



## One Method that can be Applied in the Ectopic Ureter is Uretero-Ureterostomy: Case Report

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### Abstract

Urinary system congenital anomalies are more common than other systems. The double collecting system is caused by the emergence of two separate ureter buds from a single Wolff duct or incomplete fusion of the ureter bud with the upper and lower pole parts of the kidney. The opening of the ureter orifice to the bladder neck or to a point other than trigon is called an ectopic ureter. In this case, we report the findings of a 6-year-old girl who complained of continuous urinary incontinence. Our patient had a left sided double collector system and the ectopic ureter draining the upper pole was opened infratentorially to the vaginal vestibule. In the treatment of the ectopic ureter. In our case the renal upper pole of the ectopic localized ureter was functional. End-to-side ureteroureterostomy was performed. Ectopic ureter should be considered in the differential diagnosis of girls with continuous urinary incontinence.

**Keywords:** Ectopic ureter; Erinary incontinence; Ureteroureterostomy

### Introduction

Urinary system congenital anomalies more commonly seen than other systems congenital anomalies. The reason of this is urinary system rises from both endoderm and mesoderm germ layers and merges then kidneys make as census. During the embryological process in the end of the 4<sup>th</sup> week ureter bud which rises from distal mesonephric duct unites with metanephric mesenchyme blastema and generates permanent kidney. Permanent kidney ascends to lumbal zone under adrenal glands in between 6<sup>th</sup> and 9<sup>th</sup> weeks [1]. Duplex collecting system occurs from two different ureter buds being generated from one Wolffian duct or incomplete fusion of ureter buds' upper and lower poles.

Normally ureteral orifices should be located on vesical trigone. Ureteral orifice being opened to bladder neck or other than vesical trigon is called ectopic ureter. If ureteral orifice opens more lateral to the normal location it is called lateral ectopia, if it opens more medial to the normal location or to lower parts of the bladder which is closer to the urethra it is called medial or caudal ectopia. It is often with duplex collecting system. Duplex collecting system classified as complete or incomplete duplication. If ureters have two separate pyelocalyceal systems but enter to two separate orifices in bladder it is called complete ureteral duplication, if ureters have two separate pyelocalyceal systems but enter to the same orifice it is called incomplete ureteral duplication. Incomplete ureter duplication is the most common congenital anomaly of upper urinary system. However, complete ureter duplication has more clinical symptoms. It is more often in girls [2]. Ectopic ureter usually diagnosed at pediatric ages. Usual complaints are persistent and recurrent urinary tract infections, voiding dysfunctions and urinary incontinence. Sometimes it is diagnosed incidentally by imaging techniques for different pathologies. It is seen rarely but in girls ectopic ureter may open to vaginal vestibule and could cause persistent urinary incontinence which is unresponsive to treatment. In this case report we present a 6 years old girl with constant dribbling of urine for 4 years.

### Case Presentation

A 6 years old girl, no pathological findings in her physical examination, constant urinary incontinence (as leaking) for 4 years even after toilet training. Kidney function tests were normal. No pathologies in simple urine test. Two times cystourethroscopies made in different clinics for same reasons. Left pyelocaliectasis and ureter dilatation found in her urinary ultrasonographic examination. In the voiding cystourethrography vesicoureteral reflux not demonstrated, bladder capacity was normal and bladder neck was normal during micturition. In MR urography left duplex collecting system has demonstrated (Figure 1). In other clinics ectopic ureter orifice has been

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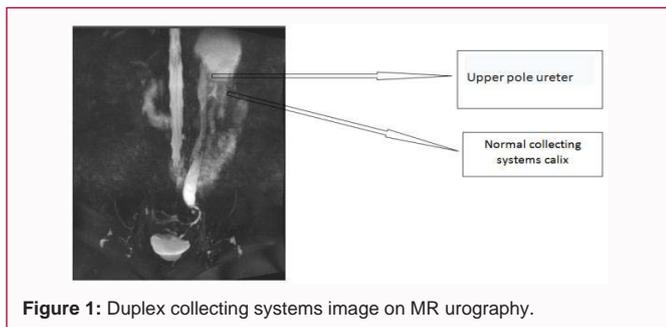


Figure 1: Duplex collecting systems image on MR urography.

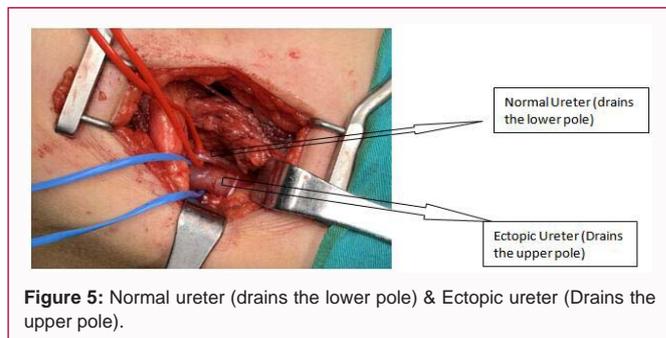


Figure 5: Normal ureter (drains the lower pole) & Ectopic ureter (Drains the upper pole).



Figure 2: RGP imaging of left collecting system.

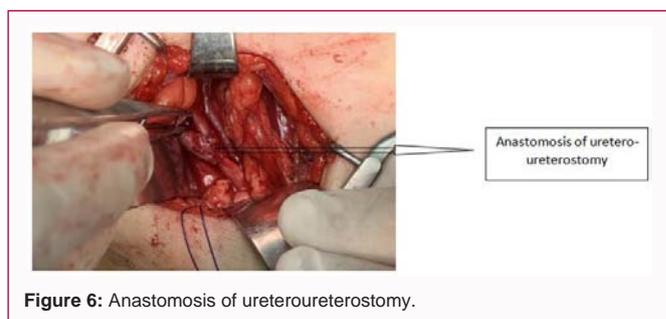


Figure 6: Anastomosis of ureteroureterostomy.

