

# Vesico-ureteric junction (VUJ) obstruction

This infoKID topic is for parents and carers about children's kidney conditions. Visit [www.infoKID.org.uk](http://www.infoKID.org.uk) to find more topics about conditions, tests & diagnosis, treatments and supporting information.

Each topic starts with an overview followed by several sections with more information.

[Links to sections](#) in topic | [Other topics](#) available on website

## Overview

In some children the urine that is made in the kidney is not able to drain into the bladder as quickly as it is produced. The affected kidney(s) become swollen and this swelling (dilatation) can be seen on ultrasound scans and is known as hydronephrosis. Urine drains from the kidney through a funnel shaped structure called the renal pelvis into a tube called the ureter then down into the bladder. A narrowing, hold up or blockage where ureter meets the bladder is known as vesico-ureteric junction obstruction (VUJO).

This swelling of the kidneys may be noticed on ultrasound scan during your pregnancy (<antenatal hydronephrosis>) and your baby may need further investigations after he / she is born. On other occasions it is not diagnosed until the baby has already been born, or, in rare cases it may be found in an older child. Sometimes only the ureter is dilated.

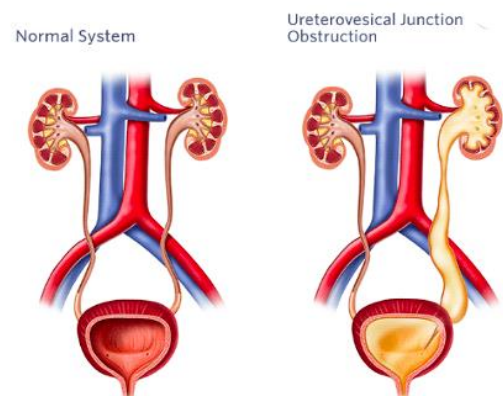


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## About the urinary system

The kidneys are part of the **urinary system**, which gets rid of things that the body no longer needs so that we can grow and stay healthy.

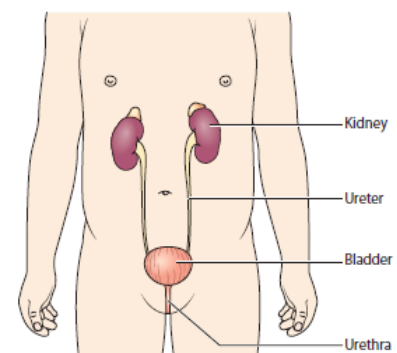
The **kidneys** are bean-shaped organs. They filter blood and remove extra water, salt and waste in **urine** (wee). Most of us have two kidneys, which are at the back on either side of our spine (backbone), near the bottom edge of our ribs.

Other parts of the urinary system are:

two **ureters**– long tubes that carry urine from the kidneys to the bladder

**bladder**– muscular bag that stores urine until we are ready to pass urine

**urethra**– tube that carries urine from the bladder out of the body.



# Causes

## About VUJO

The **Vesico-ureteric junction (VUJ, or sometimes called UVJ)** is the area where the ureter joins the bladder.

VUJO is one type of **congenital renal anomaly**:

- congenital – the problem is present at birth
- renal – to do with the kidneys
- anomaly – different from normal

In very rare circumstances, it may be **acquired**. This means that the child was not born with the problem but it developed over time.

In VUJO there is usually a narrow and stiff section of the ureter as it enters the bladder. This causes a hold up of urine passing into the bladder, causing a build-up in the ureter and kidney which become swollen. This is called hydronephrosis or hydroureteronephrosis and is sometimes first seen on an ultrasound scan, usually during pregnancy.

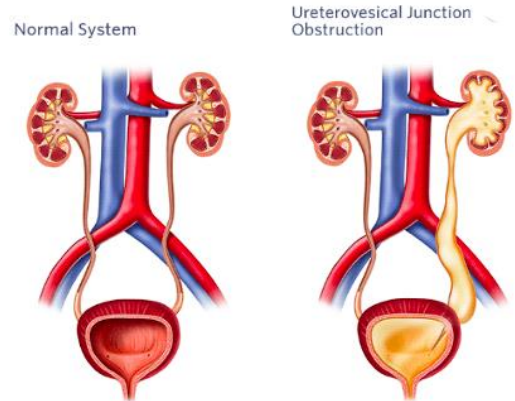


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## How does VUJO happen?

