Urinoma in a Newborn with Double Obstruction: Posterior Urethral Valve and Pelvi Ureteric Junction Obstruction - Causing Diagnostic Dilemma

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Abstract. There are few cases reporting urinoma secondary to posterior urethral valve (PUV) in literature. Urinoma secondary to a pelvi ureteric junction (PUJ) obstruction is very rare. We report a newborn with urinary ascites in whom both PUV and PUJ obstruction co-existed causing a diagnostic dilemma.

Keywords: Children, Hydronephrosis, Pelvi ureteric junction obstruction, Posterior urethral valve, Urinoma

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Introduction

Ascites in the newborn is a rare condition. Urinary ascites accounts for one third of the cases. In male neonates posterior urethral valve (PUV) is the most common cause of urinary ascites. Urinoma formation is seen in 3% to 8% of neonates with bladder outlet obstruction.[1-4] Urinoma formation secondary to pelvi ureteric junction (PUJ) obstruction is very rare.[5]

Urinary ascites is often due to the leakage of fluids through the renal fornices and transudation of this fluid into the peritoneal cavity. The systemic absorption of this fluid causes the renal function test abnormalities. It can often be diagnosed antenatally and is considered as a favourable prognostic marker as it vents the pressure effect secondary to the obstructive uropathy.

We report a newborn with urinary ascites in whom both PUV and PUJ obstruction co-existed causing a diagnostic dilemma. In addition the patient developed an unusual complication i.e malrotation with volvulus, when admitted after 3 months for stent removal.

Case Report and Technique

A 32-year-old female, on regular 34 week ultrasonogram was detected to have oligohydraminos and bilateral fetal hydrenephrosis. A male neonate with a birth weight of 3100 was delivered via lower segment Caesarean section (LSCS) at 38 weeks and was found to have left loin fullness (Fig. 1a). Post natal ultrasonogram revealed bilateral hydroureteronephrosis with urinoma around the left kidney. Voiding cysto urethrogram (VCUG) was suggestive of a classical PUV and the urinoma was seen as soft tissue shadow around the left kidney pushing the bowel shadow to the opposite side (Fig. 1b). The urinoma was decompressed with nephrostomy and the baby was stabilized with bladder catheter, intravenous fluids and antibiotics.

On day 5 of life, under general anaesthesia cystoscopy was performed. Classical type I PUV was identified and valve ablation was performed at 5, 7 and 12 O’clock positions using 8.5F resectoscope. Nephrostomy and indwelling bladder catheters were kept for a week and the child responded well following the procedure. However, after removal of catheters the urinoma recurred. A computed tomogram (CT) urogram revealed left sided urinoma with PUJ obstruction (Fig. 2a & Fig. 2b) with no drainage of contrast into the ureter. Under general anaesthesia the left kidney was explored through a flank incision. A calyceal rupture was identified and repaired (Fig. 3a). Anderson-Hynes pyeloplasty was performed over a 3F double J stent. Following the procedure there was no complications and the neonate was discharged on day 18 of life.

After 3 months, the patient underwent stent removal under general anaesthesia. Following this procedure, the patient developed, bile stained vomiting. An intravenous urogram
Discussion

The incidence of urinomas and urinary ascites in neonates with PUV varies between 3 to 8% according to various studies.\cite{1-4} Urinomas following PUJ obstruction have very rarely been reported.\cite{5} The postulated mechanisms are fornical rupture, transperitoneal transudation and intraperitoneal leakage following bladder rupture. Often it is not possible to delineate the exact site of extravasation. Although urinomas and urinary ascites have long been felt as protective mechanisms, this concept has not been widely accepted.\cite{1-3}

Patil et al\cite{1} felt that bilateral urinomas were associated with good renal function but unilateral urinomas led to impairment of ipsilateral renal function. They also felt that PUVs with urinary ascites had a poorer prognosis. The postnatal effects of urinary ascites are profound on the newborn ranging from splinting of diaphragm, respiratory distress, absorption urine, electrolyte imbalance and sepsis. It is prudent to deal with urinomas urgently after delivery.

There is insufficient literature on the management of urinomas associated with PUV.\cite{12,14} Patil et al\cite{1} suggested needle aspiration or drainage as initial management for urinary ascites associated with massive distension, respiratory distress, rising plasma creatinine, increasing urinoma, parenchymal

inotropic support. On day 5 a re-look laparotomy revealed patchy gangrene involving 30cm of small bowel (Fig. 4) and resection anastomosis was performed. Following this the patient recovered well and at 1 year follow up, bowel function and renal function are stable.

Fig. 1.

Fig. 1a. Tense abdomen due to left sided urinoma. Fig. 1b. VCUG demonstrating classical PUV with trabeculated bladder and dilated posterior urethra. Left sided urinoma is seen as a soft tissue shadow pushing the bowel loops to the opposite side.

Fig. 2.

Fig. 2a. CT scan showing left sided urinoma (asterix). Fig. 2b. An abrupt cut off at pelvis (arrow) and failure of contrast in ureter, suggests PUJ obstruction in CT urogram confirming PUJ obstruction.

Fig. 3.

Fig. 3a. Fornical rupture (arrow) being repaired. Fig. 3b. Intravenous urogram following stent removal showed normal drainage across left PUJ (arrow) following pyeloplasty. Dilated bowel loops suggest bowel obstruction.

Fig. 4. Patchy gangrene seen at laparotomy
compression, infection and hypertension. Percutaneous nephrostomy, ureteric stenting or ureterostomies were advised for those with deteriorating clinical features.

In the presence of a classical PUV the urinoma is generally attributed to this and primary valve ablation with catheter drainage alone often results in resolution of urinoma. However in the presence of PUJ obstruction, one has to do pyeloplasty to prevent reaccumulation of urinoma. In our case in the absence of reflux, there was difficulty in identifying pelvic anatomy or fornical rupture causing urinoma. CT urogram only clinched the presence of PUJ obstruction. This combination of double obstruction due to PUV and PUJ in the same patient leading to urinoma has not been reported before in literature. Late occurrence of malrotation with volvulus during stent removal in such cases is also very rare. This case highlights the importance of multi disciplinary approach and role of intensive neonatal and paediatric ICU care in such challenging situation.

Conclusions

Management of urinary ascites involves initial percutaneous drainage and stabilization followed by definitive surgery to relieve obstruction. Our case with double obstruction of PUJ and PUV has not been reported in the literature.

References