Case Report

Urology, Nephrology and Andrology International
Volume 1 Number 2, July-December 2016

Author Affiliation:
*Department of Urology, KLES Kidney Foundation, KLES Dr. Prabhakar Kore Hospital & M.R.C, Nehru Nagar, Belagavi, Karnataka 590010, India.
**Department of Biotechnology and Microbiology, Karnatak University, Dharwad, 580003, Karnataka, India.

Reprint Request:
Rajendra Nerli, Department of Urology, KLES Kidney Foundation, KLES Dr. Prabhakar Kore Hospital & M.R.C, Nehru Nagar, Belagavi, Karnataka 590010, India.
E-mail: rbnerli@gmail.com

Laparoscopic Pyelolithotomy in a Patient with Ectopic Kidney and Extrarenal Calyces

Rajendra Nerli*, Prasad V. Magadum*, Amey Pathade*, Shivagouda M. Patil*, Amit Mungarwadi*, Shridhar Ghagane, Murigendra B. Hiremath****

Abstract

The abnormalities of the renal collecting system represent a complex subset of urogenital anomalies. They could manifest in many ways and often are not diagnosed by preoperative imaging or the anomaly could be missed. Extrarenal calyces is one such rare anomaly of the collecting system. This anomaly may be associated with other anomalies of the urogenital system such as hydronephrosis, ectopic kidney or horseshoe kidney and could lead to complications such as stasis, infection and stones. We report a case of ectopic kidney with extra-renal calyces complicated with stones and infection.

Keywords: Extrarenal Calyces; Ectopic Kidney; Urolithiasis.

Introduction

Extrarenal calyces and infundibulum are uncommon congenital anomaly in which the major calyces/infundibulum as well as renal pelvis lie outside the renal parenchyma. This entity is commonly seen to co-exist with ectopic and horseshoe kidneys. The ureteral atresia and renal dysplasia are the other associations with this anomaly [1, 2]. The exact aetiology of extrarenal calyces is not very clearly understood. It has been hypothesized that the anomaly could be due to a disparity resulting from slow development of the metanephric tissue or to a relatively rapid development of ureteric bud. If the ureteric bud has a rapid or a precocious development, the calyceal system could well develop prior to its coalescence with the nephrogenic mass. Conversely, lag in the growth of nephrogenic mass could delay its attachment to the collecting system permiting extrarenal development of the first or second order of the collecting system [2,3,4]. These extra-renal calyces/infundibulum usually do not produce symptoms although failure of normal drainage can lead to stasis, infection and calculi formation. We report a case of right pelvic kidney with extra-renal calyces and urolithiasis which was managed by laparoscopic pyelo-lithotomy.

Case Report

A 22 year old male presented with pain in lower abdomen and fever. Ultrasonography and CT revealed a normal left kidney and an ectopic right kidney in the pelvis. The pelvicalyceal system on the right side was dilated and the contents were turbid. Two calculi measuring 1.5×1.0 cm and 1.41.0 cm were seen floating freely in the collecting system (**Figure 1a & 1b**). Serum creatinine was 1.65 mg%. The patient was treated with antibiotics and antipyretics. Once the fever subsided, DTPA

radioisotope renal scan was done to rule out obstruction of the right kidney **(Figure 2)**. Split renal function revealed left kidney 61% and right kidney 39%. The scan showed both the systems draining well with no evidence of obstruction.

The patient was taken up for laparoscopic pyelolithotomy under general anesthesia. A 10 mm endoscope was introduced through the umbilical port and two 5 mm working ports were placed 5 cm inferior and lateral to the umbilical port. The renal bulge was well made out on entering the peritoneal cavity. The peritoneum over the right kidney was incised and the kidney was dissected all around using bipolar cautery. The renal pelvis was dissected out **(Figure 3)**. The extrarenal calyces were mistaken as ureter, however the anatomy became clearer when the pelvis was dissected all around. The anatomy was confirmed. An incision was made on the most prominent part of the pelvis, stones were seen and extracted **(Figure 4)**. A double J stent was inserted and the pyelotomy incision closed. The patient had an uneventful recovery.