As babies develop in the womb, a tube forms that connects their developing bladder to each kidney. These tubes will become the ureters. They should be hollow to allow urine to pass through them from the kidney down to the bladder, and they have a wall that is made of a type of muscle called smooth muscle.

VUJO can happen if there is a problem with the development of the muscular wall of this tube and so part of the ureter becomes narrow and stiff. This narrowing causes a hold up to urine drainage, or rarely complete blockage. Rarely, it may be caused by other things, including scar tissue, infection, a polyp or kidney stones.

## Does VUJO affect how the kidneys work?

Usually not. In a small number of cases the swelling could lead to kidney damage on the affected side unless surgery is performed. However, in about half of the affected cases, VUJO gets better without any intervention. In about one third, the dilatation (swelling) will stay the same. In 10-20%, the VUJO causes the kidney(s) not to work as well as usual, or the child to have persistent urinary tract infections meaning that they would need surgery.

## How common is VUJO?

VUJO affects approximately 1 in every 1500-2000 children, and is not usually associated with any other abnormality, and usually only one kidney is affected.

# Symptoms and complications

Most babies and children do *not* have any symptoms after birth. Some are at risk of:

## Urinary tract infections

Symptoms can include fever, vomiting, pain on passing urine, abdominal or back pain, needing to pass urine more frequently.

[<more about Urinary tract infections >](#)

## Symptoms relating to obstruction to the flow of urine.

Older children may rarely have these symptoms, which can include pain in the loin (side of the tummy) or blood in the urine [<haematuria>](#)

**If you think that your child may have these symptoms, contact your doctor. If you cannot reach your doctor straight away, contact 111 or NHS Direct or your local out-of-hours GP service.**

# Tests and diagnosis

## Diagnosis and tests in pregnancy

Most commonly, this problem is first detected during routine ultrasound scans in pregnancy. One or both of the baby's kidneys may be noted to be swollen on those scans. There are, however, other causes of swollen kidneys and so your baby will need further tests to confirm the exact cause after they are born.

During routine scans other things about your baby will also be monitored such as:

- How well he / she is growing
- How much fluid is around the baby

## Other conditions that look like VUJ obstruction

There are a number of other conditions that might cause hydronephrosis in a baby:

### Transient Hydronephrosis

Most cases of [<antenatal hydronephrosis>](#) are not serious. The problem may disappear by the time the baby is born, or in the first year or so of life with no long-term effects on the baby

### Vesicoureteral reflux

Urine travels back up the tubes from the bladder to the kidneys (in the opposite direction it should do normally). This may be associated with symptoms of a urinary infection, bloody or cloudy urine.

[<more about vesicoureteral reflux>](#)

### Pelvi-ureteric junction dysfunction or obstruction

A blockage of the urine flow at the area (junction) between the ureter and the pelvis of the kidney. Symptoms can include abdominal or back pain, a mass (swelling) in the abdomen, poor growth, bloody or cloudy urine

[<more about pelvi-ureteric junction dysfunction or obstruction>](#)

### Posterior urethral valves in boys

These are extra flaps of tissue in the tube that carries urine out of the body in males. Babies with PUV may not be able to wee normally – both while growing in the womb and after they are born

[<more about posterior urethral valves>](#)

## Diagnosis and tests after birth

There are a number of tests that can be done to look at the structure of the kidneys and how well they are functioning. Your child may have some or all of the tests below.

### Ultrasound

After your baby is born, he / she will normally have an ultrasound scan, similar to the ones done during your pregnancy. This may confirm that one or both kidneys are swollen but won't generally confirm the exact cause. During this ultrasound, the person doing the scan will take some measurements of how swollen the kidney drainage systems are. These measurements may influence what type of scan your baby has next. [<More about ultrasound scans >](#)

### DMSA Scan (Dimercaptosuccinic Acid)

This is a type of **radionucleotide scan**. This means that a substance that gives out a type of radiation called gamma rays is injected into the blood stream. This substance is taken up by the kidneys and a special camera takes some pictures. This allows us to see how well the kidneys are functioning.

