

## Inferior Vena Cava (IVC) Filter Placement and Removal

An inferior vena cava (IVC) filter is a metal filter placed inside the IVC to prevent blood clots from moving from the legs to the lungs. The IVC is a large vein that carries blood from the lower and middle body into the right side of the heart. Some IVC filters can be left in place permanently, while others are designed to be removed. Removing IVC filters helps patients avoid potential complications such as filter fragmentation, migration, and new clot formation.

An interventional radiologist can place or remove the filter through a small incision in the skin. These procedures usually are performed with sedation in an outpatient setting.

## Compression Fracture

A compression fracture is a painful break in the spine that causes the vertebrae (bones in the spine) to lose height. This can be the result of an underlying problem with the bone such as cancer or osteoporosis. Some compression fractures can be managed conservatively with a back brace and medications. Others will require additional treatment, which may include a vertebroplasty or kyphoplasty.

A vertebroplasty is a minimally invasive procedure in which an interventional radiologist inserts needles into the fractured bone using x-ray guidance, then cement is injected to stabilize the bone and reduce pain. A kyphoplasty is similar to a vertebroplasty except that a small balloon is inflated inside the fractured bone prior to the cement being injected. Both of these procedures can be comfortably performed with sedation in an outpatient setting.

## Varicocele and Gonadal Vein Embolization

In men, a dilated (widened) gonadal vein can lead to a varicocele, which is an abnormal collection of blood vessels in the scrotum that can cause pain and a low sperm count. In women, a dilated gonadal vein can cause pain and sexual dysfunction. Veins usually have one-way valves that prevent blood from flowing backward, but if these valves do not function properly, blood can build up and cause problems.

An interventional radiologist can treat this condition by accessing the blood vessels directly with a tiny needle and a small tube called a catheter, which is inserted in the correct location using x-ray guidance. Once the catheter is in the appropriate position, the dilated vein can be blocked off using metal coils, metal plugs, or chemical agents in a process known as embolization. This procedure is usually done on an outpatient basis with sedation.

## Pelvic Pain/Pelvic Congestion Syndrome

Many women experience chronic pelvic pain at some point in their lifetime. There are many causes of pelvic pain, but one potentially treatable cause is the presence of dilated (widened) ovarian and pelvic veins. This is known as pelvic congestion syndrome, and it occurs only in women.

An interventional radiologist can treat this condition by accessing the dilated veins directly with a tiny needle and a small tube called a catheter, which is inserted in the correct location using x-ray guidance. Once the catheter is in the appropriate position, the dilated vein can be blocked off using metal coils, metal plugs, or chemical agents. This procedure is usually done on an outpatient basis with sedation.

## **Biliary Drainage and Stenting**

The biliary system is a collection of ducts within the liver that helps pass bile from the liver to the intestines. Bile is a bodily fluid that helps with digestion. Sometimes the normal flow of bile from the liver to the intestines is blocked by cancer, infection, stones, or other inflammatory processes. This causes a backup of bile within the liver that can lead to infection and other problems.

An interventional radiologist can access the blocked ducts through the skin using a combination of ultrasound and x-rays in order to relieve the obstruction. These procedures are most often performed under sedation. A small drainage tube can be left in place for a period of time. Some patients may need to have a stent (a metal tube made of mesh) placed in the biliary system.

## **Gastrostomy and Gastrojejunostomy Tubes**

A gastrostomy tube is a feeding tube placed through the skin directly into the stomach to provide nutritional support. Similarly, a gastrojejunostomy tube is placed through the skin and enters the stomach but stops at the small intestine.

An interventional radiologist places these feeding tubes using x-ray guidance. These minimally invasive approaches usually spare the patient from the risks of general surgery and anesthesia, and they have a shorter recovery time compared to surgically placed feeding tubes.

## **Central Venous Access**

Central venous access is a line connected directly to blood vessels in the body. It is often done so that patients can receive easier injections of medications, chemotherapy, or nutrition, and sometimes it is done for kidney dialysis or to make frequent blood draws easier.

An interventional radiologist can place a central venous line into a blood vessel using a small tube called a catheter, which is guided to the proper blood vessel using ultrasound and x-rays. The procedure usually is performed with sedation and can be done in an outpatient setting.

## **Internal Bleeding**

For patients with internal bleeding, an interventional radiologist often can access the bleeding vessels with a tiny needle and a small tube called a catheter, which is inserted in the exact location of the bleeding using x-ray guidance. Once the area is identified, the bleeding vessel can be closed off by using metal coils, metal plugs, gelatin particles, glue, or other materials. This procedure usually is performed with sedation.