

Renal Access surgery for Haemodialysis

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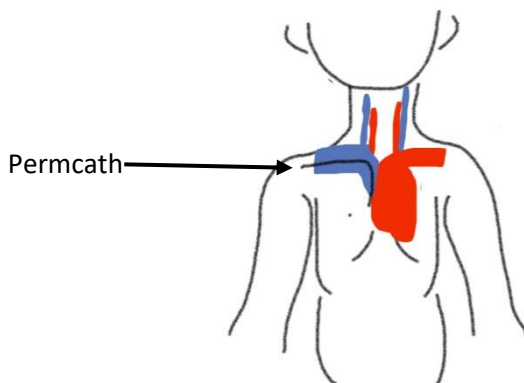
Once you have been diagnosed with Renal (Kidney) failure, your nephrologist (Kidney Specialist) will start chatting to you about essential diet changes and different types of dialysis. This is important for when the kidneys fail, as they are responsible for regulating the salts and water in the body, and eliminating toxins. If the salts cannot be regulated, they can result in leg cramps and dysrhythmia of the heart which may be lethal. When the kidneys cannot regulate water, you will become swollen, puffy and short of breath from fluid in the lungs (Pulmonary Oedema). When your body cannot regulate the toxins, you may have very itchy skin and eventually slip into a coma and die. The dialysis machine acts as an artificial kidney, taking over these essential functions, regulating the salts, water and toxins.

There are two forms of dialysis, haemodialysis which uses blood and is largely performed in specialized renal units, and peritoneal dialysis using your abdomen which you can do at home. In this section, only haemodialysis is discussed. Please look for our article for peritoneal dialysis on our website coming out soon.

With haemodialysis, the machine takes the blood out of the body, filters and cleans it, and then puts it back. This technique seems to regulate water volume best and therefore may be a more favourable choice for patients with heart or lung disease. The down side of Haemodialysis, is that most people will need to come into a renal dialysis unit three times a week. This is necessary for the dialysis machine to remove all the excess toxins, water and salts for four hours. Although overseas, home haemodialysis is possible, it is very expensive and not really done in South Africa. Some specialized units, offer overnight dialysis for working patients, but there is a very high demand for these services.

Once you and your renal specialist, have chosen the best option for you, you will be referred to a renal access doctor or vascular surgeon to create this access. In urgent cases, where dialysis needs to start almost immediately, an access line (Hickman catheter / Permcath) is inserted. This is essentially a very large drip going into the central vein around the heart. This is crucial as a drip in your arm would not be big enough, would damage the veins in your arms and might collapse when the dialysis machines are connected to it. This is inserted under local or general anaesthetic, by making a small cut in the neck, and inserting it into the chest wall where it can be covered by clothes. This is only a temporary solution, as the large veins to your heart, may become damaged or infected resulting in a heart failure or a large swollen arm, face and/ or neck and is often difficult to reverse. The long term solution is a fistula for haemodialysis.

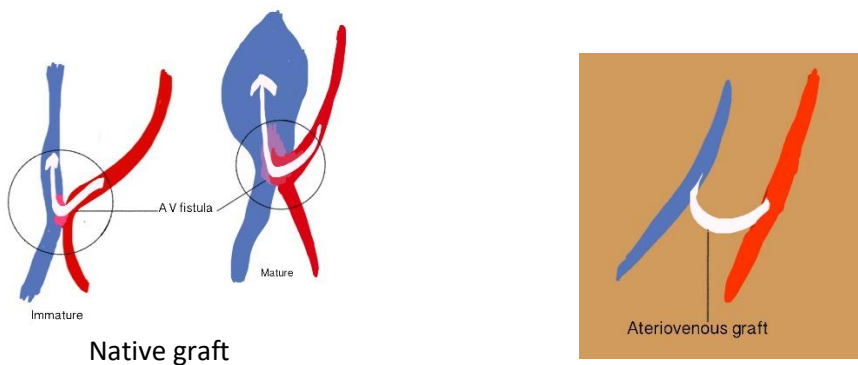
Permcath / Hickman catheter



Please note that this information is for educational purposes only, please always consult your doctor for final diagnosis and treatment.

The fistula is created when your surgeon takes the two different blood vessels in your arm (an artery and a vein) and join them together (anastomose). The artery takes blood away from the heart to your hand and the vein, takes blood from your hand, back to the heart. This joining of the artery with the vein, increases the blood flow to the vein, feeding too much blood into the vein. This is like opening a dam gate, the only thing the vein can do to accommodate this extra blood is to grow in size. Eventually, the vein grows bigger, making it easier to needle. The vein also becomes more robust as the vein wall thickens and the flow rate of the blood within the vein is of sufficient quantity to allow the haemodialysis machines to work.

The best solution is a native fistula, which uses your own vein. But it can also be done with a plastic pipe called an arteriovenous graft. These tend not to work as well due to the compliance mismatch with the body and they are more prone to infection as they are plastic and not of natural (own) material.



The veins, depending on their original size and possible previous damage due to prior drip insertion, can take 3-4 months to grow and sometimes even longer (closer to six months). During this time, you will still rely on the permcath for haemodialysis. Once the fistula has matured and is being used consistently for 2 weeks, the permcath can then be removed.

Unfortunately, no fistula lasts forever and about 25% may only last you less than 4 years. Therefore, as a surgeon, it is imperative that we plan not only for the initial fistula, but leave options open for multiple fistula surgeries, the exact number would depend on the age of the patient.

Post-surgery: You will remain in hospital for at least one night. Bleeding is the most common complication during this time. Should you observe that the dressing becomes blood stained or soaked, please place direct pressure on the site and call the nurses in the ward immediately.

Caring for your access line: Complications (discussed in a separate article) may occur, but it is important to try and prevent them by taking some precautions at home. These include washing the access area with soap and warm water each day, especially before dialysis. It is very important not to scratch the area around the site or try and remove scabs as this may introduce infection. Look for signs of infection (redness, warmth, swelling and tenderness to touch) every day.

Secondly, check for a thrill daily (over your dialysis site), this is important as a decreased thrill or absent thrill may indicate a bigger problem. Notify your renal dialysis sister as soon as possible and she will determine if you should go for an urgent appointment with your vascular / access surgeon or not. Please remember to remind your health care professional that you have a fistula on that arm, should you go for a normal check-up or blood pressure check. Do not allow anyone to take blood or measure your blood pressure on that arm.

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