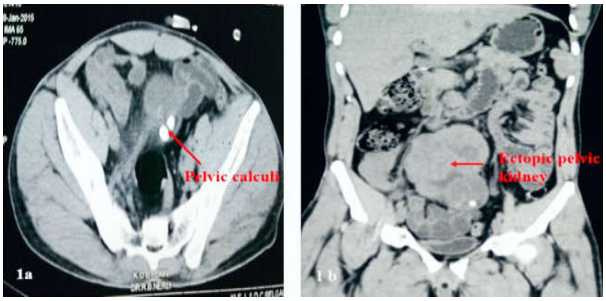

Fig. 1a and 1b: CT image showing ectopic pelvic kidney with pelvic calculi

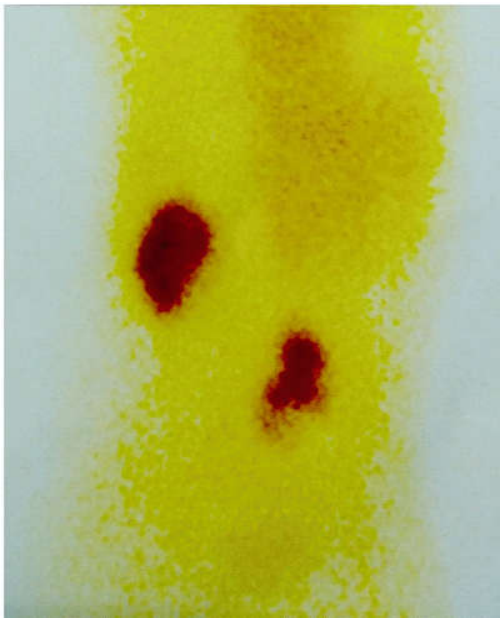

Fig. 2: DTPA Renogram showing ectopic pelvic kidney with adequate tracer uptake

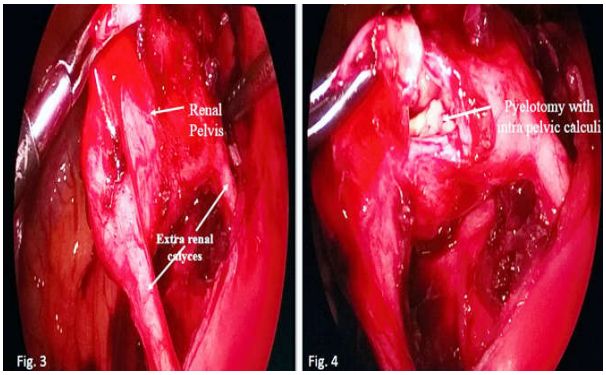

Figure 3 and 4: Laparoscopic image of right ectopic kidney with ectopic pelvis and ectopic calyces.Pyelotomy with intrapelvic calculi

Discussion

The urogenital system for some reason is more likely than any other to have congenital defects. The abnormalities of the collecting system which drains the urine from the kidney represent a complex and often confusing subset of urological anomalies. Extrarenal calyces, which are characterized by calyces and renal pelvis that lie outside the renal parenchyma, is one of the rare anomalies of the collecting system. The rarity of this anomaly and the complexity of possible associated anomalies often make the preoperative diagnosis difficult [1]. This anomaly was first reported by Eisendrath DN in 1925 [5], and since then another twenty or more cases have been reported [1].

The presentation of these anomalies is variable. It might be an incidental finding diagnosed at autopsy or may present with complications, such as stasis, infection, haematuria and pain. Hydronephrosis secondary to ureteropelvic junction obstruction (UPJO) has been reported in a few cases [1,6]. Our case presented with urinary tract infection secondary to renal pelvic calculi.

Though the renal pelvis was dilated, there was no obstruction either at UPJO or lower down as demonstrated on DTPA scan. Pre-operative imaging including CT (Computerized Tomography) did not give us the right picture. The anatomy became clearer only at the time of surgery.

Our case demonstrates that, one should be aware of such anomalies, so as to avoid intra-operative surprises and accidents. It is very important to delineate and define the structures during laparoscopy or minimal invasive surgery. Inadvertent ligation or incision of these calyces may lead to serious complications.

Conclusion

Ectopic kidney with extrarenal calyces is rare. Laparoscopic pyelolithotomy is a viable option for stone retrieval in ectopic pelvic kidneys. Laparoscopy also has an advantage of reduced morbidity.

References

1. Nataraju G, NandeeshBN, GayathriMN. Extrarenal calyces: a rare anomaly of the renal collecting system. Indian Journal of Pathology and Microbiology, 2009; 52:368–9.
2. Singh V, Gupta DK, Pandey M, Kumar V. Congenital right sided ureteropelvic junction obstruction in right crossed fused ectopia with extrarenal calyces masquerading as massive retroperitoneal urinoma in a case of blunt trauma abdomen: A diagnostic enigma and novel approach of management. African Journal of Urology, 2013; 19:194-97.
3. Dretler SP, Pfister R, Hendren WH. Extrarenal calyces in the kidney. Journal of Urology, 1970; 103:406–10.
4. Malament M, Schwartz B, Nagamatsu GR. Extrarenal calyces: their relationship to renal disease.American Journal of Roentgenology, 1961; 86:823–9.
5. Eisendrath DN. Report of case of hydronephrosis in a kidney with extrarenal calyces. Journal of Urology, 1925; 13:51-8.
6. RaghunathBV, NarendraBM, Gowrishankar BC and Ramesh S. Extrarenal calyces associated with pelviureteric junction obstruction: A case report of a rare anomaly. Journal of Indian association of paediatric surgeons, 2012; 17:124–125.