

# Middle calyx ureterocalicostomy in ectopic pelvic kidney with ureteropelvic junction obstruction: Only alternative for renal salvage

Jaisukh Kalathia, Santosh Agrawal, Saurabh S. Chipde, Rajeev Agrawal

Department of Urology and Kidney Transplantation, Sri Aurobindo Institute of Medical Sciences, Indore, Madhya Pradesh, India

## Abstract

Anomalous kidneys are mostly asymptomatic and are often found incidentally during physical or radiological investigations for urological or other medical complaints. The associated genital anomalies ranges from 15% to 45%. Females are associated with bicornuate or unicornuate uterus, rudimentary or absent uterus while males have undescended testes, duplication of the urethra, and hypospadias. A 21 year old married female presented with on and off lower abdomen pain for the past one year with history of primary amenorrhea. On examination an ill defined tender lump palpated in the lower abdomen. USG showed left ectopic pelvic kidney with gross hydronephrosis. The computed tomography confirmed hydronephrotic left ectopic pelvic kidney in front of the sacrum with anteriorly directed renal pelvis with ureter located posteriorly. There was delayed excretion from the ectopic kidney but right kidney was in normal position and function. The diethylene triamine pentaacetic acid (DTPA) scan showed 33% function of the ectopic kidney. On diagnostic laparoscopy, the uterus was small hypoplastic with bilateral ovaries appearing normal. The patient was taken for open pyeloplasty where the ureter was transected below PUJ but for a dependent drainage, the middle calyx as was the most dependent calyx as seen on the CT-scan. So a middle calyx ureterocalicostomy was performed calyx with excellent outcome. The ectopic kidney always remains a challenge because of complex neurovascular anatomy, presence of viscera and associated UPJO, but for a dependent drainage, middle calyx ureterocalicostomy is a feasible option with excellent outcome as was in our case.

**Key Words:** Ectopic kidney, ureterocalicostomy, ureteropelvic junction obstruction

## Address for correspondence:

Dr. Santosh Agrawal, Department of Urology and Kidney Transplantation, Sri Aurobindo Institute of Medical Sciences, Indore, Madhya Pradesh, India.  
E-mail: santro4u@yahoo.com

**Received:** 30.10.2015, **Accepted:** 11.01.2016

## INTRODUCTION

Renal ectopia is a rare condition involving failure of the mature kidney to reach its normal location within the renal fossa and is frequently associated with ureteropelvic junction

obstruction (UPJO). The congenital anomalies associated with ectopic kidneys for women include bicornuate or unicornuate uterus, rudimentary or absent uterus and vagina, and duplication of the vagina. For men, undescended testes,

Access this article online	
Quick Response Code:	Website: www.urologyannals.com
	DOI: 10.4103/0974-7796.177198

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

**For reprints contact:** reprints@medknow.com

**How to cite this article:** Kalathia J, Agrawal S, Chipde SS, Agrawal R. Middle calyx ureterocalicostomy in ectopic pelvic kidney with ureteropelvic junction obstruction: Only alternative for renal salvage. Urol Ann 2016;8:242-4.

urethral duplication, and hypospadias can occur.<sup>[1]</sup> We report our experience in managing a case of ectopic pelvic kidney with UPJO, which was managed with middle calyx ureterocalicostomy with excellent outcome. To our knowledge, this seems to be the first such reported case.

## CASE REPORTS

### Case 1

A 21-year-old married female presented with a chief complaints of on and off the lower abdominal pain for the past 1 year. She also had occasional vomiting, fever, and burning micturition. A history of primary amenorrhea was present. Her medical and surgical history was insignificant. On abdominal examination, there was a soft and ill-defined tender lump palpable in the lower abdomen. No abnormality detected on per vaginal examination.

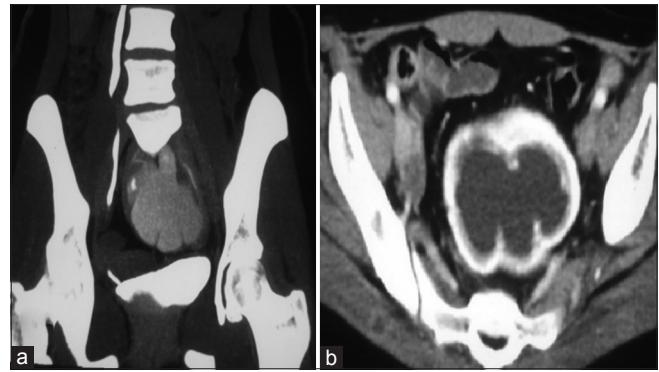
The ultrasonography of the abdomen revealed ectopic left kidney found in pelvic region with gross hydronephrosis. Computed tomography (CT)-urography confirmed the left ectopic pelvic kidney with hydronephrosis located in front of the sacrum. The renal pelvis is facing anteriorly with delayed excretion whereas the right kidney was normal in position and function [Figure 1]. On diethylenetriamine pentaacetic acid scan, the left ectopic kidney showed 33% function. The diagnostic hysteroscopy for primary amenorrhea revealed small hypoplastic uterus on the right side with normal bilateral ovaries. Hysteroscopy suggested that the cervix was normal, but the uterus was small hypoplastic with rudimentary horns.

The pelvis was facing anteriorly and the ureter running posteriorly and anatomically, the middle calyx was only the most dependent calyx. Hence, the ureter was transected below pelvic-ureteric junction (PUJ), and a middle calyx ureterocalicostomy were performed over 6F double-j stent so to have a dependent drainage [Figures 2 and 3]. The postoperative period was uneventful.

