

Pediatric Giant Bladder Stone Causing Renal Failure—A Catastrophic Sequel: A Case Report and Review of Literature

Amit Kumar Sinha¹, Bindey Kumar², Prem Kumar³

¹MBBS, MS, M Ch, Senior resident, department of Pediatric surgery, AIIMS Patna

²MBBS, MS, M Ch, DNB, MNAMS, Professor and Head, Department of Pediatric Surgery, AIIMS Patna

³MBBS, MD, Professor and Head, Department of Radiology, AIIMS Patna

Abstract: *Giant bladder stone causing renal failure in pediatric age group is a rare clinical entity. It occurs due to negligence to seek medical advice in poor socio-economic group. It occurs due to bladder changes and blockade of both ureteric orifices due to large size of bladder stone. This clinical situation mimics like bladder outlet obstruction. Urgent surgical exploration is necessary to prevent this catastrophic sequel.*

Keywords: Bladder stone; Cystolithotomy; Hydroureteronephrosis; Renal failure; Urinary retention

1. Introduction

Bladder stone is a common cause of urinary retention in pediatric age group. It occurs more commonly in patients of low socioeconomic condition of underdeveloped countries [1]. The common etiologies for development of bladder stone in pediatric age group are bladder outlet obstruction, recurrent urinary tract infection, neurogenic bladder, metabolic factors, foreign bodies etc [2]. The common presenting features are recurrent episodes of urinary tract infections, features of bladder irritability, repeated urinary retentions, hematuria, pyuria etc [3]. A giant bladder stone causing renal failure is a rare finding in pediatric age group. We are presenting a case report of giant bladder stone in a child having renal failure that was improved after stone extraction.

2. Case Report

An 8 year old male child of low socio-economic strata was presented to us with complaints of severe abdominal pain and urinary retention for one day. There was history of similar episodes in the past. On clinical examination, general condition of patient was poor, conscious but irritable, pulse rate was 100 beats per minute. On abdominal examination supra pubic fullness and tenderness was present with dullness on percussion suggesting distended bladder. Other systemic examination findings were normal. For urinary retention, per urethral catheterization was done. Catheterization was difficult. Almost 500 ml of turbid urine came out through catheter. Urine sent for culture and sensitivity. Resuscitation of the patient started and further investigations were done. On routine investigations hemoglobin was 6.5 gm/dl, blood urea 176 mg/dl and serum creatinine was 5.37 mg/dl. Ultrasonography of abdomen was done showing gross hydroureteronephrosis and a large bladder stone with features suggestive of cystitis. On abdominal X-ray KUB a large radio-opacity in suprapubic area (bladder stone) was seen (Figure 1). Due to raised blood

urea and serum creatinine intravenous urography was not done and emergency open cystolithotomy was planned. Surgical exploration was done with transverse suprapubic extraperitoneal approach. Bladder was opened. Bladder wall was thickened. Almost 10 ml of frank pus came out. A large bladder stone of the size 6 cm x 4 cm was found inside the bladder that was stucked with trigonal area and almost blocking both ureteric orifices (figure 2). Bladder stone was removed and bladder wall closed after doing suprapubic cystostomy. Post operative period was uneventful. There was dramatic decrease in blood urea and serum creatinine level (table 1). Urinary culture and sensitivity examination shows presence of E. coli sensitive to piperacillin-tazobactam. On post-operative day seventh ultrasonography of abdomen was done to see the status of upper urinary tract that was showing bilateral moderate hydroureteronephrosis. Patient was discharged in stable condition with supra-pubic cystostomy and planned to investigate the upper urinary tract in follow up.

3. Discussion

Bladder stones are common in pediatric patients living with poor socioeconomic condition with reported incidence of 5% of all urinary system stones [4]. It is having male preponderance and common age of occurrence is 2 -5 years. A giant bladder stone may occupy the whole bladder [5]. The common tools to investigate a bladder stones are plain X- ray abdomen, ultrasonography, intravenous urography, CT scan etc [6]. Open surgery is preferred treatment of choice for a giant bladder stone [7]. A giant bladder stone may occupy the majority of bladder space and causes bladder wall inflammation and obstruction to urinary flow by blocking both the ureteric orifices. This bladder wall changes and bilateral ureteric obstruction causes changes similar to bladder outlet obstruction leading to renal failure. To prevent this catastrophic sequel due to upper tract damage urgent removal of stone is necessary. Recurrence after surgical removal is rare [8].

4. Conclusion

A giant bladder stone is an important cause of acute urinary retention in children. Its clinical picture simulates features of bladder outlet obstruction. Due to negligence in poor patients to seek medical advice and chronicity of the disease, it may progress to renal failure. Emergent surgical exploration is necessary to prevent damage to kidneys.

5. Conflict of interest

None

References

- [1] Gillespie RS, Stapleton FB. Nephrolithiasis in children. *Pediatr Rev.* 2004; 25:131–9.
- [2] Basaklar AC, Kale N. Experience with childhood urolithiasis: report of 196 cases. *Br J Urol.* 1991; 67:203–5.

