

**MATTHEW  
NEAL:**

Traditionally, spine surgery has been done open, which means we use long incisions. And there is significant retraction of muscle to expose the spine. However, as technology has advanced, this has allowed us to make smaller incisions to accomplish the same tasks. And with these smaller incisions, there's less trauma or disruption of the soft tissue around the spine, which typically results in less blood loss, lower rates of infection, and faster recovery.

The indications for minimally invasive spine surgery are actually fairly similar to open surgery. We can treat a number of conditions, such as stenosis, which is narrowing around the spinal cord or nerve roots. We can treat infections, tumor. We can also treat instability in the spine, whether it's abnormal movement between bones, which can be very painful. We can place hardware and eliminate that movement.

The great advantage is that we're making smaller incisions. So there's less disruption of the soft tissue around the spine. Patients have, typically, less pain after surgery, lower rates of infection. Patients are able to recover and get back to life quicker. There are many different types of minimally invasive spine surgery, many different techniques that are used. What all of these techniques share in common is a goal of minimizing injury to the muscle and ligaments around the spine.

In general, there are two types of minimally invasive surgery. One is a decompression type of surgery. That means that we're coming in and we're removing, strategically, bone or ligaments-- in some cases disk fragments-- that are compressing the spinal cord or nerve roots. This would be a typical retractor that we use. It's tubular retractor. We insert it down through the muscle, and split the muscle fibers. And then we're able to work with long, curved instruments through this retractor in order to accomplish the work.

The other type of minimally invasive spine surgery is spinal fusion surgery. With spinal fusion surgery, we are also trying to decompress the nerves and spinal cord. But we're also fusing or fixing the vertebrae together. And what this does is, it eliminates painful movement between the bones.

With spinal fusion surgery, we typically do have to place hardware into the spine, such as plates, screws, or rods, in order to eliminate that movement while the bone is growing together. And there are different techniques to accomplish this.

This is a model of the lumbar spine-- low back. In the lumbar spine, we commonly remove the disk space-- which is a gelatinous shock absorber between the bones. And after we remove the disk, we typically place a spacer in the disk space. And that allows the bone to grow through the spacer and around the spacer together, so that this part of the vertebrae becomes a single bone.

Here would be an example of an anterior lumbar fusion, where we've gotten access to the front of the lumbar spine. We remove the disk and place a spacer. And then, in some cases, we place a plate over the front of the spacer to supplement that fixation.

More and more cases are being done with minimally invasive techniques. More surgeons are being trained in these techniques. Patients want less invasive techniques. They want to get back to life. I see a greater role for minimally invasive surgery as time goes on.