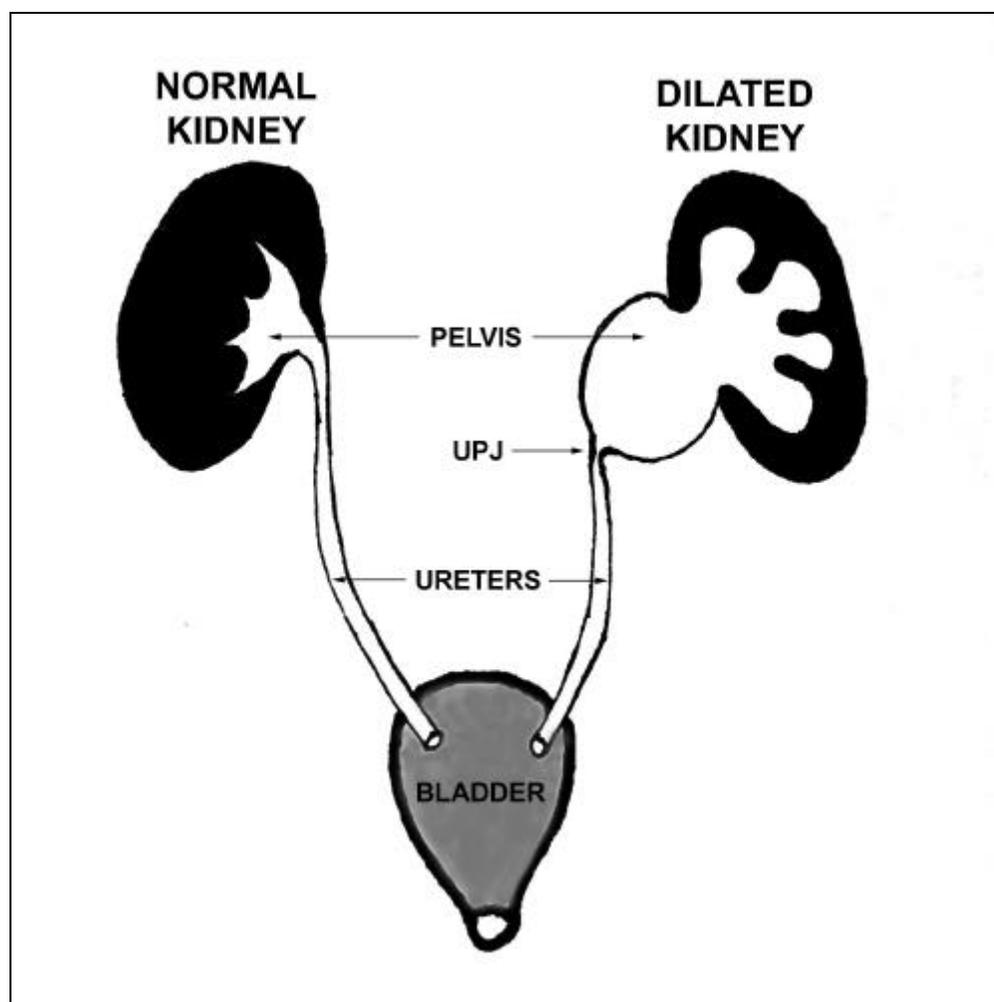


## HYDRONEPHROSIS

Hydronephrosis is a dilation of the kidney collecting system (plumbing). Hydronephrosis can be found on ultrasounds and other x-rays. There are three common causes of hydronephrosis: ureteropelvic junction (UPJ) obstruction, congenital/nonobstructive hydronephrosis and vesicoureteral reflux. If your child has already had a bladder x-ray (VCUG) that was normal, then reflux has been ruled out.

### UPJ OBSTRUCTION

The kidneys filter the blood and make urine. The urine passes into the kidney pelvis and down the ureter into the bladder. Where the kidney pelvis and ureter connect is termed the “uretero-pelvic junction” or **UPJ**. If urine has trouble passing through this junction, the urine becomes backed up and causes the kidney plumbing to dilate. This is termed a UPJ obstruction. A UPJ obstruction can cause kidney damage with subsequent loss of function. It may also cause urinary infection, kidney stones or pain.



## **EVALUATION**

### **Ultrasound**

This is a painless study that uses sound waves and gives us a picture of the kidney. This is the most common study for following hydronephrosis since it causes no pain. An ultrasound is usually done every 3 to 6 months.

### **Nuclear renal scan**

This is the best study to determine the amount of obstruction. Unfortunately it requires the placement of an intravenous catheter (I.V.) and bladder catheter. A nuclear isotope is injected into the blood stream. A special camera (outside the body) follows the isotope into the kidneys and bladder. The amount of radiation exposure is actually less than a similar x-ray study.

This study can determine kidney function and the flow (obstruction) of urine. Despite the sophisticated technology of this test, the results are imperfect and cannot always distinguish which kidneys are going to spontaneously correct themselves. A nuclear scan is usually done every 4 to 12 months.

## **SURGERY**

Deciding who needs surgery for UPJ obstruction is very complex and controversial. Obstruction of the kidney can cause many problems, but the most important is loss of kidney function. Occasionally it may also cause pain, infection or urinary stones. The decision to fix this obstruction depends upon your child's kidney function, the amount of obstruction, the amount of dilation (hydronephrosis) and whether there is associated pain, infection or stones.

Some children have spontaneous resolution of hydronephrosis. Unfortunately, there is no perfect test to determine which children will have spontaneous resolution and which children will have persistent dilation and kidney injury. Indications for surgery may include: 1) persistent and severe dilation by ultrasound, 2) loss of function, or 3) severe obstruction on a nuclear scan.

## **WHAT TYPE OF SURGERY IS USED?**

For infants and children, the most common procedure is an *open* "pyeloplasty" through an incision on the flank or back. The abnormal part of the ureter is removed and the normal part of the ureter is sewn back to the kidney pelvis. Surgery is successful in over 90 percent of children. Only one procedure (general anesthetic) is required for most patients. A small drain is left in the flank and removed one week later in the office. The main risk of surgery is recurrent obstruction requiring another operation.

For adults, *endoscopic* pyeloplasty through the bladder or kidney is becoming popular. The success rate in adults is 70 to 80 percent. The advantages of this type of surgery include no incision, a shorter hospital stay and less pain. The disadvantages include a lack of pediatric experience, lower success rates and the requirement of at least two general anesthetics. For infants and children, *open* pyeloplasty is the most common procedure.