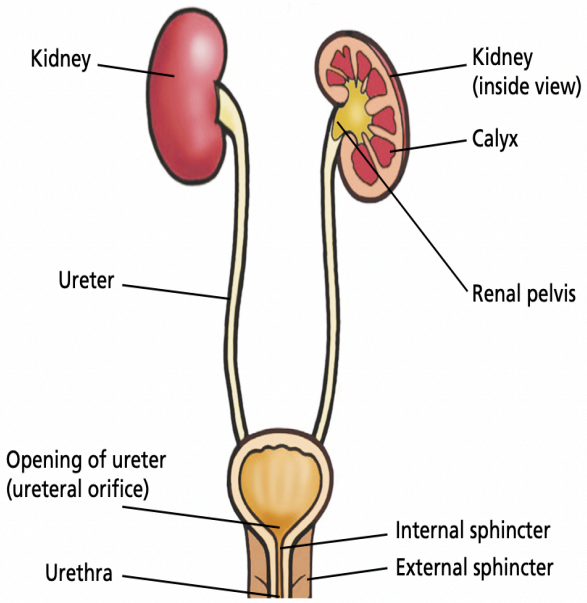
Antenatal Hydronephrosis

1.What is Antenatal Hydronephrosis ?

"Antenatal hydronephrosis" is a condition that occurs prior to birth. When fetal urine output is at its peak in the latter stages of pregnancy, kidney dilation might be observed, and ultrasounds are the most common method used to detect it. Additionally, it can be observed earlier in pregnancy, particularly during the 20-week anomaly scan, when the urinary tract's collecting or drainage systems appear to be holding more urine than usual. The word is of Greek origin and means "water on kidneys" (nephrosis). Another term for this is "dilatation."

This is a common problem that can be seen in approximately 1% of pregnancies. Most cases are not serious. The problem often disappears by the time the baby is born, with no long- term effects on the baby and mother.

The kidney is made up of two parts. The first produces urine and the second transfers urine from the kidney to the bladder
- this part is called the **renal pelvis**. Urine then flows from the renal pelvis down a tube called the ureter into the bladder (see picture below). The renal pelvis is measured at your anatomy scan at 20 weeks. The normal measurement of the renal pelvis is 0-7mm before 24 weeks and less than 10mm after 28 weeks.



2. Why does Antenatal Hydronephrosis occur?

Antenatal hydronephrosis (ANH) can occur due to various factors, including:

1. Blockage or obstruction: The most common cause of ANH is a blockage or obstruction somewhere in the urinary tract, which can prevent urine from flowing freely from the kidneys to the bladder. This obstruction can be caused by anatomical abnormalities, such as narrowing of the ureters or urethra, or by conditions like posterior urethral valves.
2. Reflux: Another possible cause is vesicoureteral reflux, where urine flows backward from the bladder into the ureters and possibly the kidneys. This reflux can lead to pressure buildup in the kidneys, resulting in dilation.
3. Functional issues: Sometimes, ANH can occur without any structural abnormalities, due to transient or functional causes. For example, increased fetal urine production or reduced fetal swallowing of amniotic fluid can temporarily increase pressure in the urinary tract, leading to dilation.
4. Genetic factors: In some cases, ANH may be associated with genetic factors or syndromes that affect kidney development or function.
5. Maternal factors: Certain maternal conditions, such as diabetes or urinary tract infections during pregnancy, can also increase the risk of ANH in the fetus.

The condition is bilateral in 17-54% and additional abnormalities are occasionally associated.The outcome of ANH depends on the underlying etiology . Although ANH resolves by birth or during infancy in 41-88% patients, abnormalities requiring intervention are identified in 4.1-15.4% and rates of vesicoureteric reflux (VUR) and urinary tract infections (UTI) are several-fold higher.

3. What will happen next?

You will need a follow-up ultrasound scan (USS) at 28-34 weeks to assess your baby's kidneys, your baby's growth and the amount of amniotic fluid that your baby is floating in.

You may also see a pediatric urologist(a surgeon who treats children with kidney problems) if the swelling warrants any intervention.

Recommended Antenatal Monitoring:

a. In fetuses with unilateral hydronephrosis, we recommend that at least one follow-up ultrasound be performed in the third trimester.

b. We suggest that fetuses with bilateral hydronephrosis be monitored frequently. The frequency of monitoring varies from 4 to 6 weeks, depending on gestation at which ANH was detected, its severity and presence of oligohydramnios.

Grades of ANH :

	2nd Trimester	3rd Trimester
Mild	4-6mm	7-9mm
Moderate	7-10mm	10-15mm
Sever	>10mm	>15mm

4. **What will happen after my baby is born?**

In most cases this dilatation is temporary and does not indicate a problem with your baby's kidneys.

You may need to come back to the hospital for your baby to have imaging tests (scans).

• **Your baby may need further USS**. Ultrasound scans done after birth are very effective at determining whether dilatation of the kidney is still present or getting worse. This is similar to the scans you had in pregnancy; it is painless and will take about 15 minutes. Your baby may either have the scan prior to discharge or you will be given an appointment date before discharge. If the dilatation has disappeared, then no more scans are required.

Your doctor may also arrange a **DMSA scan**,which checks for any damage of the kidneys, and/or a **MAG3** scan/DTPA scan , which shows whether blood is going into the kidneys and whether there is a blockage in the urinary system. These are normally done when your baby is some weeks (<6)old.

In each test, a chemical that gives out a small amount of radiation (energy) is injected into one of your baby's blood vessels. A special camera takes images of your baby's kidneys.

An **MCUG** (sometimes called a VCUG) checks how your baby is passing urine, and whether there is any reflux (when urine passes back up towards the kidney). A thin flexible tube called a catheter is passed through your baby's urethra and a dye is put through to reach

the bladder - this does not hurt your baby. A special x-ray machine takes a series of images of your baby's bladder while it is emptying.

If there is a partial blockage of flow of urine from the kidney it may require treatment as your baby gets older to prevent damage to the tissue of the kidney.

A. MCU image showing bilateral Reflux

References: ISPN -Guidelines for management of ANH

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