

What is a kidney biopsy?

When a patient's history, physical examination, blood tests and X-rays fail to reveal the exact cause of their kidney problem, to confirm a precise diagnosis a small piece of kidney tissue is sent to the laboratory for pathological analysis.

Why are kidney biopsies performed?

A kidney biopsy provides the definitive answer to the causes of many kidney disorders such as: presenting with protein in the urine (proteinuria), blood in the urine (haematuria), high blood pressure (hypertension) or impairment of kidney function.

If the kidneys are functioning normally and the proteinuria or haematuria are mild, a kidney biopsy may not be needed, provided the kidney function and urine abnormalities are monitored very carefully.

Alternatively, if the proteinuria or haematuria are severe or there is rapid deterioration in kidney function for unknown reasons, despite careful evaluation, kidney biopsy may be essential to determine the precise diagnosis. This will also help determine the prognosis and guide future treatment.

How is a kidney biopsy performed?

Kidney biopsies are carried out in the kidney ward of the hospital by a kidney specialist or in the X-ray department by a radiologist. In most cases it is a simple procedure, which takes approximately 30 minutes to perform. Because the kidneys are located close to the back, the biopsy is performed with the patient lying on their stomach.

The position of the kidney is located with ultrasound or CT scan. The skin surface is cleansed with disinfectant. Local anaesthetic is used to numb the area over the kidney. General anaesthetic is not used as the patient's co-operation in 'breathing in' is essential. This pushes the kidneys down below the ribs into a more favourable position for the biopsy to be performed.

A very fine needle is initially used to confirm the location and depth of the kidney and to inject more local anaesthetic. A special biopsy needle is then used to obtain the kidney biopsy while the patient is holding their breath. Two pieces of tissue are usually taken, each the width of a paperclip wire and about 1.5-3 centimetres in length.

These samples are usually sufficient to carry out several different types of tests; that is, examination by light microscopy, immunofluorescence and electron microscopy.

Immediately after the biopsy the patient remains lying flat on their back for six hours. During this time blood pressure, pulse rate, urine flow and colour of the urine are monitored frequently and the patient is encouraged to drink large volumes of fluid. All going well, the patient can often go home eight hours after the biopsy if accompanied by a friend or relative.

What are the risks of a kidney biopsy?

The main risk of kidney biopsy is bleeding. It is for this reason that people undergoing a kidney biopsy should avoid aspirin or non-steroidal anti-inflammatory medications for at least five days before the biopsy.

Common non-steroidal anti-inflammatory medications include Brufen, Nurofen, Ponstan, Orudis, Voltaren, Arthrotec, Feldene, Indocid and Naprosyn, though many others are available.

When bleeding occurs, it may result in red urine or may be internal without any discolouration of the urine - hence there is a need for careful monitoring in the hours after the biopsy.

No worrisome bleeding occurs in 98% of cases; however, there may be obvious red discolouration of the urine in about 2% of cases. Severe bleeding requiring a blood transfusion occurs in less than 1% of cases. Very severe bleeding can occur, but is rare.

Occasionally, if blood clots form in the bladder, a temporary blockage may result, requiring the insertion of a small tube (a urinary catheter) into the bladder. This is why the patient is encouraged to drink large volumes of fluid in order to prevent the formation of clots.

Most kidney biopsies are almost painless. A dull ache as the local anaesthetic wears off is not uncommon but is easily controlled with paracetamol. More severe pain is rare, but can occur if a large blood clot (haematoma) forms around the kidney.

By the Renal Physicians at Royal North Shore Hospital, St Leonards, NSW 2065 – produced 2002