Giant Hydronephrosis Due to Ureteropelvic Junction Obstruction in A 53-Year-Old Male: A Case Report

Vinay H G*

Department GI Surgery,Vamshodaya Hospital, Kolar, India.

***Corresponding Author:** Vinay H G., Department GI Surgery,Vamshodaya Hospital, Kolar, India.

Received Date: 07 November, 2024 | **Accepted Date:** 13 November, 2024 | **Published Date:** 13 December, 2024

Citation: Vinay H G., (2024), Giant Hydronephrosis Due to Ureteropelvic Junction Obstruction in A 53-Year-Old Male: A Case Report., *Journal of Clinical Surgery and Research.*, 5(9); **DOI:**10.31579/2768-2757/150

Abstract:

The hydronephrotic kidney, resulting from an uretero-pelvic junction obstruction (UPJO), presents commonly as a clinical condition, with the presence of usually no more than 1-2 liters in the collecting system, but a very small number of cases of giant hydronephrosis (GHs) has been reported in adults. In this case report a 53-year-old male was admitted to the Vamshodaya Hospital Kolar, Karnataka, India in November 2023 with an abdominal pain since 15 days and abdominal distention since 6-months. Computed tomography was performed, finding large thin walled cystic mass in right side of abdominopelvic region (40x32x27cm) showing few incomplete septations, fluid density within lesion and causing significant mass effect and displacing the rest of the abdominal contents. Such cases are rarely presented; therefore the aim of the present case study was to document a clear case of GH resulting from UPJO.

Keywords: giant hydronephrosis; uretero-pelvic junction obstruction; abdomen; kidney

Introduction:

The overall definition of hydronephrosis is dilatation of the renal pelvis and calyces as a result of partial and sporadic restriction of the urine's flow [1].Hydronephrosis can be unilateral or bilateral, depending on where the urine flow restriction occurs. A unilateral hydronephrosis happens when the blockage is higher than the bladder's level. Between the ages of one and eighty, the incidence of unilateral hydronephrosis was determined to be 1:100. The right side is more frequently afflicted by unilateral hydronephrosis, which is most frequently caused by idiopathic pelvi-ureteric junction (PUJ) blockage or calculus. The female to male ratio of this condition is 2:1. It might be the consequence of aberrant smooth muscle growth at PUJ [2, 3].With a range of treatment programs, it is now possible to detect the etiology of stone illness in over 95% of patients, and most individuals with recurrent calculi can have their stone production stopped or delayed. The advent of extracorporeal shock wave lithotripsy (ESWL) and percutaneous lithotripsy has led to a most remarkable and amazing accomplishment [4].

The symptoms of GH can vary from vague symptoms like nausea, constipation, dyspepsia, fever, asthenia, mild diffuse abdominal pain or flank discomfort, chronic low back pain, recurrent urinary tract infections, and hematuria to asymptomatic abdominal distension until the late stages of the disease [5]. Most cases of this illness will be identified in the early stages of childhood and infancy. Prolonged irritation can lead to progressive and gradual consequences such hypertension, renal failure, ruptured kidneys, and malignant transformation if left untreated [6]. Although the clinical signs of these patients are not particular, they frequently involve a bloated abdomen and an elevated belly circumference. Hematuria, persistent stomach pain, flank pain, and recurrent UTIs are some other symptoms. Despite having ambiguous and broad clinical signs, massive hydronephrosis has only ever been properly diagnosed in 50% of cases [7]. Our objective is to report a case ofrare entity as the giant hydronephrosis.

Case Report:

A 53-year-old male was admitted to the Vamshodaya Hospital Kolar, Karnataka, India in November 2023 with an abdominal pain since 15 days and abdominal distention since 6 months. Patient was apparently normal 6 months back, later he developed abdominal distention associated with minimal pain, then gradually abdomen uniformly distended. Hence came to hospital for further evaluation and management. Patient had no complaints of dysuria, discoloration of urine or any other irritative urinary symptoms. There was negative history of nausea, vomiting, constipation, fever, weight loss, and anorexia. Also he had no history of stone disease and, or any other urologic problem.

