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Augmentation Ileocystoplasty for A Case of Small Bladder with Tuberculosis: A Case Report

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Abstract

Genitourinary tuberculosis (GUTB) occurs in 15-20% cases of pulmonary tuberculosis. Reconstructive surgery for GUTB is required for cases with grossly distorted and dysfunctional anatomy that are unlikely to regress with chemotherapy alone. The goals of augmentation cystoplasty includes

increasing bladder capacity, while retaining as much of bladder as possible. Various bowel segments (from the stomach to the sigmoid colon) have been used for bladder reconstruction. We report a case of GU tuberculosis with a small capacity bladder and a non-functioning left kidney.

Keywords: Genitourinary tuberculosis; Ileocaecocystoplasty; Ileocystoplasty.

Introduction

Tuberculosis (TB) affects all the organ systems of the body, including the genitourinary (GU) tract. If left untreated, GU TB can lead to irreversible damage with serious consequences such as renal failure and infertility. It is important to consider TB in the differential diagnosis of several GU disorders. It is a great imitator,¹ and can mimic many other diseases and complicate the correct diagnosis and treatment of infected patients. TB is commonly seen in India and the diagnosis of GU TB increasingly relies on clinical recognition and a high index of suspicion.^{2,3}

There has been a steady decline in the incidence of TB since the year 2000. Mortality due to TB has fallen by 45% since 1990.⁴ Several new obstacles have also surfaced in regards to control and treatment of TB. These include medical conditions that promote resurgence of TB such as the human immunodeficiency virus (HIV) epidemic in sub-Saharan Africa and the rapid increase in obesity and diabetes worldwide.^{5,6} The appearance of multidrug and extensive drug resistance has also compromised the control and treatment of TB. The frequency of GU involvement among patients who develop TB varies significantly depending on the population studied. In developed countries, GU TB has been found in 2% to 10% of patients with pulmonary TB.⁵ In contrast, the frequency of GU TB in developing countries approaches 15% to 20%.⁷ In the developing world, the GU tract is the second most common extrapulmonary site after lymph nodes.⁸

Descending infection affects the bladder and it usually begins near the ureteral orifices and spreads along the lymphatics to other areas. The TB bacilli implant in the urothelium and cause a patchy cystitis similar to that in the ureter. Cystitis leads to ulcerations. The dome of the bladder is the most affected, whereas the trigone and neck usually remain unaffected. Mucosal inflammation and friability of tissues leads to haematuria.⁸ Chronic inflammation and mucosal scarring over a period of a year leads to contracture of the bladder.⁹ Urinary frequency, urgency, pain, and dysuria become prominent when bladder capacity reduces to less than 100 mL. The severely contracted "thimble" bladder typically has a capacity of less than 20 mL. Bladder contraction is a late complication of GU TB and is more common in the developing world (12% vs. 4% of GU cases in developed countries), where diagnosis occurs after disease is more advanced.⁷ We report a case of GU tuberculosis with a small capacity bladder and a non-functioning left kidney.

Case Report

A 35 year old male presented to the Urological services of the hospital with history of supra-pubic catheterization for a urethral stricture. The patient had presented with poor urinary flow, frequency, urgency and fever to a private hospital. He was evaluated and diagnosed to have genito-urinary tuberculosis. He was started on multi drug anti-tubercular treatment. Over a period of 4 weeks his urinary stream worsened and needed suprapubic



Fig. 1a: CT Urogram shows dilated Rt. Pelvic calyceal system with ureter dilated right up till the bladder. Bladder is small with a capacity of less than 50 cc

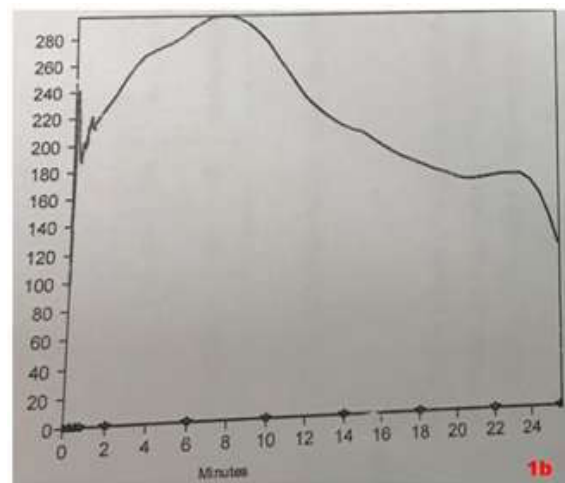


Fig. 1b: Shows radioisotope Renogram with a non-functioning left kidney

catheterization for an impassable urethral stricture. He was referred to our hospital for further management.

The patient's hemogram was normal, serum creatinine was 1.7 mg% and serum uric acid was 11.5 mg%. Gene Xpert test for tuberculosis was negative, abdominal ultrasonography revealed cystitis with bilateral hydronephrosis. Ascending urethrogram revealed a pan-urethral stricture. Patient could not void, hence voiding cystourethrogram was not possible. Computed tomogram (CT) showed right pelvicalyceal system (PCS) moderately dilated and the entire right ureter was dilated upto the bladder (Fig. 1a). The left PCS too was dilated and the entire left ureter was dilated. The left kidney was small in size. The

bladder was small, capacity <50 cc. Radioisotope renogram showed a non-functioning left kidney (Fig. 1b).

Undercover of anti-tubercular treatment, patient was prepared and underwent left nephroureterectomy, augmentation ileocystoplasty, right ureteric reimplantation into the ileum and temporary perineal Urethroostomy (Fig. 2a, b & c). The left kidney, ureter and a part of excised bladder was sent in for histopathological examination. The patient had an uneventful recovery and was discharged on the 8th postoperative day. Buccal mucosal urethroplasty was planned for the pan-urethral stricture 3 months later.

