

Information for those who had back surgery and still have pain

It has been estimated that 300,000 new laminectomies are performed in the U.S. yearly. 1 Unfortunately, for 15% the surgery will be unsuccessful or leave them with some form of disability. Thus based for this data, at least 45,000 people annually will suffer from chronic postoperative back and limb pain after surgery. This constellation of symptoms is known as the so-called **Failed Back Surgical Syndrome (FBSS)** or **Post Laminectomy Syndrome**.

Treatment of failed back syndrome is difficult. Common approaches include:

- Behavioral Pain Management. This was detailed by The University of Washington Multidisciplinary pain team, who reported a 25% to 40% return-to-work rate with therapy. 2
- Spinal Fusion. However when and on whom to operate remains controversial.3
- Nerve Destroying procedures, such as selective rhizotomy and ganglionectomy, have proven of questionable value, with long-term success rates of 0% to 40%.4-6
- Stimulatory modalities such as subarachnoidal narcotic infusion^{7,8} and spinal cord stimulation, have shown a high degree of promise.⁹⁻³² However, many of these treatment modalities have not been studied prospectively; for example, the proper role of stimulation is not precisely known and efficacy data are incomplete at best.

These approaches are reviewed below in detail. However, it is important to realize that you should see your specialist with questions. The vast majority of cases of FBSS should be managed in a multidisciplinary, nonoperative setting by pain management specialists.

Surgical Approaches

The term “failed back surgical syndrome” is an innately poor one. Rather than specifying a discrete diagnostic entity, the term encompasses a constellation of distinct diagnostic possibilities, each of which may require particular treatment. In the patient with back and leg pain after unsuccessful surgery, pain could be caused by instability, progressive deformity, pseudarthrosis of a previous fusion, recurrent nerve compression, established nerve injury, central pain syndrome, behavioral or psychologically maintained or mediated pain, postoperative scarring, or other related complications.³⁴

Clearly, continued back and leg pain after laminectomy may be due to a combination of these factors: it is the differentiation of these factors and the relative contribution of each to the overall pain picture that frequently confounds evaluation and confuses treatment.

Conventional surgical intervention in the form of decompression or fusion has been shown to have limited utility.³⁵⁻³⁷ However, the studies that have been done have flaws, and there are few good randomized, prospective studies. One study by Biondi and Greenberg³⁵ looked back at 45 patients who underwent re-decompression surgery combined with fusion. Based on pain and function scales, only 47% had a satisfactory outcome at an average follow-up of 29.2 months. Those patients having no change in pain tended to be those on workers' compensation, those with a pain-free interval of less than

six months from the initial procedure, male sex, history of psychiatric illness, and perineural fibrosis. Based on these data, the authors were unable to convincingly recommend selection criteria for the surgery. Several studies have attempted to analyze reasons for continuing lower extremity pain after decompressive surgery. Yaksich³⁶ reviewed 1861 laminectomies. In those patients with persistent leg pain, a high incidence of continued nerve root compression was identified, usually due to lumbar disk protrusion or missed lateral recess stenosis. The author also noted that the patients' "motivational status" had a significant effect on surgical outcome. Based on this retrospective analysis, he concluded that the patient best served by repeat surgery is the individual with recurrent or residual disk protrusion and in whom physical findings correlated. Laus et al³⁷ retrospectively studied 95 patients who underwent repeat lumbar nerve root decompression. These authors listed a list of possible causes for persistent postoperative pain that included progression of spurring (spondylosis) and the presence of fibrosis, recurrent disk herniation, stenosis of the central or foraminal canal, arachnoiditis, and vertebral instability. Of the five groups listed, a successful result based on reintervention was judged to have occurred in 83% of cases with evidence of recurrent disk herniation and in 100% of cases with stenosis. The authors also reported excellent clinical results in cases of persistent pain due to "instability" when a solid fusion was obtained. However, there were no clear guidelines for defining "instability."

Thus, another surgery may be appropriate in cases of nerve compression and concordant symptoms; however, the role of repeat intervention for persistent axial pain (i.e., low back pain alone) is less clear. Markwalder and Battaglia³⁸ attempted to analyze the results of treatment for "instability" in 171 patients with previous surgery. By the application of a diagnostic algorithm incorporating trials of external immobilization and anesthesia of various articular nerves, the authors reported "excellent" or "good" results following fusion in 79% of patients.³⁸ Kim and Michelsen³⁹ studied a series of 50 failed back patients retrospectively. All patients were treated by decompression and fusion for predominantly back pain. Of the 16 patients judged to have had a successful fusion after the index operation, 81% had a satisfactory outcome; of the 13 patients judged to have persistent pseudarthrosis, only 23% had a satisfactory outcome. The authors then conclude that successful repair of a pseudarthrosis is "the key" for a high clinical success rate in revision surgery.

These recommendations, however, have proven difficult for others to reproduce or to generalize due to the idiosyncratic nature of many reported diagnostic techniques and variability in rates and methods of determining fusion. In patients in whom fusion rate was determined without re-exploration, the reliability of the fusion data are suspect. In 30% of patients, studies showed no problems with the fusion, while a problem was subsequently found during surgery.⁴⁰ Thus, no combination of noninvasive imaging modalities (i.e., x-ray, CT scan, or tomography) can accurately predict whether or not a fusion is actually healed.