[<More about DMSA scans >](#)

### MAG3 Scan (mercaptoacetyl triglycine)

This is another type of **radionucleotide scan**. In this scan a substance called mercaptoacetyl triglycine is injected into the blood stream. It is also linked to a substance that gives out a type of radiation called gamma rays. It is taken up by the kidneys and then a special camera takes pictures. This type of scan gives us information on how well the kidneys are functioning, but also on how well urine is draining from the kidneys down into the bladder.

[<More about MAG 3 scans >](#)

### Urine Tests

You, or a nurse, would need to collect some of your child's urine in a small, clean container for a urine test. A dipstick will be dipped into the urine – this is a strip with chemical pads that change colour depending on what substances are in the urine. The sample may also be sent to a laboratory for more accurate tests.

[<More about urine tests>](#)

### Blood Tests

As well as various scans, your child may have some blood tests. This gives an idea of how well the kidneys are working.

[<More about blood tests>](#)

# Treatment

## Before birth

In most cases, no treatment before birth is needed. The delivery may need to take place at a centre where urgent surgery could be undertaken if it were needed, but this is rarely required.

## After birth

This depends on findings from the antenatal ultrasound scans and tests after birth. In most cases, babies can be discharged home a short time after birth. Rarely, babies need to be moved to a neonatal unit, an area of the hospital for newborn babies, for monitoring and treatment.

## Preventing and treating urinary tract infections (UTIs)

Some babies may be at higher risk of **<urinary tract infections> (UTIs)**. If your baby is found to have hydronephrosis during your pregnancy then after birth, he / she is likely to be prescribed some antibiotics. These are sometimes referred to as prophylactic antibiotics. This means that a low dose of antibiotic is given every day to prevent urine infections. These may be stopped later on the advice of your doctor if the scans that are done are reassuring.

## Surgery

If the kidney scans show that the kidney and / or ureter is very swollen or not working well then your child may be referred to a paediatric urologist (a surgeon specialising in operations on the urinary system in children). They will consider whether an operation is needed. An operation may also be considered in older children if they have VUJO and have symptoms

Indications for surgery include urinary tract infections; increasing or severe dilatation (swelling); and decreased kidney function.

When intervention is needed a urologist may suggest one of several different options:

### Stent insertion

A stent is a plastic tube from the bladder to the kidney which helps drainage of urine. A stent is not permanent, but may either be used to allow more time for your child to grow before further treatment or until the condition has resolved. A stent may be performed using a telescope passed in to the bladder through the **urethra** under an anaesthetic.

### Ureteric re-implantation

Sometimes a section of the ureter may need to be removed and the ureter re-implanted into the bladder. Depending upon the size of child this may be performed by a small cut (incision) or laparoscopically (keyhole surgery). Your surgeon (urologist) will be able to work out which would be best for your child if this is needed.

### Diversion / cutaneous distal ureterostomy

In some cases, it may be necessary to divert the ureter from the bladder to the skin forming a **stoma** (opening on the skin) for urine to drain freely into the nappy. This would normally be temporary, and once the child has grown (usually beyond 12 months of age) the ureter would be re-implanted into the bladder.

## About the future

Your child should be able to do all of the things that other children their age do. Your child should be able to go to nursery and school, play with other children and stay active.

### Follow up

Your child will be followed up by healthcare professionals, usually at a hospital. This may be a paediatrician (a children's doctor), a paediatric nephrologist (a specialist in kidney care) or a paediatric urologist. Your child will have regular monitoring scans usually every 3-6 months over the first few years of life, although this may vary slightly in different hospitals.

### Long-term effects

In most babies and children, the degree of swelling is mild, and doesn't progress over the first few years of life. At this point, scans will stop and nothing will need to be done unless your child developed symptoms. A very small number of children develop long-term problems with their kidneys and will need specialist follow-up throughout life.

### Will it happen in future pregnancies?

PUJ dysfunction is not a condition that is inherited. This means that it is unlikely that a future pregnancy will be affected. However, if you have any concerns then speak with your doctor for more information.

### Further support

This can be a difficult and stressful experience for you and your family. If you have any concerns or need additional support, speak with your doctor or nurse.

### Further information

This is the end of the information about VUJ obstruction. If you would like to read more about tests and diagnosis, treatment or supporting information, you can find a list of topics covered on the infoKID website at [www.infokid.org.uk](http://www.infokid.org.uk).

## Your notes and contact information

[www.infoKID.org.uk](http://www.infoKID.org.uk)



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