

What is a disc bulge or herniation?

To describe what a disc bulge or herniation is, let's start with the basic anatomy. See figure 1 below. The bones of the spine are stacked on top of each other to create the vertebral column. In between the bones (called vertebra), are thick pads, called "discs". The discs are not simply made of a slab of cartilage. I like to compare them to a jelly donut. There is a jelly-like substance called the "nucleus pulposus" in the center, surrounded by a strong fibrous material called the annulus.

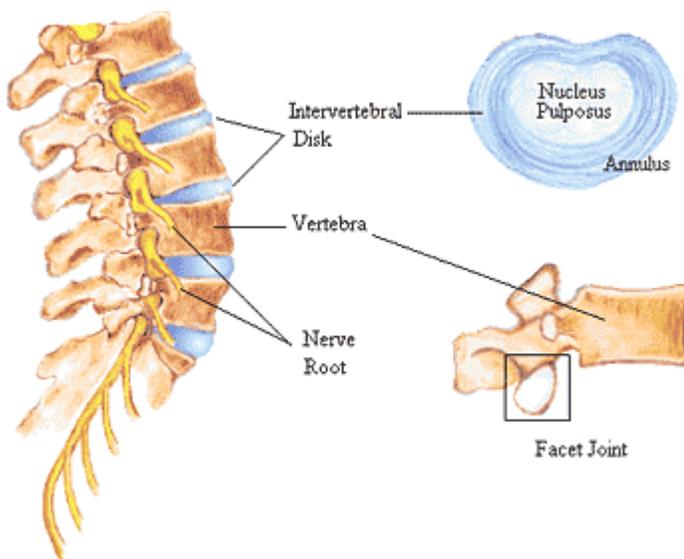


Figure 1

If the annulus becomes weakened or torn, from trauma, age, or just inherent weakening, the jelly will begin to squirt out. In the early stages, this is usually referred to as a "bulge". When the jelly squirts out further, it may be referred to as a protrusion, or herniation. You will often hear different terms being used by different doctors or therapists. Many different textbooks also use different terms as well. This makes it a bit confusing to the patient, because there is not one standard nomenclature used by everyone to describe the different levels of injury.

These disc bulges can be painful in themselves, because the outer 1/3 of the disc has many pain sensitive nerve endings. The tearing of the annulus, with associated inflammation can be painful. Once the jelly begins to push against the fibers and make it's way towards the outer annulus, then that pressure adds to the problem. Once the surrounding nerve roots and spinal cord begin to experience pressure from the jelly and associated swelling, it can become very painful, and may create pain into the buttock or the leg called "sciatica".

As one ages, a disc may “degenerate”. This means that the disc gets thinner, and becomes more brittle. Once the disc begins to degenerate, it will weaken and can tear as a result. It can herniate back into the spinal canal, as shown in figure 2. The light blue oval area is the disc and it is bulging into the spinal canal on the lower right side of the disc. In the lumbar area, this can cause pain to radiate all the way down the patient's leg to the foot. In the area of the cervical spine, the pain would radiate from the neck down the arm to the fingers.

Approximately 90% of disc herniations will occur at L4- L5 (lumbar segments 4 and 5) or L5- S1 (lumbar segment 5 and sacral segment1), which causes pain in the L5 nerve or S1 nerve, respectively.

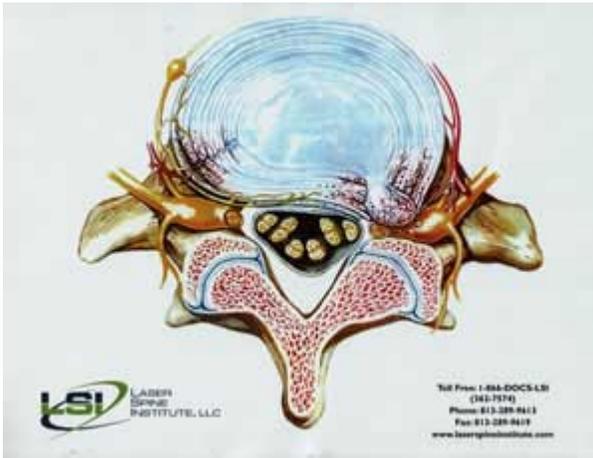


Figure 2

When there is irritation or pressure on the spinal nerves from a disc herniation, the patient may experience pain in the back and/or leg(s). Please note that it is possible to have little back pain, but a lot of pain or numbness or tingling into the leg(s). This sciatic pain affects 1-2% of all people, usually between the ages of 30-50.



Figure 3

Often, the patient with a disc injury looks like they are bending to one side, or even forward. This is referred to as antalgia, or antalgic posture. When a disc ruptures and is squirting out to the left side, then the body automatically tries to bend away from the herniation. This allows for more space on the left side in an attempt to avoid more pinching of the nerve. This all happens through the nervous system, and is an uncontrolled response by our bodies. Figure 3 is an example of right leaning antalgia, likely from a left protruding lumbar disc. Also notice the blue arrow extending down the left leg. This represents sciatic pain.