insidious condition with late onset symptoms, a high organ destruction rate and therefore an increased incidence of renal failure. The reasons identified for delayed diagnosis include the insidious onset, non specific symptoms of kidney tubercular disease<sup>[6]</sup>. About 26.9% of cases present with unilateral non-functioning kidneys while 7.4% present with renal failure<sup>[7]</sup>. Constitutional symptoms such as malaise, fever, night sweats and weight loss are unusual in these patients. Only half of all patients with renal TB are symptomatic at presentation<sup>[6]</sup>.



Only about 36.6% of patients have a previous diagnosis of TB or radiologic evidence at time of diagnosis<sup>[8]</sup>.

TB renal involvement often lacks prior diagnosis. Bacilli disseminate hematogenously, forming granulomas in cortico-medullary regions. Dormant until immune decline, they reactivate, progressing to papillary necrosis, fibrosis, abscesses, and renal parenchymal destruction<sup>[9]</sup>.

A giant hydronephrosis is mostly due to pelvi-ureteric junction obstruction and rarely due to tuberculosis as it causes complete destruction and fibrosis of kidney<sup>[10]</sup> but occasional tubercular fibrotic stricture can lead to hydronephrosis<sup>[11]</sup>.

Renal TB patients may be asymptomatic or exhibit nonspecific urinary symptoms like abdominal pain, haematuria, or urinary frequency. Antibiotic-resistant urinary tract infections often signal genitourinary TB. Late diagnosis due to its varied presentations can lead to complications like abscesses, strictures, calculi, hydronephrosis, and chronic kidney disease<sup>[12]</sup>.

For urogenital tuberculosis diagnosis, imaging techniques are upto 91.4% sensitive. Intravenous urography and Contrast CT Urography are useful in evaluation of the urinary system. Various CT findings are suggestive of renal tuberculosis such as renal parenchymal masses, scarring, multiple strictures leading to hydronephrosis, renal cavitation, calcifications, cortical destruction with loss of corticomedullary demarcation<sup>[3]</sup>. We didn't find any radiological signs suggestive of tubercular kidney in the present case, hence histopathology report suggesting tuberculosis was a surprise.

Management of tubercular kidney comprises prolonged anti-tuberculosis drug therapy for 12-18 months. Surgical intervention, indicated in 55% of cases with complications like kidney obstruction, includes procedures like DJ stenting or nephrostomy for severe hydronephrosis. Nephrectomy is contemplated if renal function remains severely impaired, with a GFR <15ml/min and cortical thickness <5mm, though associated with potential complications. In our case, there was complete destruction of right kidney with no functioning on DTPA scan. Thus, nephrostomy wouldn't have helped in this case.<sup>[3]</sup>

Currently, more than half of the surgical procedures are reconstructive in nature, such as repair of strictures at ureteropelvic junction and the lower end of the ureter, and bladder augmentation for a small fibrotic bladder<sup>[14]</sup>.

Gupta et al<sup>[15]</sup> reported an incidence of 33% of patients with tuberculosis requiring nephrectomy. Laparoscopic nephrectomy is difficult in infective renal diseases and tuberculous kidneys and was considered as a relative contraindication due to severe fibrotic adhesions between Gerota's fascia and the renal parenchyma with a higher conversion rate. But with better techniques and increasing expertise, minimal surgery by transperitoneal or retroperitoneal laparoscopic approach could be achieved in maximum number of cases<sup>[9]</sup>.

The transperitoneal approach permits better manoeuvrability of instruments than the retroperitoneal approach; however, the incidence of spillage of caseous material is higher in the peritoneal cavity with a transperitoneal approach. Laparoscopic retroperitoneal subcapsular nephrectomy can be done safely to remove an infected and heavily adhesive nonfunctional kidney, with minimal trauma, blood loss, and with faster recovery in comparison to open subcapsular nephrectomy.

In our case, dense adhesions were encountered during dissection near superior pole. Renal veins were well visualized, identified and clipped. Adhesions to duodenum, colon and IVC were managed with meticulous dissection with no major complication<sup>[16]</sup>.

### **III. Conclusion –**

Genitourinary tuberculosis has many clinical and radiological manifestations and present with non-specific symptoms, hence diagnosis is usually delayed. Therefore, it is essential to have a high index of suspicion in mind for early detection. With disease progression, disease can present as hydronephrotic non-functioning kidney mandating nephrectomy and laparoscopic transperitoneal approach is safe and feasible.

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