In physical examination there was no positive finding except gross abdominal distention.

On Ultrasound of Abdomen showed huge cystic lesion with thick internal echoes and septations in abdomino pelvic region measuring (37 X 33 X 27 cm) and it is causing significant mass effect and displacement of all the abdominal organs. No sonological evidence of solid component/ calcification/ internal vascularity. No free fluid in pleural spaces. Visualized bowel loops show normal peristalsis.

On Renal cortical scan was performed by injecting 5mci 99m TC- DMSA intravenously and delayed static planer images were acquired in posterior projections using High Definition detectors with low energy high-resolution collimation (Dual head SPECT

system).There was significant SOL occupying most of the anterior abdomen, especially in the right side that is observed to push the left kidney more laterally to the left.

Computed tomography was performed, finding large thin walled cystic mass in right side of abdominopelvic region (40x32x27cm) showing few incomplete septations, fluid density within lesion and causing significant mass effect and displacing the rest of the abdominal contents (intra and retroperitoneal contents), Figure 1.The lesion is causing significant mass effect and displacing the rest of the abdominal contents. The entire bowel loops are displaced to left side of abdomen.It is also displacing the retroperitoneal structures like aorta and IVC. Right kidney is not visualized separately from the mass lesion. Right lower ureter is seen and upper ureter blending with the lesion Features likely suggestive of right non-functioning kidney with gross hydronephrosis occupying entire right side of abdomen and pelvis probably due to PUJ obstruction. Enlarged prostate with back pressure changes in bladder, Figure 2. Using technique suspended respiration 2 mm contrast enhanced (with oral & IV contrast) sections of the pelvis and abdomen were obtained.

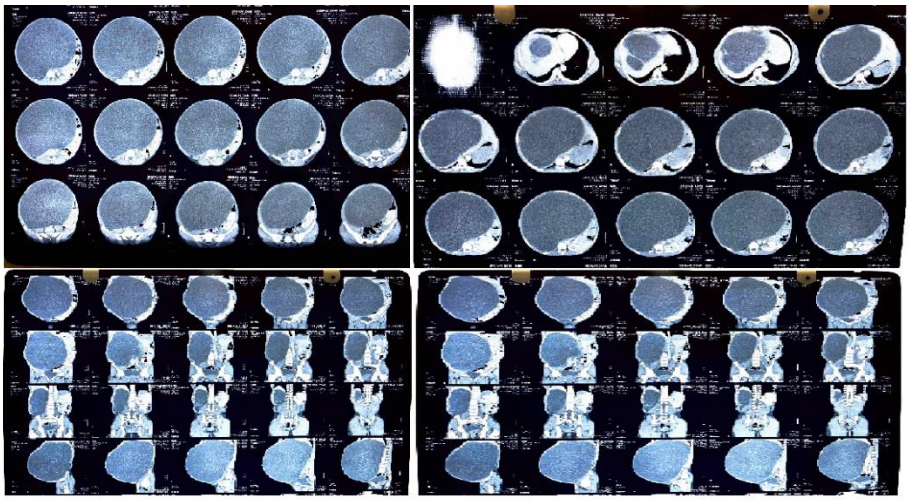

Figure 1: Abdominal computed tomography.

