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Hypertension and Kidney Specialists

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## Types of Procedures

[\\*X-Rays \(3 Types\)](#) – [\\*Transplants](#) – [\\*Renal \(Kidney\)Biopsy](#) –  
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### **X-Rays** ([Renal Arteriogram](#), [Renal Venogram](#), [Renal Ultrasound](#))

#### **Renal Arteriogram**

##### **What Is Renal Arteriogram?**

A renal arteriogram is a series of x-rays that evaluates the supply of blood to the kidneys, through the renal artery.

##### **Why Is This Procedure Done?**

Renal arteriogram determines if there are any abnormalities such as a renal mass, tumor, or clot. The study is also done for vascular hypertension and to view the anatomy of the arteries.

##### **Where Is the Procedure Done?**

The arteriogram is done in the x-ray department of the hospital, on an outpatient basis.

##### **How Is the Procedure Done?**

A radiopaque catheter is placed into the femoral artery and advanced up to the kidneys. Contrast material (iodine) is then injected into the catheter and x-rays are then taken.

##### **Is the Procedure Painful?**

You may have mild discomfort during the procedure; a sedative may alleviate any pain. The contrast material may cause you to experience some nausea, flushed sensations or an unpleasant taste in your mouth. This is normal and will pass.

##### **How Long Is the Procedure?**

The procedure lasts approximately 45minutes. Following the procedure, you will remain on bed rest for six hours with restricted movement of the extremity used for the procedure. During this time, your vital signs and an assessment of the puncture site will be done frequently.



A **Renal Venogram** is a series of x-rays that evaluates the kidneys venous drainage system. This procedure is the same as the arteriogram, but views the venous system instead of the arterial system of the kidneys.

### **Are There Any Complications?**

There are several complications that can result from these procedures.

- Bleeding
- Shock
- Reaction to the dye
- The possibility for the need to have a blood transfusion
- Reaction from the transfusion
- Kidney failure

Your physician will discuss these complications at the time of the procedure \*Before the procedure, it is very important to alert your physician of any allergies you may have to contrast material (iodine).

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### **What Is a Renal Ultrasound?**

A renal ultrasound or sonogram is a diagnostic study done in the x-ray department. During the study, sound waves are used to image or visualize the urinary system's organs. This includes the kidneys, ureters, bladder, and the veins and arteries that supply the kidneys.

### **Why Is This Study Done?**

The sonogram will identify the anatomy, or structure, and size of the organs. It will also detect any abnormalities such as tumors, cysts, or calculi (stones).

### **Is There Any Discomfort during the Study?**

Renal sonograms are painless noninvasive procedures.

### **How Long Is the Procedure?**

The procedure takes approximately thirty minutes to complete.

### **Is There Any Preparation?**

No preparation is required for this procedure.

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## Transplants

**Kidney transplantation** is a procedure that places a healthy kidney from another person in to your body. This one new kidney does the work that your two failed kidneys cannot do. Many people view a kidney transplant as a cure, but it is in fact another treatment option.

When a kidney from another person is put in to someone whose kidneys are no longer working it is called a kidney transplant. Once you have the transplant operation, you will need to take medications as long as you have a working transplanted kidney. These medicines help your body to accept the kidney and are called anti-rejection medicines. There are several types of kidney transplantation:

1. **Living Related Donor** - is a blood relative who agrees to give you one of his or her kidneys. Blood and tissue type are tested to determine if the kidney offered is a good match for you.
2. **Living Non-Related Donor**- is a person who is not related to you. The person is tested for blood and tissue type. If the person is a match, they may donate a kidney to you (Examples: spouse, friend, co-worker, etc.)
3. **Cadaver**- donors are those people who have recently died and whose family has donated their organs for others to use. With this type of transplant, your name is put on a national list. When a kidney becomes available, your blood and tissue types are compared to the cadaver kidney. Finding just the right kidney may take a short time or several years.

Before you can be transplanted you must be evaluated by a transplant center. It is not necessary to be on dialysis to be eligible for a transplant.

At the transplant center you will meet with a team of professionals including, doctors, nurses, and social workers that will do a complete medical and financial evaluation of your situation to determine whether or not you qualify for a transplant.

The evaluation process can take as long as six months.

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## Renal (Kidney) Biopsy

A kidney biopsy is when a doctor takes a tiny piece of your kidney to examine under a microscope. The results will almost always explain why a patient's blood and/or urine tests are abnormal.

There are two different types of kidney biopsy:

**The First type is:** Percutaneous (through the skin). A thin needle is passed through the skin into the kidney. Inside the needle is a sharp cutting edge that slices and removes small pieces of the kidney.

