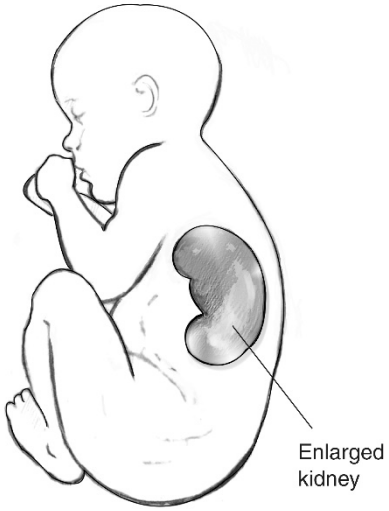
C.S. MOTT CHILDREN'S HOSPITAL
MICHIGAN MEDICINE

Antenatal Hydronephrosis

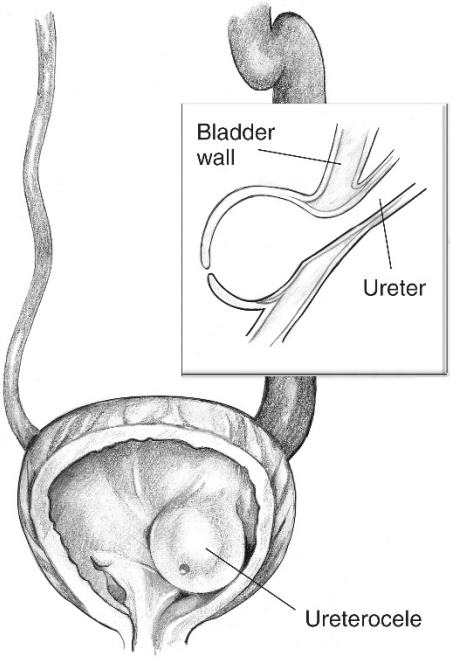
What is antenatal hydronephrosis?



Antenatal hydronephrosis means the kidney is enlarged and filled with fluid before birth. It is detected in the fetus by ultrasound studies as early as the first trimester of pregnancy. In most instances, this diagnosis will not change obstetric care but will require monitoring and possible surgery during infancy and childhood.

What are the usual causes of antenatal hydronephrosis?

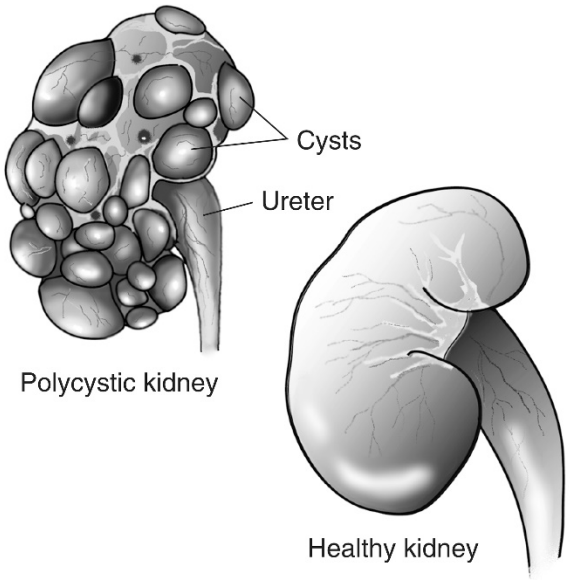
1. **Blockage:** This may occur at the kidney in the ureteropelvic junction (UPJ), at the bladder at the ureterovesical junction (UVJ), or in the urethra (posterior urethral valves). Blockages usually have to be corrected.
2. **Reflux:** Vesicoureteral reflux occurs when the valve between the bladder and the ureter is not working and permits urine to backflow to the kidney when the bladder fills or empties. Most children (3 out of 4, or 75%) outgrow this during childhood but need monitoring and preventative antibiotic treatments (prophylaxis) to prevent kidney damage before they outgrow the reflux. Only a minority of people with reflux require surgery either because of failure to outgrow reflux or because of breakthrough urinary tract infections.



3. **Duplications:** A small percentage of all people have two collecting tubes from a kidney. This is called a duplication and may

show up on a fetal ultrasound. Occasionally people with duplication have a **ureterocele** which is a balloon-like obstruction at the end of one of the duplicate tubes.

4. **Multicystic kidney:** This is a non-working kidney with cysts (closed sacs of tissue filled with fluid, air, pus or other material).



How is antenatal hydronephrosis managed during pregnancy?

In nearly all instances of antenatal hydronephrosis, ultrasound tests are all that is necessary. In the rare fetus with severe blockage of both kidneys and insufficient amniotic fluid (the fluid surrounding the fetus), draining the kidneys or bladder by tube or operation has been done experimentally. While these procedures are technically possible, the outcome of these babies has not been improved. These babies are likely to have very abnormal kidneys that do not 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. Very huge obstructed kidneys may require C-section delivery, but this is unusual.

How is antenatal hydronephrosis managed after birth?

An ultrasound is usually performed during the first couple of days of life. If hydronephrosis persists, we must rule out vesicoureteral reflux with a procedure called a **voiding cystourethrogram** (this requires a catheter in the bladder). Reflux can usually be managed by antibiotics, ultrasound tests, and voiding cystourethrograms.

Blockages also must be ruled out with a **diuretic renal scan** (requiring an IV and a catheter). The diuretic renal scan is more accurate if delayed until the baby is one month old. Most blockages require surgical correction. In some babies the evidence for a blockage is small or the degree of blockage is mild. In these babies, the tests might be repeated after a few months. After all testing is complete, some babies have hydronephrosis without reflux or obstruction. We usually follow these patients with ultrasound tests to monitor the hydronephrosis and growth of the kidneys.

A **multicystic kidney** does not work, but the opposite kidney is usually normal. There is controversy about 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 at 1 year of age. If the multicystic kidney is still large, we recommend removal.

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