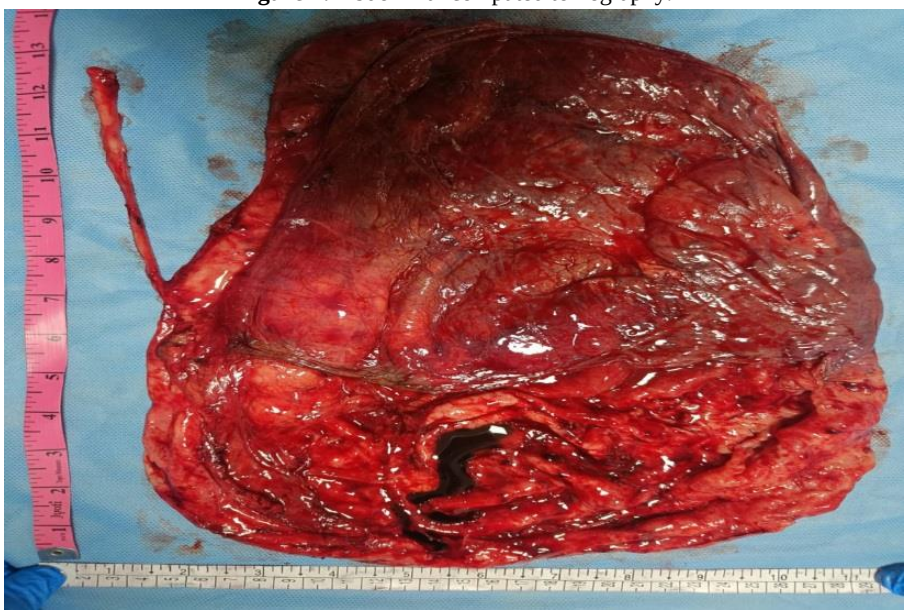

Figure 2: Gross appearance of right Kidney after nephrectomy, shows large kidney with huge pelvis.

On histopathology report showed right nephrectomy specimen measuring 27 x 15 x 6 cm. Ureter measures 12 cm in length. External surface of kidney is enlarged and cystic. Capsule is adherent at places and areas of congestion noted. Cut section - Entire kidney is cystically dilated. Cortico-medullary junction and pelvi calyceal system cannot be made out. Cortical thickness measures 0.1 cm to 0.5 cm. No stones noted. Cut section of ureter is unremarkable. No stricture is seen.

Microscopic study:

Sections studied from kidney show atrophic glomeruli and atrophic tubules lined by attenuated epithelium and lumen filled with eosinophilic material (thyroidisation), Figure 3. Few of the tubules were cystically dilated. Many congested blood vessels and areas of hemorrhage noted. Stroma show mixed inflammatory infiltrate comprised of neutrophils,lymphocytes and plasma cells. Focal area showed hemosiderin laden macrophages. Lymphoid follicles were also noted. Section studied from pelvi calyceal region showed urothelial lining and underlying stroma showing dense mixedinflammatory infiltrate rich in neutrophils. Section studied from ureter appears unremarkable.Sections were negative for granulomas or malignancy.

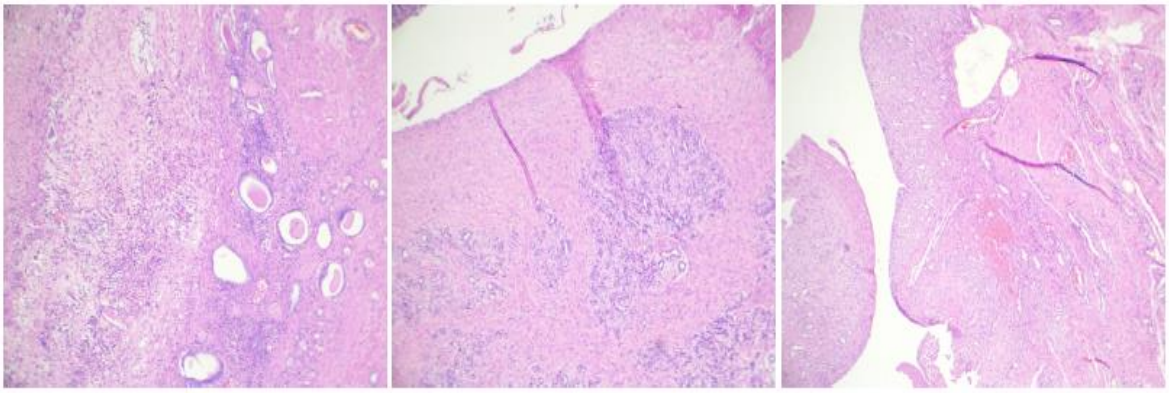

Figure 3: Features are of Acute on chronic pyelonephritis with hydronephrosis - Right kidney.

Post-operative period was uneventful. Patient was shifted to wards in view of symptomatic improvement. Drain removed on pod 4. Patient was improved clinically during the course of stay in the hospital. Hence patient was being discharged.