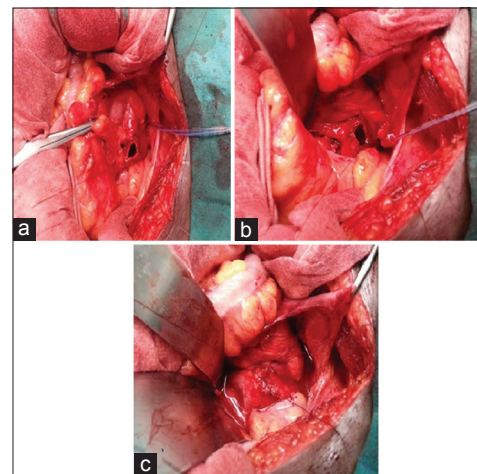
## DISCUSSION

The urinary system anomalies affect approximately 10% of population.<sup>[2]</sup> Ectopic kidney is described as abnormal localization of a kidney due to a developmental anomaly, and it occurs as a result of a premature halt in the migration of the kidney to its normal location during the embryonic period. Pelvic, iliac, abdominal, thoracic, contralateral, and crossed ectopic kidneys can occur.

The incidence of the pelvic kidney has been approximated between 1 in 2200 and 1 in 3000<sup>[3]</sup> whereas the incidence of one normal and one pelvic kidney is 1:800–1:3000.<sup>[4]</sup> Reportedly, 56% of ectopic kidneys have hydronephrosis, of which 70% are related to UPJO. This may be related to



**Figure 1:** (a) Computed tomography-urography showing left ectopic pelvic kidney with hydronephrosis with delayed excretion located in front of the sacrum. (b) Anteriorly facing pelvis with ureteropelvic junction obstruction



**Figure 2:** (a) Opened middle calyx (b) transected ureter (c) middle calyx ureterocalicostomy



**Figure 3:** Stent *in situ*

malrotation and an anteriorly placed pelvis, which may lead to impaired drainage of urine from a high insertion of the ureter or an anomalous vasculature that partially blocks one of the major calyces or the upper ureter.

The ectopic kidney disease can be associated with anomalies of vertebral column, lower gastrointestinal tract, genital tract, or spinal cord and meninges. Genital abnormalities are the most prominent. For women, these include bicornuate or unicornuate uterus, rudimentary or absent uterus and vagina, and duplication of the vagina. In our patient, the associated congenital anomalies were small hypoplastic uterus with rudimentary horns. For men, undescended testes, urethral duplication, and hypospadias can occur.<sup>[1]</sup> PUJ obstruction, as in the current case, has also been noted. The pattern of the renal vascular network is dependent on the position of the ectopic kidney and is completely anomalous. More inferiorly situated ectopic kidneys may be supplied by one or two main renal arteries arising from the distal aorta, aortic bifurcation, and the common or external iliac arteries. The inferior mesenteric arteries can also provide blood supply to these kidneys.<sup>[1]</sup>

The hydronephrotic pelvic kidney presents special treatment challenges because unlike lumbar kidney, the posterior approach is precluded by the sacrum;<sup>[5]</sup> the presence of viscera, aberrant vessels, and nerves if approached from the anterior aspect and<sup>[6]</sup> poor outcomes with endoscopic approaches because of the high insertion of ureter and anomalous vessels.<sup>[5-7]</sup> The renal ectopia may present a diagnostic problem when acute disease develops in the kidney, and there is always a danger that an unwary surgeon may be tempted to remove it as an unexplained mass.<sup>[8]</sup>

The standard technique of UPJO is pyeloplasty and ureterocalicostomy is used as a primary reconstructive procedure in the orthotopic kidney or proximal ureteral stricture associated with a relatively small intrarenal pelvis. Though calicovesicostomy or pelvivesicostomy has been described in the literature, we used the native ureter for the ureterocalicostomy

as pelvis was anteriorly directed and the ureter was passing posteriorly. A middle calyx ureterocalicostomy was performed as it was the most dependent calyx, which can be seen on the CT-scan [Figure 1] with excellent outcome.

## CONCLUSION

Ectopic kidney always remains a challenge because of complex neurovascular anatomy, presence of viscera and associated UPJO, but for a dependent drainage, middle calyx ureterocalicostomy is a feasible option with excellent outcome as was in our case.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- Wein AJ, Kavoussi LR, Campbell MF. Campbell-Walsh Urology. Philadelphia, PA, USA: Elsevier Saunders; 2012.
- Queisser-Luft A, Stolz G, Wiesel A, Schlaefer K, Spranger J. Malformations in newborn: Results based on 30,940 infants and fetuses from the mainz congenital birth defect monitoring system (1990-1998). Arch Gynecol Obstet 2002;266:163-7.
- Zafar FS, Lingeman JE. Value of laparoscopy in the management of calculi complicating renal malformations. J Endourol 1996;10:379-83.
- Gray SE, Skandalakis JE. Embryology for Surgeons – The Embryological Basis for the Treatment of Congenital Defects. Philadelphia, London, Toronto: W.B. Saunders Co.; 1972. p. 472-4.
- Bauer SB. Anomalies of the upper urinary tract. In: Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA, editors. Campbell Walsh Urology. 9<sup>th</sup> ed. Philadelphia: Saunders Elsevier; 2007. p. 3278-81.
- Gupta M, Lee MW. Treatment of stones associated with complex or anomalous renal anatomy. Urol Clin North Am 2007;34:431-41.
- Gross AJ, Fisher M. Management of stones in patients with anomalously sited kidneys. Curr Opin Urol 2006;16:100-5.
- Russell RC, William NS, Bulstrode CJ, editors. Baily and Love's Short Practice of Surgery. 23<sup>rd</sup> ed. London, UK: Arnold; 2000. p. 1174.