

# SpineFAQs **Spinal Instrumentation**

In many types of spinal surgery, we either are correcting instability of the spine, or preventing it from occurring in the future. In these circumstances, fusion is typically required. In the majority of the time, metallic implants (instrumentation or hardware) are used to improve the stability, and hold the spine rigid. The most common forms of instrumentation are screws, rods, plates, wires, and spacers (or cages).

Instrumentation is the term also used for implants such as the artificial disc, or the X-Stop, but this SpineFAQs handout will only discuss instrumentation in the context of spinal fusion.

## **Why use instrumentation?**

Just like when you break your ankle and are put into a cast for immobilization, the spine may need an “internal splint” in order to be stable enough for fusion to take place. Instrumentation provides immediate rigidity to the spine. It also holds the bones in the correct position. This is particularly important if we are trying to correct a deformity of the spine (such as in scoliosis).

## **What is the instrumentation made of?**

Most instrumentation is made of metal...either titanium or cobalt chrome steel. Some instrumentation may also be made out of synthetic carbon fiber or plastic. All of these materials have been used in the body for a very long time. They do not rust. They rarely cause an allergy (Although if you have a know allergy to metal – especially titanium, you should tell your doctor).

## **What are the risks of instrumentation?**

As with any man-made material, it is possible for the instrumentation to break. This usually means that there continues to be too much motion at the levels of instrumentation. (Think of repeatedly bending a paper clip...eventually if bent enough times, it will break) It is also possible for me to put the screws or wires in the wrong position. While this is uncommon, since my training is specifically designed to maximize the chance that the implants are put in the correct place, mis-placement can lead to nerve or spinal cord injury, leakage of the spinal fluid, and possible inadequate fixation to the spine.

Infection is another possible risk. Metallic objects are seen as “foreign bodies” in the spine, and do not have any blood supply. A foreign body can be a site where bacteria can survive, because of the poor blood supply to that area. If the instrumentation gets infected, it may have to be surgically removed in order to cure the infection.

## **What happens if the hardware breaks?**

It depends. Sometimes by the time it has broken, the area is stable and there is no need to remove or replace it. Sometimes, if there is still instability, I will recommend removal and replacement of the instrumentation. If the broken instrumentation is putting pressure on important structures (such as the esophagus in the throat, the nerves in the lower spine, the major blood vessels in the abdomen or chest, or on the spinal cord, I will likely recommend removal and possible replacement.

## **Does the instrumentation need to be removed?**

Most spinal instrumentation is designed to stay in place indefinitely. It is sometimes removed if it breaks, gets infected, is getting in the way of future spine surgeries, or if the patient wants it out.

## **Does the instrumentation set off the metal detectors at the airport?**

Rarely, but since the sensitivities of the machines have been increased, it is possible for a large amount of metal instrumentation to set them off. Typically the security team will NOT accept a simple card stating that you have an implant. You may have to undergo personal wand screening to clear security.

## **Can I have an MRI with instrumentation?**

Typically yes. It will not get torn out of your body by the magnetic fields since it is not magnetic. But, metal can distort the images nearby, making the information gathered by the MRI less valuable.

## **Can I decide to not have instrumentation?**

I would not suggest that you have instrumentation if it was not necessary. Many spine surgeries will fail without the recommended instrumentation.