Belfast Health and Social Care Trust

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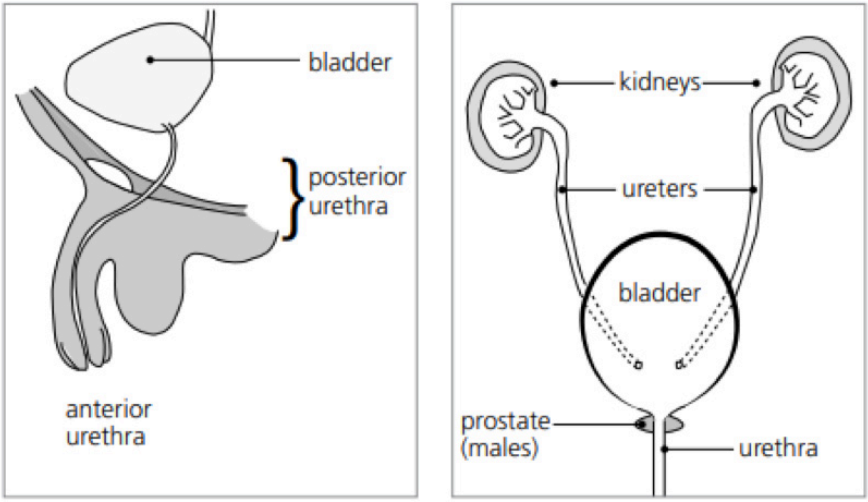
Posterior Urethral Valves (PUV)

Posterior Urethral Valves (PUV) is a condition found only in boys that affects the urethra (the tube which carries urine from the bladder to the outside).

The 'waterworks' consists of the two kidneys and their ureters, the bladder and the urethra. The kidneys filter the blood to remove waste products and form urine. The urine flows from the kidneys down through the ureters to the bladder from here it passes through another tube called the urethra to the outside when urinating.



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In PUV, the urethra has a blockage in it near the bladder. This makes it difficult for a child to pass urine. As the bladder pushes harder to try to get the urine out, it causes pressure which may result in urine being pushed back from the bladder into the ureters and kidneys. This causes the kidneys and bladder to swell and may lead to kidney damage.

About one in every 8,000 male births has PUV. This means it is really quite rare, so many GPs (family doctors), will not have met anyone with it. However, all cases born in N. Ireland (about 3 per year) come to RBHSC for treatment, so we are very experienced at dealing with it.

What causes Posterior Urethral Valves (PUV)?

PUV is not inherited in any recognised way and seems to happen in the early stages of pregnancy when the organs, muscle and other tissue starts to form. It is not due to anything a mother did or ate during pregnancy.

What are the signs and symptoms of PUV?

There are various symptoms associated with PUV, but they may not affect every child in the same way. The degree of narrowing affects the severity of the symptoms.
Some symptoms include:

- An enlarged bladder, so that it can be felt as a lump in the tummy
- Urinary tract infections (UTIs)
- Difficulty urinating
- A weak stream of urine
- Unusually frequent urination
- Bed wetting after toilet training has been successful
- Poor weight gain

However, these symptoms can resemble those of other conditions, so parents should always check with their family doctor.

How are Posterior Urethral Valves (PUV) diagnosed?

PUV can be diagnosed by a routine ultrasound scan during pregnancy if the bladder, ureters or kidneys are swollen. It can also be diagnosed in a newborn baby if the bladder is swollen and urine comes out only in constant dribbles.

If the blockage is not severe the condition can remain undetected until the child has symptoms as above.

The severity of the blockage affects how the condition is diagnosed. Each case will be different, but the following tests are usual:

- **Ultrasound of the child's abdomen –** this is very similar to the ultrasound scan that most women have during pregnancy. It creates a picture of the organs inside the body and shows how well they are working.
- **Micturating cystourethrogram (MCUG) –** this test shows urine passing from the bladder to the urethra and then to the outside. It will also show if the urine is flowing backwards towards the ureters and kidneys (this is known as reflux).
- **Cystoscopy –** this is a test under general anaesthetic which uses a small tube with a camera at the end to examine the inside of the bladder.
- **Blood tests –** these will show how well the child's kidneys are working and check that there is enough fluid inside the body.
- **Other tests and scans** may be needed to check that other parts of the urinary system are working properly. These can include kidney and bladder function tests.

How is PUV treated?

There are several options for treatment, depending on how severely the symptoms are affecting the child:

- The first course of action usually deals with the symptoms and includes putting a catheter (thin, plastic tube) into the bladder to drain away the urine. Any UTIs and fluid imbalance will also be treated with antibiotics and intravenous (IV) fluids, which are delivered directly into a drip in a vein.
- The next course of action is to try to cut through the parts of the valve which are causing the build-up of urine in the bladder. This is carried out under general anaesthetic (with your child asleep) using a cystoscope (small tube with a camera attached) rather than a traditional 'open' operation. The blockage can be seen through the camera and cut through

Risks of the operation

Any surgery carries a small risk of infection or bleeding. Serious bleeding during and after the procedure is rare. There is also a small risk of infection and your son will be given antibiotics to help reduce the risk of this happening.

In some cases, it is not possible to successfully cut through the blockage. If this is the case for your baby, the procedure will be repeated when they are a few weeks older. During this time, they will continue to have the urinary catheter in place to help drain their bladder.

The anaesthetic doctors will discuss the risk of a general anaesthetic before the procedure.

What happens next?

Several days after the operation the catheter will be removed and your son will usually have an MCUG to check the flow of urine through the urethra.

The future health of your boy depends on how much damage has already occurred in the kidneys. The doctor will be able to give parents a better idea once they have all of the child's test and blood results.

Your son will need follow up appointments on a long-term basis to check that no lasting damage has been done to the urinary system. These will be mainly with the paediatric nephrology team (kidney doctors), however also with the paediatric urology team (kidney surgeons).

Contact Details

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1. Image from Oxford University Hospitals
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