

# DIVISIONS OF NEPHROLOGY & UROLOGY

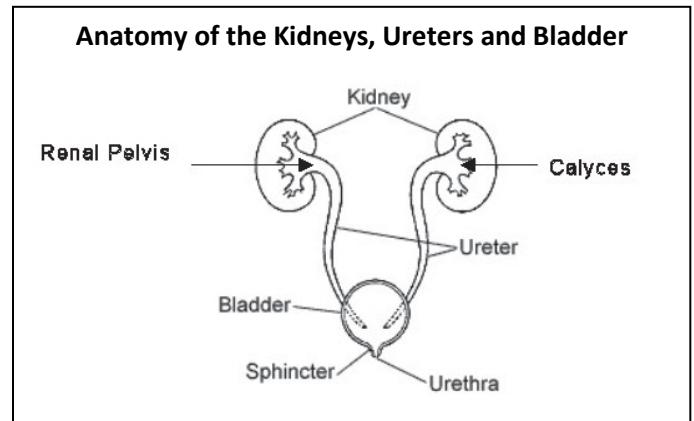
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## Hydronephrosis

### What is Hydronephrosis?

Hydronephrosis is swelling of the kidney or its drainage tube (the ureter) from extra urine (pee). It can occur on one side (unilateral) or both sides (bilateral.) It is very common, found in about one out of every 100 pregnancies. Many cases get better during pregnancy, and many others get better after birth without needing any interventions. Only about 1 in 500 babies born with hydronephrosis will have a significant urologic problem.

In order to understand hydronephrosis, it is important to understand how the kidneys and their collecting systems work. The kidneys remove waste products from the body by filtering the blood to remove impurities. These impurities are then turned into urine within the kidney and drained into the middle part of the kidney which is called the renal pelvis. Urine leaves the renal pelvis through a drainage tube called the ureter which empties into the bladder. Urine then exits the bladder through urethra.



### What Causes Hydronephrosis?

There are many causes of hydronephrosis, but there is nothing that the mother did or didn't do during pregnancy to cause this.

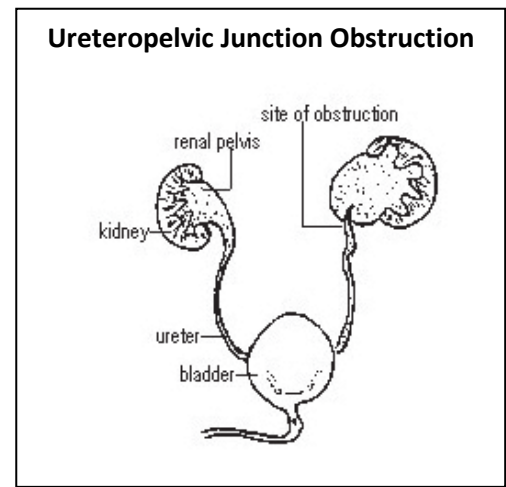
- **Transient**

Many cases of hydronephrosis that are found during pregnancy get better before the baby is born, and many others get better after birth without needing any interventions. Some of these cases are so mild, they do not need any workup other than meeting with your doctors and getting ultrasounds to make sure the child grows out of the hydronephrosis.

- **Obstruction**

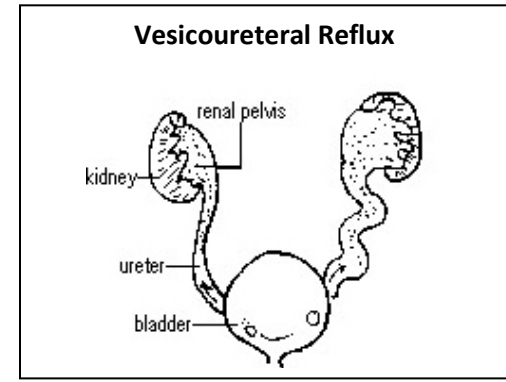
One cause of hydronephrosis is an obstruction or blockage. This happens when urine can't drain from one area of the body. These blockages are only concerning if they are keeping the kidneys or bladder from working the way they need to, if the child is getting urinary tract infections, or if the blockage is causing pain. There are many places that the urine can get blocked.

- *Ureteropelvic Junction Obstruction:* This is a blockage where the renal pelvis meets the ureter. Rarely, children will undergo a procedure to rebuild this area and fix the blockage.
- *Ureterovesico-Junction Obstruction:* This is a blockage where the ureter meets the bladder. Rarely, children will undergo a procedure to rebuild this area and fix the blockage.
- *Posterior Urethral Valves:* This is a very rare condition in which the urethra (the drainage tube from the bladder) gets blocked. It only happens in boys and occurs in about 1 in 5,000 to 1 in 8,000 babies. Generally this condition is known before the baby is born because the amniotic fluid levels during pregnancy are low. Babies who might have posterior urethral valves are followed closely by their doctors. They may have some imaging studies and blood tests done after they are born to determine if they have this condition. Posterior urethral valves are treated with a small procedure.



- **Vesicoureteral Reflux**

Another cause of hydronephrosis is vesicoureteral reflux or urinary reflux. This happens when the urine goes the wrong way from the bladder up to the kidney. Urine reflux is only concerning if a child is having urinary tract infections because it gives the bacteria a free ride up to the kidney to cause a kidney infection. Many children with reflux are given low dose daily antibiotics to prevent infections while waiting for them to outgrow their reflux. Rarely, children will undergo a procedure to fix their reflux.



- **Multicystic Dysplastic Kidney (MCDK)**

This rare condition is sometimes mistaken for hydronephrosis. The kidney is filled with small cysts or bags of water. The one kidney generally never works as a normal kidney should. In most cases, the other kidney functions normally. MCDK in one kidney does not impact overall health and children grow up to lead long and normal lives. Children with MCDK almost never need to take any medications or undergo any procedures for this condition.

### **How is hydronephrosis diagnosed?**

Hydronephrosis is usually diagnosed on an ultrasound during pregnancy. It can also be found on an ultrasound if a child has a urinary tract infection, pain in their side, or another concerning symptom. Sometimes it is found by accident. Seeing hydronephrosis on an ultrasound does not always explain what is causing it. Your doctor may order other tests to learn more.

- **Voiding Cystourethrogram (VCUG) / Contrast Enhanced Voiding Ultrasound (CEVUS):** These tests use dye in the bladder placed by a small catheter to see if the urine goes the wrong way up to the kidney. They can also make sure the bladder drains well when a child is peeing without any signs of posterior urethral valves.
- **Nuclear Medicine Renogram (MAG3) / Magnetic Resonance Urography (MRU):** These tests use different types of IV dye to look at how well the kidneys work and how well they drain. They are helpful to know if there is a blockage or obstruction.

### **How is hydronephrosis treated?**

Treatment for hydronephrosis depends on what is causing it and whether a child is having problems such as urinary tract infections, pain in their side or worsening blockage that might hurt their kidney in the future. Many children will be followed by ultrasounds if their hydronephrosis remains mild. Some children will have the radiology tests mentioned above. Some children will have blood tests performed to check their kidney function. Some children may go on low dose daily antibiotics or have a procedure to correct their problem. Your urologist and nephrologist will work closely with you to determine the best course for your child.