Discussion:

Since abdominal CT lowers the risk of needless surgery and treatment expenses, it is a gold standard diagnostic technique for patients experiencing lower back discomfort [8]. While USG is the preferred procedure for treating patients with radiation exposure, pregnant patients, and children despite CT's superior accuracy, USG is also more affordable, easier to administer, and doesn't use ionizing radiation [9]. Congenital hydronephrosis is most commonly caused by occlusion of the ureteropelvic junction. A dilated renal pelvis and calyces devoid of ureteral dilatation will be shown on a USG or IVP. Prolonged washout half time, or an obstructive pattern, will be shown on diuretic renography or renal scan. Some children with UPJ blockage may also have vesicoureteral reflux. Congenital hydronephrosis has ureteropelvic junction blockage as its second most common etiology. On renal USG and/or IVP, hydronephrosis is observed together with concomitant ureteral dilatation. There may be an obstructive pattern on a renal scan. Three main categories of dilated ureters (megaureters) exist: non-obstructed, non-refluxing megaureters, refluxing megaureters, and obstructed megaureters [10]. The multicystic, dysplastic kidney, ectopic ureter, megacalycosis, simple renal cyst, urachal cyst, ovarian cyst, hydrocolops, sacrococcygeal teratoma, bowel duplication, duodenal atresia, anterior meningocele, and prune belly syndrome are additional causes of hydronephrosis or apparent hydronephrosis [11]. The percentage of cases with bilateral hydronephrosis varies quite a bit, while it is just 3% in the study of Haralambous et al [12]. The study by Hawthorne et al. still shows a greater male predominance, 76:24 [13]. According to research by Johnston et al., the left side has about 70% of the patients with ureteropelvic junction obstruction that are discovered antenatally [14]. The study by Kass et al. indicates that approximately 55% of the cases were resolved postnatally [15]. This is a quite significant rate. On the other hand, only a relatively small percentage of instances were documented in a study done by Keller and colleagues. In addition to identifying hydronephrosis, the antenatal Ultrasonography should record the amount of amniotic fluid, the degree of bladder distension, the ureter's wall thickness and emptying, the presence of any abnormalities in the opposing kidney, and the kidneys' echogenicity [16].

Author	Age/gender	Size of mass (cm)/ quantity of fluid (ml)	Initial symptoms	Treatment	Cause of GH
Schrader AJ, et al, [17]	78/F	35x30x25/30,000	Nausea, vomit, fatigue, fever, weight loss	Puncture/drainage, Nephrectomy	Tumor
Vishwanath M et al. [18]	65/F	30x20x25/15,000	Fatigue, fever	Nephrectomy	Obstruction
Wu CC and Sun GH [19]	45/M	30x20x20/15,000	Anemia, liver dysfunction	Nephrectomy	Stone
Tazi MF et al. [20]	42/M	44x32x30/20,000	Weight loss	Nephrectomy	Bladder neck obstruction

Mediavilla E et al. [21]	82/M	30x21x10/4,500	Fever	Nephrectomy	Tumor
Golcuk Y et al. [22]	83/M	20x16x22/4,000	Nausea, vomit, fatigue, fever, weight loss	Puncture/drain nephrectomy	Ureteral stone

Table 1: Following cases of GHs reported in the study.

Conclusion:

The primary modality for diagnosis was USG abdomen. Surgical intervention is used to treat hydronephrosis, depending on its etiology and grade. The most appropriate surgical procedure for treating GH, a rare illness linked to the development of cystic abdominal masses, is a nephrectomy.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

References:

