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Editorial

# Back Pain: How to Avoid Surgery?

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Treatment of low back pain remains a dilemma. In the USA more than 300 thousand back surgeries are performed each year. For about 10% to 39% patients, pain may continue or even get worse after back surgeries[1]. This condition is called failed back surgery syndrome. In the USA, about 80,000 new cases of failed back surgery syndrome are accumulated each year[2]. Pathological changes such as recurrent disc herniation, arachnoiditis, scar tissue formation, poor surgical indication, misdiagnosis, and surgical technique failure can all contribute to the failure of surgery. Pain after back surgery is difficult to treat. Many patients have to live with pain for the rest of their lives with severe disability.

Over the last several decades, our understanding of the causes of low back pain has been challenged. With a sensitivity up to 95%[3], MRI has been used a gold standard for the diagnosis of spine disease such as lumbar disc herniation. With the "MRI evidence" of a disc herniation and nerve root compression, patients are more easily convinced surgery is their best and only option. However, the reliability of MRI as the evidence for surgical decision has been questioned. An early study found that in a group of asymptomatic volunteers at age of 60 years or older, about 57% had abnormal MRI findings including disc herniation and spinal stenosis[4]. Follow up studies have yielded similar results. Now it is widely accepted that degenerative disc disease, such as disc herniation is a common finding in asymptomatic adults. Even though at the age of 60 years or older, 57% or more may have abnormal MRI findings in the lumbar spine, however, only less than 20% of this group of people have chronic low back pain. A recent study also suggested a lack of correlation between imaging findings of spine degenerative change and back pain[5]. Simply, degenerative change in the lumbar spine, such as a herniated disc, is not necessary painful.

The results of these studies have changed our belief in the relationship between lumbar disc herniation and back pain. It is believed that back and leg pain in the presence of acute disc herniation is not merely the result of a pinched nerve root, rather it is more related to the inflammation of the nerve roots and nerve endings around the herniated disc or it may be the combined results of chemical inflammation and mechanical compression[6]. A herniated disc is not a sole indication for back surgery and up to 70% to 95% of patients may be pain free after 12 months without major intervention[7]. The primary goal of treatment of lumbar radicular pain should be the suppression of inflammation, relieving the pain and restoring function rather than removal of the herniated disc. Before one chooses an open back surgery the following options should be considered:

Diagnosis: Low back pain can be related to a herniated disc, nerve root irritation, annular tear, facet joint arthritis, muscle spasm, injuries to the ligament, sacroiliac joint arthritis and referred pain from visceral organs. An MRI finding of a herniated disc, no matter how large, is not enough to justify surgery. A thorough history and physical examination is tantamount to judge whether the herniated disc is the real source for the ongoing pain.

Medications: Non-steroid anti-inflammatory medications should be offered as the first line medication to patients with mild back pain. Early administration of oral steroid medication in patients with acute sciatica may lead to slightly more rapid improvement in pain, mental well-being, and disability scores[8]. Anti-depressants, especially tricyclic antidepressants, are often used to treat patients with chronic back pain.

Physical therapy, massage therapy and chiropractic management have been widely used for treatment of back pain and lumbar radicular pain, even though the value of these treatment modalities have yet to be proven.

Spine injections: Multiple double blind, clinical controlled studies have confirmed the clinical efficacy of lumbar epidural steroid injection (LESI) in relieving the acute radicular pain due to herniated nucleus pulposus, speeding the rate of recovery and return to function[9]. The pain relieving effect of LESI may last up to three months. Inflammatory mediators, such as phospholipase A2, have been implicated in lumbar radiculopathy and disc herniation and have been the focus of recent research. Lumbar epidural steroid injections can decrease pain by suppressing the function of inflammatory mediators. As long as the patient is pain free and is without any neurological deficits, a herniated disc should not be a clinical concern. Even though LESI alone may not decrease the necessity of back surgery, it will be intriguing to investigate whether a combination of LESI and other treatment such as physical

therapy and life style modification will decrease the need for surgery.

Minimally invasive surgery: Minimally invasive surgery offers another alternative in the treatment of back pain. These treatments include chymopapaine, percutaneous nucleotome, automated percutaneous lumbar discectomy, laser discectomy, neucleoplasty and disc deKompressor. The advantage of the minimally invasive techniques is that it leaves no or minimal scar after the surgery. Among the minimal invasive techniques, laser discectomy has a reported success rate of 80% to 90%[10]. Neucleoplasty and disc deKompressor have been recently introduced with early non-controlled studies showing success rates up to 78%[11]. These procedures are still not widely accepted and more studies are needed to confirm their clinical efficacy.

Life style modification: Low back pain can often be the result of improper lifestyle choices. Smoking can increase the risk of low back pain[12]. Obesity can worsen back pain and contribute to disk degeneration[13]. Heavy lifting, sport related injuries and motor vehicle accidents can cause back pain. Education to patients with low back pain is critical to help them recover from back pain and prevent future back pain. Smoking cessation and weight control should be strongly recommended to back pain patients. Proper exercise techniques should be taught. Patients, especially those with spinal stenosis often have difficulty walking due to neurological claudication. Treadmills and long distance walking exercise may exacerbate back pain. Some studies suggested therapeutic aquatic exercise is potentially beneficial to patients suffering from chronic low back pain[14].

Conclusion: Lumbar spine surgery can potentially provide quick pain relief and functional recovery. There are many downsides to surgery however that would include post laminectomy surgery syndrome and a lack of proven long term benefit. Because of these risks one should be very careful in determining surgical candidacy. A preliminary study[15] has provided the evidence that the rate of back surgery can potentially be decreased through appropriate education and application of evidence-based medicine for patients, general practitioners and spine surgeons. Conservative treatment with the combination of medications, physical therapy, spinal injections and life style modification should be tried before surgery is considered.

**COMPETING INTERESTS**
None Declared

**AUTHOR DETAILS**
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