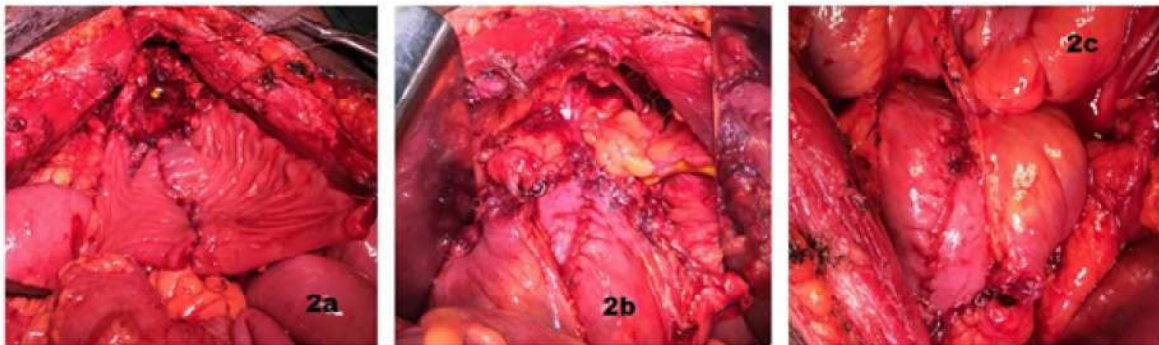


Fig. 2a: Shows the open bladder with a catheter and loop of ileum tubularized.
2b: Ileocystoplasty completed.
2c: The Rt. Ureter reimplanted into the ileum.

Histopathological examination showed features of chronic pyelonephritis of the left kidney with epithelioid granulomas and scanty necrosis. Sections from bladder revealed ulcerations of

mucosa with chronic inflammation and tubercular granuloma (Fig. 3a & b). Sections from peritoneal lesions showed TB granulomas with necrosis and dystrophic calcification.

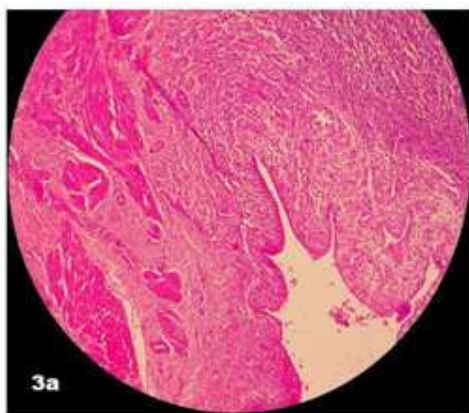


Fig. 3a: Bladder: Shows wall of bladder with ulceration of mucosa and chronic inflammatory infiltrate.

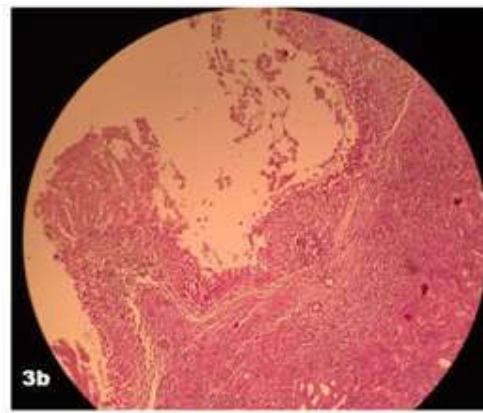


Fig. 3b: Kidney showing epithelioid cell granuloma. Pelvic wall shows granulomatous inflammation and necrosis.

Discussion

Reconstructive surgery for GUTB is required in a number of cases with grossly distorted and dysfunctional anatomy that are unlikely to regress with chemotherapy alone. About 55% of patients with GU TB will require surgical management during the course of their disease.⁸ Intervention is more frequent as disease advances. Surgical procedures are performed to relieve urinary obstruction and drain infected material, to remove nonworking infected kidneys in cases resisting cure, to improve medically resistant hypertension secondary to a functionally excluded kidney, or to reconstruct the urinary tract. Currently, more than half of operations performed for TB are reconstructive.¹⁰

The goals of augmentation cystoplasty include increasing the bladder capacity, while retaining as much of bladder as possible. Various bowel segments (from the stomach to the sigmoid colon) have been used for bladder reconstruction and augmentation. The aim of the reconstructive surgery includes (1) increase in the size and capacity of the urinary bladder so as to enable the patient to retain urine for a reasonable period of time, (2) creation of a low-pressure (less than 30 cm of water) reservoir during storage and a high-pressure compressor during micturition and (3) prevention of incontinence and infection that may jeopardize upper urinary tract integrity.¹⁰ A minimum of four weeks of ATT (anti tubercular treatment) is recommended prior to surgery so as to stabilize the lesion and allow better planning of reconstructive surgery.⁵

Professor Antoni introduced ileocystoplasty for tubercular contracted bladder.^{10,11} The ileum is used as an attachment to the bladder wall by a lateral or terminal anastomosis or as a flat graft incorporated in the bladder wall. The reabsorption of ammonia, ammonium chloride and, to a lesser extent, secretion of bicarbonate by the bowel segment, produces a biochemically detectable acid-base and electrolyte disturbance in virtually all patients. Augmentation cystoplasty although commonly performed through the open technique, the use of minimally invasive approaches like laparoscopy and robot-assisted laparoscopy has been now employed especially in augmenting the bladder.¹²

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