- [3] Aydogdu O, Telli O, Burgu B, Beduk Y. Infravesical obstruction results as giant bladder calculi. *Can Urol Asoc J.* 2011; 5:77–8.
- [4] Stapleton FB. Childhood stones. *Endocrinol Metab Clin N Am* 2002; 31:1001–15.
- [5] Kher KK. Urinary stone disease. In. Kher KK, Makker SP, eds. *Clinical pediatric nephrology.* 1996:699–723.
- [6] Rizvi SA, Naqvi SA, Hussain Z, et al. Pediatric urolithiasis: developing nation perspectives. *J Urol* 2002; 168:1522–5.
- [7] Salah MA, Holman E, Toth C. Percutaneous suprapubic cystolithotripsy for pediatric bladder stones in a developing country. *Eur Urol* 2001; 39:466–70.
- [8] Rodrigues Netto N Jr, Longo JA, Ikonomidis JA, Rodrigues Netto M. Extracorporeal shock wave lithotripsy in children. *J Urol* 2002; 167:2164–6.

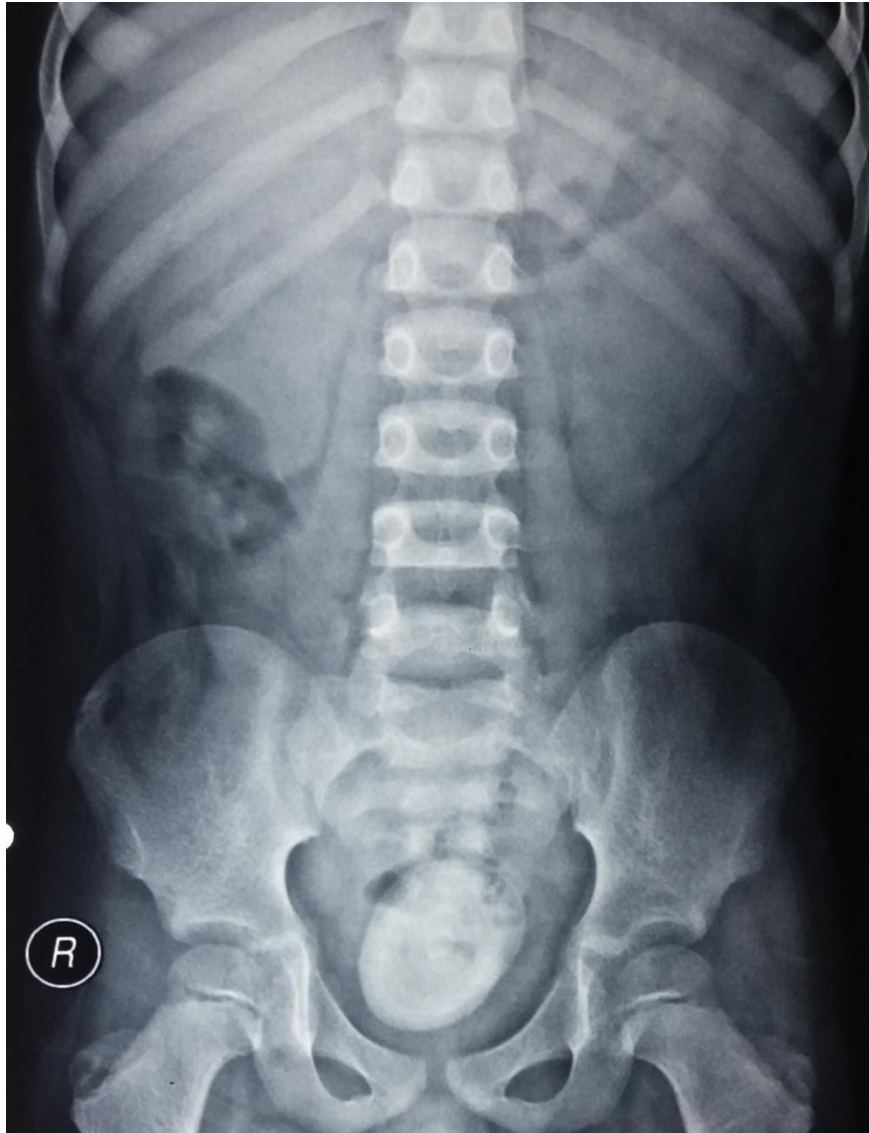


Figure 1: X-ray KUB showing large bladder stone



Figure 2: Giant bladder stone

Table 1: Improvement in biochemical parameters after cystolithotomy

	Blood urea(mg/dl)	Serum creatinine (mg/dl)
Preoperative	176	5.37
Post operative day 2	161	4.53
Post operative day 5	96	2.95
Post operative day 7	80	2.35
Post operative day 9	74	2.01
Post operative day 11	60	1.5