

## Renal Services

# Everything I need to know about a Single Kidney or one Small Kidney

## Introduction

**This information is for people with a single kidney, or one small kidney with the other being of a normal size. If both kidneys are small, the causes and treatment are likely to be different.**

The kidneys are bean shaped organs approximately 11cms long. They lie in the upper back just below the rib cage. The kidneys filter the blood to remove waste products and control the amount of water in the body. Although the majority of people have two kidneys, the body can function perfectly well with one kidney. People with one kidney can lead normal lives. It is also possible to lead a normal life with one normal sized kidney and one small kidney.

## Causes of Small Kidney

A person may be born with a small kidney or it may be that the kidney hasn't grown with the rest of the body. This is known as 'Congenital Dysplasia'. The small kidney may be found in the normal position or may have failed to move up from the lower abdomen prior to birth. This is known as pelvic kidney and in the majority of cases people with this condition have normal kidney function. However, some pelvic kidneys may be small or there may be abnormalities in the drainage system, which may increase the risk of infections.

A condition called 'Reflux Nephropathy' which is a faulty drainage system, can also damage the kidney. This condition is usually diagnosed in children and young adults and may affect both kidneys.



## Patient Information

Although kidney infections do not usually cause a kidney to shrink, if the infection is severe enough (acute pyelonephritis) it can damage the kidney and cause shrinkage. A pre-disposing cause of this may be reflux nephropathy.

Narrowing of the artery in the kidney starves the kidney of an adequate blood supply and causes shrinkage. This is common in older people or people with a history of angina, heart attack or narrowed arteries in the legs. Narrowing of the kidney artery is known as 'Renal Artery Stenosis'.

### **Causes of Single Kidney**

Removal of a kidney surgically, due to an accident, disease or extensive kidney stones, means that a person has to function on one kidney. This is possible so long as the remaining kidney is normal.

Before birth, the kidneys form in the lower abdomen and move up. However, in some situations the kidneys join together to form a 'Horseshoe Kidney'. This horseshoe kidney is too large to move to its proper position and settles in a lower position. The horseshoe kidney usually functions normally. However, treatment of disease or kidney stones in a horseshoe kidney is more difficult. Drainage system problems are more common in people with horseshoe kidneys and these lead to increased infections.

If one kidney is normal and one kidney is small, the small kidney may be so hard to see on a scan or X-ray that a person is diagnosed as having a single kidney although both kidneys are present.

### **Investigations**

Investigations are required to determine the cause of a small or missing kidney and to check the function of the normal kidney.

These include:

- Blood tests to check the overall level of kidney function.
- Urine tests to check for infection.
- Blood pressure checks. High blood pressure is common in kidney disease. Various scans and X-rays will be performed dependant on the details of each case.

### **Scans and X-rays which may be performed include:**

- An ultrasound scan
- A radio-isotope scan which measures the level of function and efficiency of drainage in each kidney.
- A computerised tomography (CT) scan to look at the arteries
- An X-ray with dye in the bladder to investigate reflux nephropathy - called a micturating cystogram.

### **Problems**

Some problems that may occur include:

- Pain in the kidney area if infection is present
- Pain on passing urine (cystitis)
- High blood pressure
- Kidney failure, if the better kidney is diseased

### **Should a small, non-functioning kidney be removed?**

Surgical removal is not necessary if the small, non-functioning kidney is not giving any discomfort or problems. Removal may be indicated if the kidney is giving pain or causing recurrent infection or high blood pressure. However, if a kidney is providing more than 25% of kidney function then doctors are reluctant to remove it. Control of the problems caused by the small kidney can be put in place.

### **Should the family be checked?**

If the small kidney is caused by reflux nephropathy or congenital dysplasia family checks should be made. These conditions run in families but at present there are no genetic or DNA tests that can be used. Families are therefore screened by checking the kidneys condition by ultrasound scan.

Recommendations vary from centre to centre and are changing quickly as understanding of kidney disease improves.

### **The following information is intended only as a guide**

The children of a person with small or single kidney due to reflux nephropathy or congenital dysplasia should have an ultrasound scan to check size and shape of kidneys. If abnormalities are noted then a specialist needs to be consulted

If a child has a normal scan but suffers repeated urine infections then a specialist needs to be consulted

Brothers and sisters of a person with reflux nephropathy or congenital dysplasia can also be checked. If the ultrasound scan is normal their children need not be checked unless they have recurrent urine infections or there is a strong history of kidney failure

### **Is it possible to lead a normal life with a single or small kidney?**

A person with a single or small kidney should lead a normal life so long as the other kidney is healthy and functioning normally and none of the complications listed previously are present,

It may be necessary to mention the problem when applying for life insurance and an insurance company may request a specialist report.

Before you take up any contact sports such as rugby, judo etc., or extreme sports such as parachuting, please discuss this with your doctor.

Pregnancies should be uneventful. Problems with infection or blood pressure may occur for the first time during pregnancy and doctors and midwives will undertake careful observations if someone is known to have kidney problems.

If you need further information or clarification please contact the Renal Ward 50 on 024 7696 8258/9

## Patient Information

The Trust has access to interpreting and translation services. If you need this information in another language or format please contact us on 024 7696 8264 and we will do our best to meet your needs.

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