# Obstructing non-refluxing megaureter secondary to ectopic ureter: A rare case report

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## Abstract
Megaureter is a nonspecific term implying a spectrum of anomalies associated with grossly dilated diameter of ureter. Ectopic ureter is one such anomaly. Ectopic ureter is defined as any ureter, single or duplex, that does not enter the trigonal area of the bladder. Megaureter is defined as any ureter with a diameter of 7-8 mm[2]. Megaureter is a common cause of obstructive uropathy among neonates and young children. It is four times more common in boys than in girls and is bilateral in <25% of patients. Ectopic ureter is more common in girls. The left ureter is involved 1.6±4.5 times more often than the right. Treatment of ectopic ureter and megaureter includes exploration, laproscopic or robotic surgery. Ectopic ureter needs ureteric reimplantation and megaureter requires tapering. We present a case of an ectopic ureter leading to secondary obstructing non-refluxing megaureter in a 12 year old female child.

**Keywords:** Ectopic ureter, Megaureter, Ureteric reimplantation, Ureteral tapering.

## Introduction
Megaureter is a nonspecific term implying a spectrum of anomalies associated with grossly dilated diameter of ureter[1]. Ectopic ureter is one such anomaly. Ectopic ureter is defined as any ureter, single or duplex, that does not enter the trigonal area of the bladder.[2] Megaureter is defined as any ureter with a diameter of 7-8 mm.[2] Megaureter is a common cause of obstructive uropathy among neonates and young children[3]. It is four times more common in boys than in girls and is bilateral in <25% of patients.[4] Ectopic ureter is more common in girls. The left ureter is involved 1.6±4.5 times more often than the right.[5] Surgical treatment of ectopic ureter is required in all cases. The majority of congenital megaureters can be managed conservatively with spontaneous remission rates of up to 85% in primary megaureters. There is a group of patients with the primary or secondary obstructive megaureter, who require operative treatment. Surgical management is generally indicated in cases with recurrent urinary tract infections coexisting with ectopic ureter/megaureter, deterioration of renal function and significant obstruction. Children with a ureteric diameter more than 10 mm to 15 mm are more likely to require intervention in megaurter cases.[6-10] The management of megaureters has evolved from two stage operative treatment (cutaneous ureterostomy and then ureteral reimplantation or only ureteral reimplantation), to one stage treatment which could be open or laparoscopic approach or even robotic. We present a case of an ectopic ureter leading to secondary obstructing non-refluxing megaureter in a 12 year old female child.

## Case Report
A 12 year old girl brought to us by her parents in the outpatient department with complaints of recurrent pain in abdomen and continuous leakage of urine. Clinical examination suggested wet vagina with no leakage of urine demonstrated on pressing the abdomen. Her urine culture and sensitivity (C/S) grew Escherichia coli and appropriate antibiotics were started. Ultrasound (USG) of abdomen showed left severe hydroureteronephrosis. Contrast enhanced computed tomography (CECT) of abdomen (Fig. 1) and pelvis suggested left ectopic ureter opening into the vagina, severe hydroureteronephrosis. DTPA scan was done which suggested preserved left renal function. She was planned for left ureteric reimplantation. On exploration we found severely dilated left ureter (Fig. 2). On first look it was confused with the dilated bowel loop, but later on after tracing its course we confirmed it as ureter. It was approximately 4 x 3 cms in correlation with the CT findings. We then did left Hendren's tapering of ureter with ureteric reimplantation (Leadbetter and Politano's). Post operatively patient recovered well.

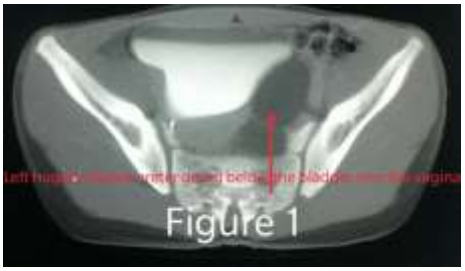


**Fig. 1:** Left hugely dilated ureter going below the blader into the vagina

**Fig. 2:** Hugely dilated ureter

**Discussion**

Ureteral anomalies are most important urogenital abnormalities because they directly affect kidney function and ectopic ureter and megaureter are one these. It must be corrected surgically to save the renal function. It could be unilateral or bilateral, single system ectopia or duplex system ectopia. Our patient had left sided single system ureteral ectopia. In males the ectopic ureter always enters the urogenital system above the external sphincter or pelvic floor and usually opens into the wolffian structures including vas deferens, seminal vesicles, or ejaculatory duct. In females the ectopic ureter may enter anywhere from the bladder neck to the perineum and into the vagina, uterus, and even rectum. Our patient had ectopic ureter opening into the vagina. Females usually present with urinary incontinence as the ureter opens below the pelvic floor, similar was the situation in our patient. Because this ectopic ureter drains well, there are less chances of the ureter becoming megaureter. In our case although the ureter was draining well, patient had intermittent dry periods suggesting that the ectopic orifice was intermittently blocked either due to urinary tract infection or by the vaginal secretions. The CECT in our case suggested hugely dilated ureter of 4 x 3cm diameter. Treatment of ectopic ureter and megaureter includes exploration, laproscopic or robotic surgery. Ectopic ureter needs ureteric reimplantation and megaureter requires tapering. Many surgical procedures can be performed for megaureter, but 3 procedures are proposed allowing the management of the great majority of situations: 1. Transtrigonal reimplantation according to Cohen without remodelling of the ureter, when the ureteric calibre is less than 1 cm. 2. Transtrigonal reimplantation according to Cohen with remodelling of the transmural portion of the ureter. 3. Suprahiatal reimplantation with extravesical remodelling of the ureter according to Hendren in the case of dolichomegaureter. The other ureteric remodelling or plication techniques are indicated more rarely.[11] In our rare case we performed extravesical tapering of ureter as described by Hendren and suprahiatal (Leadbetter and Politano's) reimplantation of the ureter.

## Conclusion

The combination of ectopic ureter and megaureter is rare. Ectopic ureter should always be suspected whenever a female child comes with history of urinary incontinence. Megaureter needs treatment only when the ureteric diameter exceeds 10-15 mm. Ureteric reimplantation with tapering of the megaureter is safe and effective in cases of ectopic ureter with megaureter.

**Conflict of Interest:** None.

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