For the percutaneous biopsy you may lie face down on your stomach with a pillow under your rib cage. Once the site of entry to the kidney is found and marked you likely will receive a local painkiller before the biopsy needle is inserted. Usually, several needle passes are needed to obtain enough tissue.

Percutaneous kidney biopsies are usually done as an outpatient.

**The Second type** of biopsy is a surgical kidney biopsy. This is done by a urologist and at times can be done laparoscopically (minimally invasive surgery). Kidney biopsy can be done with the patient awake, under light sedation or is surgical under general anesthesia. Generally, only mild discomfort is felt. The biopsy takes about 30-60 minutes to complete.

Kidney biopsies are done for several different reasons. To identify a specific disease and to determine whether it may respond to treatment, to evaluate how much damage has occurred in the kidney and to find out why a kidney transplant may not be working well.

Final results of a kidney biopsy may take 2-3 weeks and are generally discussed with patients at their next office visit.

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## Renal Scan

### What Is a Renal Scan?

The renal scan is a noninvasive procedure that will provide detailed information about the urinary system and kidney function. The renal scan uses nuclear imaging to view the system.

### How Is the Procedure Done?

The procedure is done in the nuclear medicine department of the hospital. This procedure is done as an outpatient, and does not require a hospital stay. The patient is injected with a radionuclide tracer substance. This tracer substance assists in the viewing of the kidney system. A series of nuclear images or pictures are taken at different intervals, following the injection. The scan takes approximately 30 minutes to complete. There is no pain during the procedure.

### Why Is the Renal Scan Done?

The scan is done when renal obstruction or blockage is suspected. The scan is also used to estimate glomerular filtration rate.

### Is There Any Preparation?

There is no preparation required by the patient.

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## Renal Artery Doppler

**Renal Artery Doppler** is a noninvasive procedure that uses sound waves to examine the arteries of the kidneys. The reason for this procedure is to view the flow of blood through the vessels of the kidneys.

There are no known risks of this test. The usefulness of the doppler test may be limited if the view of the arteries is obstructed by:

- Obesity
- Dehydration

During the procedure you will be asked to lie flat on an examining table. The room will be dark to allow the images to be seen well on the video screen. The doctor or technician will rub gel over the area to be examined. The gel helps to slide the transducer over your skin. When the transducer slides over your skin, it conducts transmitting sound waves that are reflected back to the ultrasound transducer. The specific characteristics will then be converted into an image on a video screen. You may be asked to change positions so that certain blood vessels can be seen.

The procedure should last about 20-30 minutes.

A doppler is painless.

After the procedure a doctor trained in radiology will examine the images. The doctor who ordered the test will advise you of the results and any treatment recommendations.

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## Types of Vascular Access

In preparation for dialysis, you will have a vascular access created. This process will allow you to have dialysis as often as you need it. It is not possible to use your own veins for dialysis; they are too small and fragile for the repeated treatments. Creation of a vascular access should be done when your creatinine clearance level is between 20-25. This time frame allows for the access to heal and mature prior to starting your treatments.

One method of creation is the **Arteriovenous Fistula**. This is formed by sewing the side of the vein to the side of the artery. This causes the vein to get larger and stronger from the high-pressure flow from the artery. This type of access is the preferred.

The other type of access is an artificial blood vessel or **Graft**. This procedure involves sewing one end of the graft to the artery and the other end to the vein. This method is used when a fistula cannot be created.

### How Is the Procedure Done?

The procedure is done in the operating room of the hospital by a vascular surgeon. It can be done with IV sedation or general anesthesia.

It takes approximately one and one half-hours to complete the operation. Following the procedure, you will be given antibiotics to reduce the risk of infection. After the operation your arm will be swollen and discolored, this is normal and will subside over the next few weeks.

Elevating the arm after surgery will reduce the swelling. You may also be given pain medication for any discomfort.

The fistula may be used in 4-6 weeks after the placement; the graft may be used sooner.



There are several things you may be asked to do after your surgery.

- Keep the incision area clean and dry
- Keep your arm elevated, avoid putting any pressure on the arm
- Take medications as ordered exercise the arm as instructed

There are two signs that indicate that your fistula or graft is functioning.

1. You should be able to feel a vibration when placing your fingers over the site. This is called a thrill and is caused by the blood flowing through the area of creation.
2. If you use a stethoscope to listen over the site, you will hear a swishing noise. This is called a bruit and indicates the flow of blood through the area.

### **How Long Does the Fistula And Graft Last?**

The fistula usually lasts for many years, where the graft may last only for several months to several years. Usually when this happens there is clot that has formed and needs to be removed. When this occurs it is not dangerous, but it does require another trip to the operating room to remove the clot.

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