1. Walsh PC. (2002). Pathophysiology of urinary tract obstruction. In: Walsh PC, Vaughan R, Wein, editors. Campbell Urology. 8th ed. Philadelphia: *WB Saunders Company*: 412-440.
2. Fowler CG, (2004). The kidneys and ureters. In: Russell RCG, Williams NS, Bestrode CJK (eds). Bailey and love's short practice of surgery, 24th ed. London: *Arnold*:1313-314.
3. Kim Hl, Belledegrum A. urology. In: Brunicardi FC, Andersen DK, Billiar TR, Dunn DL, Hunter JH, Pollock RE (eds). Schwartz‟s principles of surgery, 8th ed. New York, Mc Graw-Hill; *2005*: 1545-547.
4. Arthur D, Smith MD. (1994). Surgical treatment of Hydronephrosis secondary to Uretropelvic junction obstruction. In: Seiman EJ, Hanno PM (eds). Current urologic therapy. 3rd ed. Philadelphia: *WB Saunders Company*; 34-35.
5. Dino MS, Hassen SM, Tufax TH (2021) Unilateral giant hydronephrosis secondary to ureteropelvic junction obstruction in a middle-aged woman. *Case Reports in Urology*: 1-4.
6. Pattanshetti VM, Swamy MK, Neeli SI, Godhi AS, Metgud SC (2010) Giant Hydronephrosis, Association of Surgeons of India. *Indian J Surg* 72: 359-360.
7. Hassen SM, Issack FH, Mummed FO, Hassen IK (2021) Giant hydronephrosis secondary to ureteropelvic junction obstruction, a rare occurrence, case report. *Urol Case Rep* 39: 101803.
8. T. J. Ata, E. K. Chouillard, A. Kane et al., (2007). "Appendiceal abscess revealed by ureteral stenosis and hydronephrosis," *Asian Journal of Surgery*, vol. 30, no. 3, pp. 224–226,
9. S. N. Abdul Rashid, S. Ab Hamid, S. Mohamad Saini, and R. Muridan, (2012). "A rare case of an appendiceal mass masquerading as a pelvic tumour and causing bilateral hydronephrosis," *Biomedical Imaging and Intervention Journal*, vol. 8, no. 2, article e11.
10. Kramer SA. Beiman, AB, King LR, Kramer SA. (2002). Chapter 25- Vesicoureteral Reflux. In: *Clinical Pediatric Urology*, 4th Edition, London, Martin Dunitz, Ltd., pp. 749-810.
11. Blythe B, Snyder HM, Duckett JW. (1993). Antenatal Diagnostic and Subsequent Management ofHydronephrosis. *J Urology*;149(4):693-398.
12. Haralambous-Gasser A, Chan D, Walker RG, Powell HR, Becker GJ, et al. (1993). Collagen studies in newborn rat kidneys with incomplete ureteric obstruction. *Kidney Inter*;44(3):593-605.
13. Hawthorne NJ, Zincke H, Kelalis PP. Ureterocalicostomy: an alternative to nephrectomy. J Urol. 1976;115(5):583-6.
14. Johnston JH, Evans JP, Glassberg KI, Shapiro SR. (1977). Pelvic hydronephrosis in children: a review of 219 personal cases. *J Urol*.;117(1):97-101.
15. Kass EJ, Fink-Bennett D. (1990). Contemporary techniques for the radioisotopic evaluation of the dilated urinary tract. *Urologic Clin North Am*.;17(2):273-289.
16. Keller MS. (1991). Resistive index ratios in the US diffierentiation of unilateral obstructive vs. nonobstructivehydronephrosis in children. Pediatr. *Tadiol*.; 21:462.
17. Schrader AJ, Anderer G, von Knobloch R, Heidenreich A et al. (2003). Giant hydronephrosis mimicking progressive malignancy. *BMC Urol* 3: 4.
18. Vishwanath M, Pattanshetti MK, Swamy SI, Godhi, AS and Metgud, SC: (2009). Giant hydronephrosis. *Indian J Surg* 72: 359 360.
19. Wu CC and Sun GH: (2009). Giant hydronephrosis. *Mayo Clin Proc* 84: 954.
20. Tazi MF, Riyach O, Ahallal Y, Mellas S, Khallouk A, et al: (2012). Giant urinary bladder and bilateral giant hydro¬nephrosis due to bladder neck obstruction: One case report and literature review. *Case Rep Urol*: 817519, 2012.

21. Mediavilla E, Ballestero R, (2013). Correas MA and Gutierrez JL: About a case report of giant hydronephrosis. *Case Rep Urol*: 257969, 2013.
22. Golcuk Y, Ozsarac M, Eseroglu E and Yuksel MB: Giant hydro¬nephrosis. *West J Emerg Med* 15: 356, 2014.