North et al³⁴ retrospectively reviewed the patients and again noted that recurrent neural compression and strict concordance with clinical data and imaging findings predisposed patients to a successful outcome; no particular benefit was identified with stabilization procedures. Wetzel and LaRocca⁴¹ studied the failed posterior lumbar interbody fusion (PLIF). Surgical reconstruction of the failed PLIF for persistent back and leg pain yielded

very disappointing results. In this study, the presence of a solid fusion did not correlate with satisfactory relief of pain; even in those patients who fused solidly, continued lower extremity pain was a predominant feature of the clinical syndrome. Turner et al,³ in a comprehensive literature synthesis investigating success rates and outcome data for lumbar spinal fusion, concluded that for several low back disorders, especially those with failed previous surgery, no advantages of fusion per se were evident. Mooney,⁴² in reviewing FBSS, emphasized that failure to identify the structural source of the pain negatively impacts treatment outcome. He concluded that functional restoration of the patient, rather than decreased pain scores or technical indices, should be the predominant treatment goal.

Thus, based on a review of the literature, the only reliable indications for repeat decompression (laminectomy or discectomy) for pain relief are recurrent disk herniation, disk herniation de novo, or stenosis, with concordant findings of neural compression on objective imaging modalities and physical examination.^{34,42,43} While a progressive deformity, such as spondylolisthesis or kyphosis, is regarded by most as an appropriate indication for intervention via fusion, this may or may not relieve complaints of pain. The study of Lagrone et al,⁴⁴ assessing spinal osteotomy, is instructive in this regard. In reviewing a series of patients who had undergone spinal osteotomy for kyphotic deformity following fusion for scoliosis, only 40% reported satisfactory pain relief following surgical correction of a radiographic deformity.

Interventional Pain Management Options

When conventional intervention has been ruled out, the interventional approach to chronic benign pain syndromes revolves around two concepts, interruption of afferent nociceptive pathways (deafferentation) and enhancement of presynaptic inhibition (modulation). The final objective of both approaches is diminished nociceptive input. Obviously, prior to recommending either approach to the patient, a reversible cause of back or extremity pain must be systematically excluded, although, as noted above, conventional repeat surgery rarely needs to be performed.

Ablative procedures, such as cordotomy,⁴⁵⁻⁵⁹ dorsal root entry zone,⁶⁰⁻⁶⁷ and rhizotomy and ganglionectomy,^{5,6,68-72} have been extensively studied. Based again on data in retrospective or case-controlled series, all these procedures have unacceptably high incidences of side effects and poor outcome. A recent report examined selective sensory rhizotomy for persistent extremity pain following failed back surgery. The authors reported a low rate of clinical success (18%) at minimum follow-up of two years.⁵

Facet Joint Blocks

Prospective data are available for the efficacy of percutaneous radio-frequency facet rhizotomy (PRFR), performed for “facet pain” as diagnosed by trial nerve block.⁷³⁻⁷⁹ This treatment involves destruction of the nerve that senses pain in the back joint (the medial branch of the posterior primary neural ramus), with a radio-frequency probe placed through the skin. Compared to control groups, PRFR patients had increased duration of pain relief, although the effects did not appear to be permanent.^{78,79}

Pain Pumps

Approaches to neural modulation, namely spinal cord stimulation and subarachnoid drug infusion, have shown promise. At two-year follow-up, Auld et al⁷ reported a 65% rate of pain relief in patients who used an infusion system for benign pain syndromes. This involves implantation of a programmable pump which is connected to the spinal fluid. There are some reports of increasing narcotic requirements,⁸ which is of some concern. This is a promising intervention, but it has not been prospectively studied.

Spinal Stimulators

Arguably, the intervention that would precede an infusion pump is spinal cord stimulation, whereby an electrode array is placed directly in the space around the spine. By repetitive generation of electrical impulses, those pathways conducting painful information centrally may be blunted or, in some cases, blocked. The advantages of stimulation include reversibility and an opportunity to test the device before final implantation. Unfortunately, the literature on spinal cord stimulation is similarly confusing. Overall, success rates from 0% to 84% have been reported.⁹⁻³² Turner et al⁸⁰ recently reviewed the literature on spinal cord stimulation in chronic low back pain in an attempt to perform a meta-analysis. They concluded that this was not possible based on the characteristics of the literature. They analyzed 39 reports, all "case studies." Based on these data, the authors noted a 42% complication rate, and concluded that 50% to 60% of patients with failed back surgery syndrome reported greater than 50% pain relief with the use of spinal cord stimulation. The lack of randomized trials, however, precluded any significant conclusions regarding the effectiveness of stimulation relative to other treatments, placebo, or no treatment at all. In the literature on spinal cord stimulation, only the study of North et al³³ is of a randomized, prospective design. Unfortunately, the follow-up in the study is short-term, and the rates of pain relief are not specified. Finally, and most importantly, the selection criteria are controversial. At best, this study simply demonstrated that spinal cord stimulation is more efficient than unnecessary surgery.

Discussion and conclusions

The treatment for FBSS remains controversial and somewhat confusing even for specialists. However, it shows the need to see a Pain Management Specialist, to help you sort through the options and find the most effective way of treating your pain.

For more information go to www.newportpain.com

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