

LUMBAR DISC DEGENERATION

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Low back pain is considered to be a symptom and not a specific diagnosis or disease in and of itself. In fact, it is a very common symptom, affecting 80% of individuals during their lifetime. If 80% of humans are afflicted at some time with low back pain, why do we not have a “nation of cripples?” The answer is that all, but a few of these symptomatic individuals get better whether or not they visit a healthcare professional. If this is the case, the next question is obvious: Why do we spend billions of American healthcare dollars each year to care for this symptom? This has become a question that not only many individuals in government, but also administrators of the national insurance companies are currently asking.

Low back pain to the spine surgeon is equivalent to the neurologist's evaluation of headache with one major difference; there is an operation that can be done for the symptom of low back pain, the lumbar fusion. This operation originally arose out of the observation that when a painful hip or knee was fused, the pain would disappear. It has been shown that, in certain instances, immobilizing a degenerated disc through a spinal fusion can lead to resolution of pain.

Lumbar disc degeneration is the result of deterioration of the mechanical and chemical properties of the disc. The cause is the universal phenomenon of the aging process that is aided and abetted by episodes of trauma throughout one's life. As we all age and experience degeneration of our discs, we find that we are not all symptomatic. It is a consistent theme throughout our website that degenerative disc changes routinely occur without symptoms, and if it does become symptomatic, there is a powerful natural tendency towards self-healing.

The actual physical and chemical changes that occur in our discs with aging include loss of water content within the inner gelatinous portion of the disc (nucleus pulposus), as well as the outer fibrous portion of the disc, annulus fibrosis). This phenomenon is a kin to the conversion of a grape to a raisin. With progressive degeneration or drying out of the disc itself and replacement of the well-hydrated cartilage with stiffer fibrous tissue, movement between the adjacent vertebrae is decreased. Bone spurs of the adjacent vertebrae represent the body's attempt to increase surface area contact, therein restoring stability to the subtly unstable relationship around the degenerated disc. This explains why we get stiffer as we get older and why the vast majority of individuals grow older without back pain.

The reason for the chemical changes in the disc centers around an understanding of disc nutrition. Our lumbar discs are relatively avascular and receive their nutrition through the passive transport of nutrients across the fibrous periphery of the disc itself. With aging, these vascular channels start to fail and diffusion of the necessary nutrients decreases. The result is a decrease in the number of cartilage-forming cells and a resultant decrease in the formation of collagen itself.

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The end result is failure of the disc to be able to absorb mechanical forces. This disc dysfunction can be further aggravated by poor health habits including smoking and lack of exercise.

When deciding the treatment for back pain, it is important to keep in mind that the natural history of lumbar degenerative disc disease is one of spontaneous improvement. Before getting too aggressive with surgery, or too involved with lengthy conservative treatment efforts, it is best to pay homage to the natural ability of the body to stabilize a potentially unstable relationship between two adjacent vertebrae, and in doing so, alleviate pain.

Another fundamental understanding that is necessary to grasp in treating patients with low back pain is that there is often no relationship between the patient's symptoms and what is seen on x-ray or MRI. X-rays are often obtained during an initial presentation to the surgeon when the patient presents with severe low back pain, a history of recent trauma, presenting symptoms of nerve root irritation and neurologic deficit, in the setting of an apparent clinical spinal deformity, and in those patients over the age of 50 in whom osteoporosis or possible malignancy is suspected. The use of x-ray is somewhat limited, but can be used to exclude serious disease such as infections, inflammatory arthritic conditions, and tumors. If x-rays of the spine show disc degeneration, this radiological change just merely demonstrates a region of the spine that is vulnerable to trauma. Such a demonstration, however, does not necessarily indict the spinal motion segment (the adjacent vertebrae with the intervening disc) as the cause of the patient's presenting back pain. CT and MRI scans may be ordered for two reasons: 1) most commonly to verify that the clinical the diagnosis is correct and at the same time, to plan a surgical approach to the problem, and, 2) occasionally to solve a differential diagnostic problem. The potential for false negative and false positive imaging findings is significant. CT scanning and MRI scanning are so sensitive that it is possible to show pathology in almost every patient beyond the age of 30. Research studies looking at the use of MRI scanning have observed that nearly 70% of pain-free 30-year-old individuals have significant degenerative changes on their lumbar MRIs. Nearly 20% of these asymptomatic young individuals have also been shown to have lumbar disc herniations of varying sizes. As such, the finding of degenerative disk bulging or herniations should be viewed similar to how we view the development of grey hair. While both the development of a degenerative disc and grey hair may be sad, the existence of a degenerated disc correlates no more with the existence of low back pain than the existence of grey hair correlates with the frequency of headaches. As such, the cornerstone of the diagnosis of lumbar disc degeneration and associated back pain is the history and physical examination, not the imaging study that is ultimately obtained. The treatment of low back pain related to lumbar disc degeneration is based on many factors. We need to ensure that we have an accurate diagnosis and there is no underlying threat to the integrity of the spinal cord or exiting nerve roots. We must be sure that we understand, to the best of our ability, which particular vertebrae and degenerated discs are involved. We at Connecticut Neck and Back Specialists also believe that by getting to

know our patients as best as we can, we will be able to offer more tailored and conservative treatment to our patients.

Sometimes, for instance, we have to determine if the patient is accurately reporting their disability or whether there is some embellishment from medical, legal or compensation purposes.

Treatment always begins with conservative care over a fairly extended period of time. Initially bed rest of short duration is felt to be helpful. We then encourage progressive mobilization. Medications including oral anti-inflammatory medications, Tylenol or in rare instances short-term oral narcotics can be helpful. A course of physical therapy with an emphasis on lumbar facet joint mobilization and postural strengthening can be employed. A progressive exercise program is encouraged. Again, the main stay of treatment is having our patient understand that lumbar disc degeneration is a common finding in virtually all individuals and that the duration of back pain is typically self-limited. While these various conservative modalities may be employed, we do try to get our patients to understand that time, in and of itself, will result in healing of most low back pain problems. Surgery, in the form of a lumbar spine fusion, or artificial disc replacement, is rarely necessary. More advanced studies such as lumbar discography can help the surgeon to determine if in fact a degenerated-appearing disc is the source of pain and whether immobilizing or removing that degenerated disc with surgery would result in pain reduction.