

Pediatric Urology Associates, Ltd.

& Pediatric Enuresis Center of Arizona

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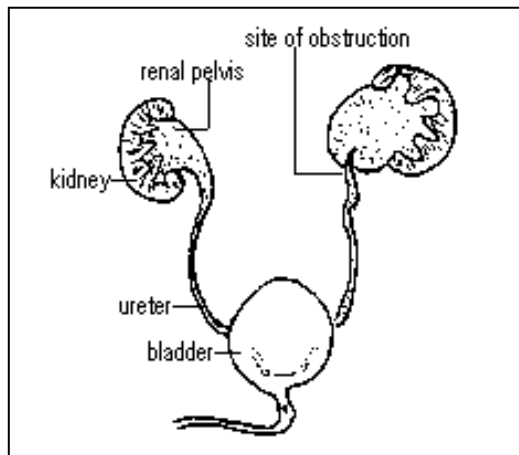
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ANTENATAL HYDRONEPHROSIS

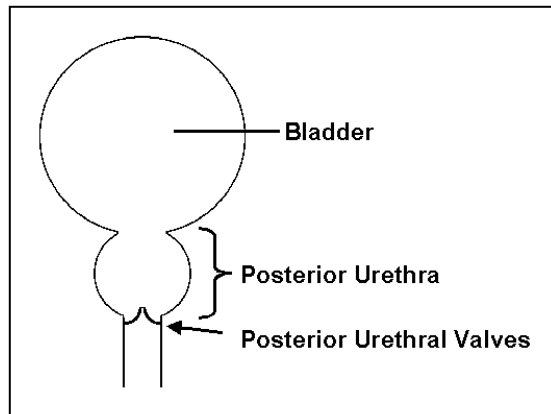
Antenatal (before birth) hydronephrosis (fluid-filled enlargement of the kidney) is detected in the fetus by ultrasound studies performed as early as the first trimester of pregnancy. In most instances this diagnosis will not change obstetric care, but will require surveillance and possible surgery during infancy and childhood.

Possible causes of antenatal hydronephrosis:

1. **Blockage.** This may occur at the kidney in the ureteropelvic junction (UPJ), at the bladder in the ureterovesical junction, or in the urethra (posterior urethral valve).

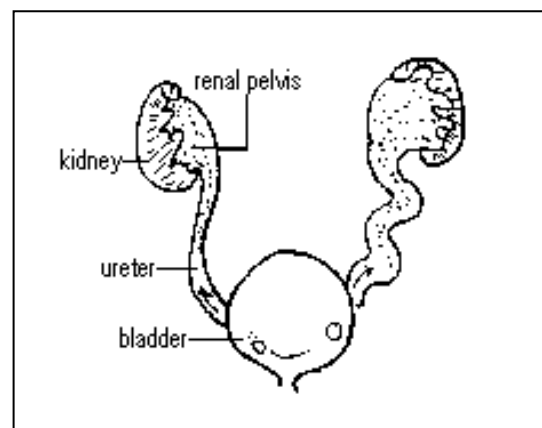


UPJ obstruction



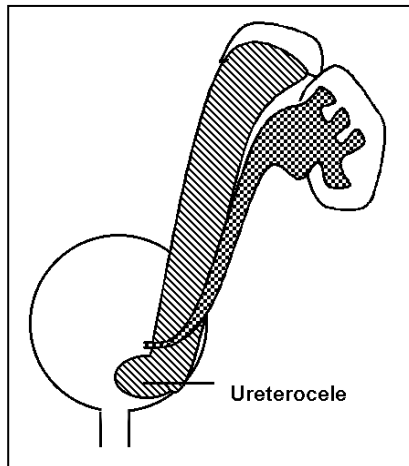
Posterior Urethral Valves

2. **Reflux.** Vesicoureteral reflux occurs when the valve between the bladder and the ureter is incompetent permitting urine to backflow to the kidney when the bladder fills or empties. Most children (75%) outgrow this during childhood but need daily antibiotic prophylaxis to try to prevent kidney damage before they outgrow the reflux.

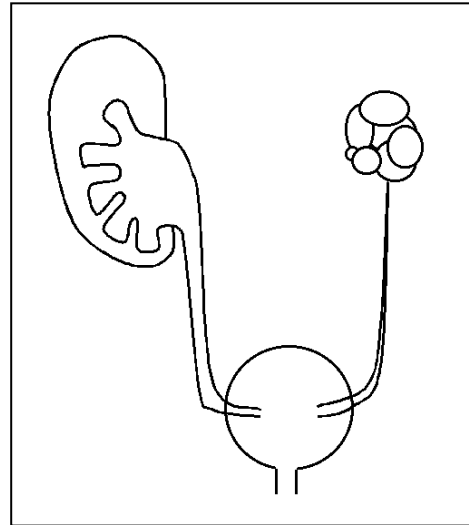


Vesicoureteral Reflux

3. **Duplications etc.** Perhaps 1% of all humans have two collecting tubes from a kidney. These may show up on fetal ultrasound. Occasionally patients with duplication have a ureterocele which is a balloon-like obstruction at the end of one of the duplex tubes.



4. **Multicystic kidney** is a nonfunctional cystic kidney.



5. **Normal Variant:** Many of the dilated kidneys are found to be normal after delivery. It is likely that the dilation was due to the high urine output in the fetus and also changes that occur in the kidney during development. We now know that minor dilation of the kidney before birth does not always need evaluation after the child is born.

Management during Pregnancy: In nearly all instances of antenatal hydronephrosis, ultrasound surveillance is all that is necessary. In the rare fetus with severe obstruction of both kidneys and insufficient amniotic fluid, drainage of the kidneys or bladder by tube or operation has been performed experimentally. While these procedures are technically possible, the outcome of the babies has not, to date, been improved. These babies are likely to have very abnormal kidneys that don't function well and also may have inadequate lung development. For most cases of antenatal hydronephrosis pregnancy is not affected and delivery can be performed normally.

Management after Birth: Postnatal ultrasound is usually performed before the child leaves the hospital. A **voiding cystourethrogram (VCUG)** (this requires a catheter in the bladder) is performed to exclude vesicoureteral reflux as this occurs in 25-30% of children with antenatal hydronephrosis. We exclude obstruction with a **diuretic renal scan** (requiring an IV and a catheter). The renal scan is more accurate if delayed until the baby is one month of age.

Children with vesicoureteral reflux are managed with antibiotics and surveillance with periodic ultrasound and voiding cystograms. Children with an obstruction or blockage of the urinary tract may require surgical correction. In some babies the evidence for obstruction is marginal or the degree of blockage is mild. In these babies the tests might be repeated after a few months. After all testing is done, some babies have hydronephrosis without reflux or obstruction. We usually follow these patients with periodic ultrasounds to monitor the hydronephrosis and the growth of the kidneys.

A multicystic dysplastic kidney doesn't work, but the opposite kidney is usually normal. There is controversy whether a multicystic kidney should be removed or left alone. Unless it is causing a problem with breathing or eating - and unless there is a question of tumor or blockage - we usually leave these alone in infancy and do a follow-up ultrasound at 6 months and a year.