

## **Low Back Pain: The Non-Surgical Approach**

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Low back pain is one of the most frequent problems and one of the most common causes of disability in America. Approximately four out of five adults will experience significant low back pain sometime during their life. After the common cold, low back pain is the most frequent reason for doctors' visits and estimated costs for treatment exceed 30 billion dollars a year. It is important for all doctors to have a healthy understanding of the common causes and treatments available for this condition.

The lower or lumbar spine is a complex structure made up of ligaments, bones, muscles, tendons, joints and discs. The lumbar disc is approximately 1-½ inches in diameter and is responsible for transmitting the entire weight of the upper half of the body. This can result in substantial pressures within the disc, even with everyday activities. For example, bending over at the waist to pick up a 10 lb. object can exert 300 lbs. of pressure per square inch (PSI) to the lumbar disc. However, picking up the same object correctly (bending at the knees while keeping the back straight) will lower the pressure to 100 PSI. Emphasizing correct body mechanics to decrease pressure applied to the spine, thus helps to prevent injury.

Low back pain affects men and women equally, but it is more common in people who are overweight, smokers and those who live a sedentary lifestyle.

There are several different structures in the lumbar spine that can cause pain. One of the most common causes of pain is a strain of the muscles or other soft tissues (e.g. ligaments and tendons). Often patients will complain of an aching pain localized to the lumbar spine and buttocks region; however, it is usually not often associated with numbness and tingling in the legs. The prognosis is excellent with most patients making a full recovery. Other causes of low back pain could be from a herniated or bulging disc or from arthritis. Patients with disc related pain often have numbness or tingling radiating into the leg (also know as sciatica). Symptoms are aggravated with prolonged sitting or bending and could be accompanied by weakness in the effected leg. Patients with low back pain related to arthritis (also known as degenerative disc disease) can have pain isolated to the lumbar spine or pain radiating into one or both legs. Patients with arthritis whose pain is shooting into the leg often have what is called "spinal stenosis". Spinal stenosis occurs when an arthritic bone spur presses up against a nerve. Unlike patients with disc problems, patients with spinal stenosis feel comfortable when sitting, but have pain when walking. Despite the cause of the pain, many times the treatment does not require surgery. However, it is important for the doctor to recognize the cause of the pain and individualize a treatment plan to meet the patient's specific needs.

It is often recommended for patients to start with the most conservative treatment and if not successful, move onto more advanced therapeutic modalities. The initial (and most conservative) treatment for most patients with low back pain is physical therapy. Physical therapy can reduce acute pain and spasm with hot or cold modalities such as deep heating ultrasound or cold packs. Once the acute pain has resolved, it is also important for physical therapy to focus on lumbar strengthening and flexibility exercises. Each exercise program should be tailored to meet the patient's needs. For example, physical therapy for a herniated disc is often treated with low back extension exercises whereas, pain from lumbar stenosis is usually treated with flexion exercises. It is important for both the doctor and physical therapist to individualize care to each patient. Once a physical therapy program is completed, it is important for the patient to continue the exercises at home. A home exercise program has been proven to help keep the back muscles strong and reduce the likelihood of recurrent pain.

In addition to physical therapy, activity modification may relieve the pain and diminish the inflammation. Although a brief period of rest may be helpful, most studies show that light activity speeds healing and recovery. It may not be necessary to discontinue all activities, including work.

Anti-inflammatory medications often help reduce pain and are typically coupled with physical therapy and activity modification to produce successful results. There are two classes of anti-inflammatory medications, traditional NSAID's (Non-Steroidal Anti-Inflammatory Drugs) and COX-2 inhibitors. The latter is associated with less stomach upset, but recently one medication in this family (Vioxx) was pulled off the market because of its association with heart attacks. Currently, there is no convincing data to suggest that the other COX-2 inhibitors (Celebrex and Bextra) are associated with cardiac issues.

Sometimes patients have severe unrelenting low back pain (typically following an injury). Anti-inflammatory medications may not provide enough relief; therefore stronger pain (narcotic) medications and muscle relaxers are indicated. This usually helps the patient get over the severe pain episode until the pain subsides.

If these conservative treatments fail to yield satisfactory results, more invasive selective spinal procedures can be the next treatment option. For those patients with disc related pain (bulging or herniated discs pinching a nerve) or pain from spinal stenosis (arthritis pinching a nerve) epidural injections may be indicated. This consists of injecting cortisone and a numbing agent similar to novocaine into the epidural space. The epidural space lies outside of the spinal canal and harbors a section of the spinal nerves. The cortisone helps reduce inflammation associated with a pinched or irritated nerve. Most epidurals are done under x-ray guidance to assure proper needle placement. Occasionally, mild sedation can be used if a patient is nervous about the injection.

The therapeutic response to epidural injections varies. Some patients get significant long-lasting pain relief, while others get only partial or temporary pain relief. Unfortunately, there is no way of predicting the degree of pain relief or how long the therapeutic effects will last. Sometimes epidurals are done in a series of three injections to attempt to significantly reduce a patient's high level of pain. Other times epidurals are performed one at a time with a re-assessment in between injections. The doctor will often decide which approach will work best for the patient. There is a limited number of epidurals a patient can have in a year, this number depends on how much cortisone the doctor puts in the injection, but generally the patient should not exceed three epidurals in one year.

In addition to therapeutic effects, the numbing agent in the epidural can provide the doctor important diagnostic information. Occasionally, the source of a patient's pain is not clear based on radiographic or physical exam findings. If a painful structure is injected with novocaine, the pain subsides for the duration of the anesthetic effects. Therefore, if the epidural fails to reduce the pain, even temporarily, a re-investigation of the pain generator may be considered. The diagnostic effects of an epidural can be especially helpful in pre-surgical cases where the source of pain is in question.

Although epidurals are generally considered safe and effective, every medical procedure has potential risks and complications. Most complications resolve within a few days. The most common complication is increased pain. This is usually due to direct pressure on the nerves by the cortisone solution. This usually resolves once the anti-inflammatory effects of the cortisone begins.

There are many other types of non-surgical procedures that can be done for low back pain. Each procedure has its indications and potential complications, it is important for the doctor to discuss the potential benefits and complications with the patient before moving forward with the procedure. Low back pain is a common problem and often times difficult to treat. Each treatment plan should be constructed around the patient's symptoms and individualized to meet the patient's needs.