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Kidney Reflux

Kidney reflux explained

Your body has two kidneys, one on either side of the middle back just under the ribs. The functions of the kidneys include:

Regulating the amount of water and salts in the blood
Filtering out waste products
Producing a hormone that helps to control blood pressure.

Each kidney has a tube called a ureter. Urine leaves the kidneys via the ureters and enters the bladder for temporary storage. There is a valve at the meeting point between each ureter and the bladder to prevent the backflow of urine into the kidneys.

Kidney reflux means that one (or both) of these valves is not working properly. During urination, the urine travels (refluxes) up the affected ureter to the kidney instead of flowing out of the body. This increases the likelihood of infections and other problems. Most cases of kidney reflux are discovered during tests for frequent urinary tract infections. It is estimated that kidney reflux is responsible for around one fifth of all kidney (renal) failure that occurs in children and young adults. Kidney reflux is also known as *vesicoureteric reflux* ('vesico' means bladder).

Symptoms

Kidney reflux is often asymptomatic (shows no symptoms). Any symptoms that do appear are usually caused by urinary tract infections and can include:

- Recurring bladder infections
- Recurring kidney infections (pyelonephritis)
- Fever
- Back pain (often in the loins and accentuated when the bladder is over full)
- Nausea
- Vomiting
- Frequent urge to urinate (frequency)
- Burning sensation during urination
- Foaming urine
- Bloody urine
- A feeling that the bladder can't be fully emptied
- Bed wetting

A range of possible causes

Some of the conditions that may cause or contribute to kidney reflux include:

- Family history of kidney reflux
- Physical problems (congenital abnormalities) with the kidney present at birth
- Physical problems (congenital abnormalities) present at birth with the bladder and the bladder outlet
- Bladder stones
- Trauma or injury to the bladder
- Temporary swelling after surgery (such as kidney transplant).

Infection can cause kidney damage

By itself, kidney reflux doesn't cause any harm to the urinary system. However, if a child has a urinary tract infection, the backflow of urine can push the infection into the kidneys. Repeated bouts of inflammation and subsequent scarring can reduce the functioning of the tiny filtering units inside each kidney (glomeruli). If the glomeruli are severely damaged, they stop working. This serious complication is known as kidney (renal) failure.

Most cases of kidney reflux correct themselves

It is estimated that around one quarter of children with recurring urinary tract infections have kidney reflux. The valves tend to mature as the child grows and research suggests that around eight out of 10 cases of kidney reflux will correct themselves within five years.

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Diagnosis methods
Kidney reflux is diagnosed using a number of tests including:
- Kidney ultrasound
- Micturating cystourethrogram (MCU) - this involves filling the bladder with a special dye and taking X-rays
- Radionuclide (DMSA) scan - this involves an injection of radioactive dye and subsequent scans.
- Blood tests
- Urine tests
- Sometimes, kidney reflux is diagnosed before birth during an ultrasound scan - the baby's kidney appears larger than normal due to urine reflux.

Treatment options
Kidney reflux is graded into five categories according to severity. Mild cases don't require surgery because they will most likely correct by themselves but severe cases need surgical correction. Treatment options for kidney reflux include:

- Close monitoring and observation, including regular urine tests to check for signs of infection
- Mild antibiotics given daily to prevent urinary tract infections.
- Stronger antibiotics if the child experiences a 'breakthrough' infection.
- As the child grows, the valves at the ureters may start working properly and no surgery is necessary.
- If daily antibiotics don't stop the recurring infections, surgery may be needed to remodel the defective valve.
- Following successful surgery, around one third of children will still need antibiotic treatment because of recurring bladder infections.

Kidney reflux surgery
The operation is performed under general anaesthetic. A small cut is made in the belly. The bladder is opened up and the affected ureter cut free. It is then folded and tucked under the lining of the bladder so that it can serve as a type of valve. The child will need to remain in hospital for around two to three days.
Kidney reflux surgery is successful in around 95 per cent of cases. New, non-invasive techniques currently being trialled include injections of special materials (including collagen), but results so far suggest that surgery is more effective.

The importance of screening
If a child is diagnosed with kidney reflux, it is important to test the other members of the family. Early diagnosis and treatment reduces the risk of kidney damage caused by repeated urinary tract infections.

Where to get help
- Your doctor
- Kidney Health Australia Tel. 1800 682 531

Things to remember
- There is a valve at the meeting point between each ureter and the bladder to prevent the backflow of urine into the kidneys.
- Kidney reflux means that one (or both) of these valves is not working properly.
- During urination, the urine travels up the affected ureter to the kidney instead of flowing out of the body.
- In most cases, the valve will correct itself as a child grows and matures.
- In severe cases, surgery may be needed to remodel the valve.

All medical information presented in the Fact Sheet Series is overseen by the Paediatric Continence Advisory Council. For more information please go to www.pcaa.org

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