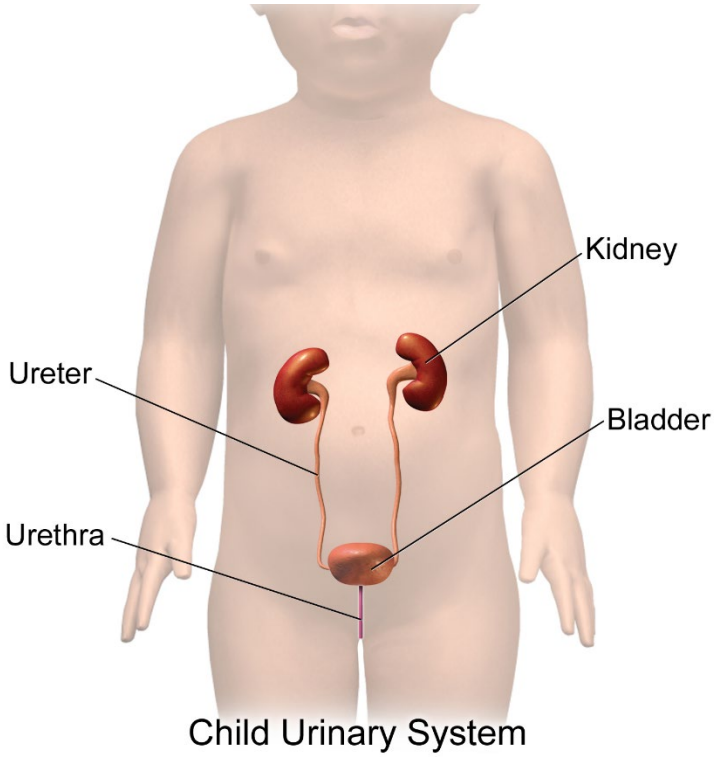
C.S. MOTT CHILDREN'S HOSPITAL
MICHIGAN MEDICINE

Duplications, Ectopia, & Ureterocele

Duplications, ectopia, and ureterocele are birth defects that affect the urinary tract.

What is duplication?

Most of us are born with two ureters, one from each kidney to drain urine into the bladder. Duplication is where 2 ureters drain from one kidney. This condition occurs in nearly 1 out of 100 people and most are unaware of it. A **duplex system** means having two complete sets of plumbing (ureters) going from kidney to bladder. **A bifid system** is where the 2 ureters join and become a single ureter by the time it enters the bladder. Duplication can run in families and usually involves just one side (kidney/ureter) but can involve both.



Child Urinary System

What is a ureteral ectopia?

Sometimes the ureter enters the bladder at an abnormal (ectopic) location, or it may miss the bladder completely and enter the lower urinary or genital tract. Ectopic ureters are more common in females. Some people with an ectopic ureter also have duplication. This condition may cause urine in the bladder to back up into the kidney instead of leaving the body, a condition called **reflux.**

Sometimes the kidney on the same side of the ectopic ureter is abnormal (dysplastic) and occasionally so abnormal that it doesn't function. In some girls, an ectopic ureter causes **dribbling incontinence**, that's when urine drips out of the bladder frequently or constantly. In some boys, an ectopic ureter can introduce infection to the reproductive system (epididymitis).

An ectopic kidney occurs when it is not located in the usual position between the flank (hip) and ribs. Sometimes it is found elsewhere such as in the pelvis. Ectopic kidneys are sometimes fused together and shaped like a horseshoe.

What is a ureterocele?

Ureterocele is the medical name of a balloon-like malformation at end of the ureter where it inserts into the bladder. (it forms inside the bladder). People who have a ureterocele usually also have duplication. The upper pole of the kidney is usually dysplastic and functions poorly. The little urine that it does make, is obstructed by the ureterocele so that the upper pole ureter enlarges. The ureterocele prevents free movement of the urine and this stagnation leads to infection so often these systems become filled with pus. The ureterocele may become large enough to block the lower pole ureter, the bladder outlet, and even the other kidney.

Is ureterocele common?

Ureterocele is not common and occurs in 1 per 5,000 to 12,000 pediatric admissions. It is more common in girls and may involve both sides.

In the past, we would discover a ureterocele when a child developed symptoms such as urinary infection, failure to thrive, an abdominal mass, etc. Occasionally, a small ureterocele would show up later in life from infection or stone accumulation. Now, most ureteroceles are found by ultrasound before birth.

How is a ureterocele treated?

The treatment of a ureterocele varies from patient to patient. If the child is sick with a pus-filled mass, we drain it via a tube in the skin (percutaneous drainage). After the infection is clear the child will have reconstructive surgery to remove the ureterocele and repair the bladder. Sometimes, there is a reason to decompress the ureterocele through a cystoscope. A cystoscope is a long, thin long instrument with a tiny lens and light at the end that the doctor inserts into the bladder through the urethra (transurethral incision).

A ureterocele can be managed in a number of ways. We sometimes work near the bladder and remove the ureterocele and re-plug or re-implant the ureters into the bladder. If the upper pole of the kidney is dysplastic and non-functional it can sometimes be removed. If the kidney is functional and worth saving, we can sometimes plug the ureter into the lower pole drainage system.

The lower pole ureter may reflux before or after the operation. Therefore, the children remain on antibiotics until several months after the surgery. At this time the child will have several medical tests and the urologist will re-assess the upper and lower tracts. A few children will require additional surgery in the lower tract because of reflux or if there is a need to repair the ureteral stump or remove left-over ureterocele tissue.

What are the possible complications?

Your surgeon will talk with you about the potential complications of the surgery including:

- bleeding
- infection
- kidney damage or loss
- persisting drainage of urine

- air in the lung cavity (pneumothorax)
- need for further surgery.

After reconstructive surgery, the children must be followed up for at least several years to assure that kidney function is satisfactory and that the lower urinary tract is normal.

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