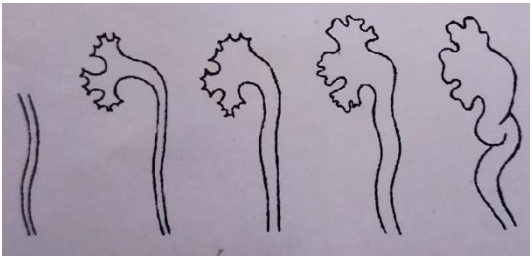
Indian Association of Pediatric Surgeons

Patient Information Sheet

VESICO-URETERAL REFLUX



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What is vesico-ureteral reflux ?

Vesico-ureteral reflux (VUR), means that there is a backflow ('reflux') of urine from the bladder to the kidneys. Normally, this should not happen. The urine should only leave the bladder by the normal route via the urethra when the child urinates.

What causes this problem and how common is it ?

In VUR, the anti-backflow 'valve' that ought to prevent the urine from flowing the wrong way does not work and the urine flows backward. VUR can either be primary (when the abnormality lies at the uretero-vesical junction) or secondary (when the basic disease/pathology is elsewhere either in the bladder or the urethra eg neurogenic bladder, bladder exstrophy, posterior urethral valves etc).

By testing (imaging studies) to see, among other things, how much urine flows backwards, it can be decided which grade of reflux the child has on a scale between one and five. Grade one represents the mildest form of reflux and grade five represents the most severe reflux.

If the urine is infected when it refluxes, there is a risk that the kidneys may be damaged. The consequences can include inflammation of the outlets from the kidneys and kidney scarring.

About 1% of all children have VUR. Of these, about half require treatment. VUR may be hereditary. Primary VUR is slightly more common in girls.

What are the symptoms ?

The commonest indication that a child has VUR is that he/she suffers from recurring urinary tract infections (UTI). If this is the case it is necessary to confirm whether the child has VUR or not and tests must be carried out at the hospital. The main symptoms are those of UTI and include :

- Fever due to urinary tract infection
- Pain in the kidneys
- Foul smelling or cloudy urine
- Stunted growth and features of kidney failure (if treatment is delayed)

How is it diagnosed ?

The early diagnosis of VUR is based on clinical suspicion. VUR should be looked for in all boys who have an episode of UTI and all girls who have had more than one episode of UTI. All boys and girls who have a primary bladder or urethral pathology should ne investigated for VUR.

The aims of investigations include

i) to confirm the suspicion of VUR : this would include a screening ultrasound (USG) scan to look for dilated ureters and kidneys

ii) to grade the VUR : this is done by a micturating cystourethrogram (MCU); an X-ray using a contrast medium which is put in the bladder via a catheter. It is possible to judge how much urine is flowing back up the ureters and to survey the urinary passage. Grading of VUR is important because treatment strategies have been built around it.

iii) to study the effects of VUR :

- blood tests to study kidney function
- urine tests to rule out active UTI
- endoscopic examination of the bladder (cystoscopy)
- nuclear scans to look for scars, differential function of each kidney and how much urine each kidney is capable of producing.

What are the treatments available ?

The management of VUR is both medical and surgical. Medical treatment includes antibiotic therapy for active UTI, keeping the children free from UTI by antibiotic prophylaxis, monitoring the effects on the kidney and in late cases management of kidney failure. Medical management is usually under the care of a pediatric nephrologist. Surgical treatment aims at eliminating VUR completely by a surgical procedure which can be done endoscopically, laparoscopically, robotic surgery and open surgery. Grade I and II VUR is generally treated medically.

Are there any alternatives to surgery ?

Today there are three different ways of treating VUR. The three methods are antibiotic treatment, operation, and endoscopic treatment. Alternatives to surgery are

recommended for only lower grades of VUR (grade I, II and possibly III). Antibiotic treatments may continue for several years and require the child to take medicine on a daily basis. Long term treatment with antibiotics may make the bacteria resistant and the child can get new urinary tract infections in spite of taking medicine. The treatment continues until tests show the reflux has been cured as the child grows and the 'valve' function matures.

What does the operation involve ?

All modes of operative treatment have a common goal – eliminate VUR by creating a new one way valve system within the bladder.

Open, laparoscopic and robotic surgery have good results, and the vast majority of children are completely cured of their reflux. For some days after the operation the child needs to have catheters before they can urinate on their own. After the operation the child may need to stay in hospital care for 8-10 days. The cost of all three is different.

Endoscopic treatment is done using a cystoscope. A substance is then injected into the mucous membrane at the opening of the ureters. The treatment takes only 30 minutes. After about 3 months the child is re-investigated. Further injections can be given if required. If the reflux has diminished sufficiently or disappeared, no further treatment is needed. Different substances have been injected endoscopically. The cost can be high and availability maybe difficult.

What are the possible complications / what happens after the operation ?

UTI in combination with VUR may recur and cause damage to the kidneys. The most serious consequence is kidney scarring. In some cases, VUR has been the cause of serious damage to the kidneys requiring dialysis later in life.

What is the outlook or future of these children ?

The chances are good that the child will be cured. Tests carried out one year after treatment show that 8 out of 10 children have either been completely cured of their reflux or it has diminished so much that no further treatment is needed.