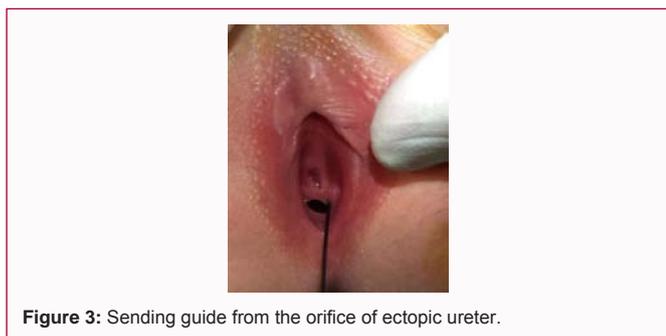


Figure 3: Sending guide from the orifice of ectopic ureter.



Figure 4: Sending guide from left ectopic ureter.

doubted but could not show it during cystourethroscopy. Hence, we did cystoscopy in anesthesia and did not see any ectopic ureter. In MR urography pyelocaliectasis and ureter dilatation has been found but during our left retrograde pyelography no pyelocaliectasis or ureter dilatations observed (Figure 2). A urogenital examination made again but under anesthesia and an orifice found located infero-lateral of urethra which suspected as a urether orifice (Figure 3). A hydrophilic guide wire placed to the kidney and confirmed with scopy (Figure 4). An open-ended urethral catheterization has tried from the orifice

but could not accomplish. According to localization of the guide wire during scopy and Retrograde Pyelographic (RGP) imaging of the other ureter, the ectopic ureter has thought to be located on the upper pole.

DMSA scan made for planning the surgical procedure to the left sided duplex collecting system (left hemi-nephrectomy?-left ureteroureterostomy or left ureteroneocystostomy). Separated renal functions of right kidney were 52% and left kidney was 48%. Left kidneys separated polar functions were 32% for upper pole and 68% for lower pole. Ureteroureterostomy has been made due to the upper pole being functional which was drained by the ectopic ureter and there were no pathologies required an intravesical procedure. End-to side ureteroureterostomy made to middle segment of the ureters. 4Fr 16 cm DJ catheter inserted from anterograde way. Urethral catheter pulled off in post-op 3<sup>rd</sup> day and drainage tube pulled off in post-op 4<sup>th</sup> day. DJ catheter pulled off in post-op 2<sup>nd</sup> week. Patient observed without complications in her post-op period. Procedure was told to the patient in details and her legal representatives accepted the informed consent (Figure 5, 6).

### Discussion

Ectopic ureter seen 0.025% in population. Nearly 10% is bilateral. It is seen 6 times more in girls. Ectopic ureter usually drains duplex system in girls and single system in boys. In duplex systems ectopic ureter drains upper pole (80%). In duplex collecting systems ureter that drains the upper pole opens to the infero-medial part of the bladder and the other ureter that drains the lower pole opens to the supero-lateral part of the bladder according to the Weigert-Meyer law. At the same time ureteroceles may occur in the one that drains the upper pole and Vesicoureteral Reflux (VUR) may occur in the one that drains the lower pole because of opening to outside of the trigon [3]. In boys ectopic ureter opens to bladder neck/prostatic urethra (48%), seminal vesicle (40%), ejaculator duct (8%), vasa deferentia (3%) or epididymis (0.5%). In girls it opens to bladder neck (35%), vaginal vestibule (30%), vagina (25%) or uterus (5%) [4]. It should be remembered that in boys if ectopic ureter opens to the epididymis

epididymo-orchitis may seen. In boys ectopic ureter never opens distal of sphincter so it never causes urinary incontinence.

In girls ectopic ureter rarely ends in urethra or vaginal vestibule. For this reason an infrasphincteric ectopia may cause constant dribbling of urine [5,6]. If not diagnosed early this urinary incontinence can be mixed with stress urinary incontinence, overactive bladder, urinary fistula or urethral sphincter insufficiency at older ages. When urinary incontinence is explored it should be known that it has a lot of causes and should be searched with a careful history while determining its type. In our case even there were a lot of physical examinations and endoscopies the ectopic ureter was not determined. Ectopic ureter determined with systematic approach to the urinary incontinence and careful physical examination under anesthesia.

Treatment of ectopic ureter should be determined according to the function of the pole that ectopic ureter drains in duplex collecting systems. Pole nephrectomy (hemi-nephrectomy) is performed in the cases which ureter opens to the non-functional pole. Ureteroneocystostomy (UNC) or ureteroureterostomy can be applied to when ectopic ureter drains a functional pole such as our case. If there is pathology in ectopic ureters opening to the bladder (vesicoureteral reflux, ureteroceles) UNC treatment should be applied. Ureteroureterostomy applied in our case due to surgical easiness and not having intravesical pathologies.

It is argued that anastomosis should be done from proximally or distally. In our case we did proximal “end to side” ureteroureterostomy by reason of difficulty of ureters lower segments dissection and lower segments constricted structure.

It should be remembered that girl constant dribbling of urine patients’ duplex collecting systems ureter may locate ectopically infrasphincteric. If there is an ectopic ureter, approaching to the duplex collecting system treatment should be considered according to renal pole drained by the ectopic ureter and intravesical pathologies (vesicoureteral reflux, ureteroceles etc.).

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