

Identifying optimal treatment of common and complex sciatica pain

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Sciatica is one of the most common disorders affecting the peripheral nervous system, 90% of which is associated with a herniated disc and nerve compression. Vast majority of sciatica patients experience a favorable prognosis, with only ~30% experiencing a reoccurrence within their lifetime. Patients often present with unilateral lower extremity pain in the distribution of the L5 or S1 dermatome, originating from acute or chronic descent. Sciatica is traditionally diagnosed within patients presenting with primary complaints of unrelenting sharp pain, which travels profusely down the leg. Cases of mild to moderate sciatica are witnessed but at a much rarer occurrence, with patients presenting with mild to moderate pain and paresthesias [1-10]. Ordinary patients may present with or without neurological deficits such as numbness and weakness of the leg and/or foot, in more severe cases patients may present with foot weakness causing difficulty and/or inability to ambulate. The etiology for sciatica is quite commonly a lumbar disc herniation, as briefly mentioned, that puts pressure upon the descending S1 nerve root. Magnetic resonance imaging (MRI) is typically utilized to obtain high resolution images leading to the diagnosis by which a physician identifies the offending agent compressing the nerve root. Given how commonly this pathology presents to primary care physicians and neurosurgeons, it is of no surprise that lumbar microdiscectomy remains as one of the most popular surgical procedures performed within the United States. Patients presenting with sciatica endure copious amounts of pain during most forms of physical activity, thus leading to their inability to work for extended periods of time. Utilization of healthcare resources and inability to work both integrate to cause significant depletion in healthcare resources while increasing treatment-costs and unemployment-subsidies all of which adversely affect the United States economic status [1-6].

Given the degree of societal impact that sciatica patients endure, it is of paramount importance to identify methods of providing immediate and long-lasting treatment for this pathology. The SPORT trials (March 2000-2004) by Weinstein et. al was a multi-million dollar randomized clinical trial which spanned over thirteen states aiming to determine the efficacy of non-standardized and conservative treatments versus standardized surgical therapy for the remediation of lumbar disc disease, spondylolisthesis, and spinal stenosis [2]. The results from the study did not demonstrate an overall statistically significant benefit for the surgical cohort over the conservative cohort within a two-year period of time. However, the patients that had opted for the surgical route experienced a faster relief of their leg pain, but in the end both groups recovered quite similarly over a one year span. There were significant limitations to the study that produced the findings above. First, there was a significant number of patients that had crossed over experimental groups in both directions during the study which lead to unwarranted conclusions on superiority or equivalence of

treatments based on the intent-to-treat analysis. Secondly, there was no standardized methodology of conservative treatments, producing a wide range of variability depending on the institution. Additional studies published prior to SPORT did not show any statically significant benefit in the surgical cohort either due to small sample size, lack of validated outcomes measured, and the overall baseline differences between the treatment groups [2].

So where are we now in 2017? What should the busy neurosurgeon prescribe for the patient with acute sciatica pain? We have some general evidence that lumbar microdiscectomy do help patients recover faster however there is no statistically significant data that whole heartedly promotes surgery over conservative treatments in the long term. Additionally, the literature is quite inconsistent about what conservative treatments are recommended and if there should be a more standardized approach, especially in regard to medicinal options. Studies utilizing physical therapy, epidural steroid injections, anti-inflammatory medications, and opioid analgesics have been completed but were yet again unable to provide a clear standardized approach for patients with acute sciatica.

Mathieson et al. studied 209 patients with acute sciatica pain during the PRECISE Study and prescribed Lyrica (pregabalin) in doses ranging from 150mg to 600mg per day, in hopes to identify if pain relief was dependent upon drug dosage. Patients were randomized, double-blinded and placebo-controlled. The study spanned over two subsets of time; 8 weeks and 52 weeks, each producing no statistically significant difference within the patients. Even more shockingly, incidences of adverse effects were significantly higher in the group of patients receiving the drug Lyrica versus the placebo group [6].

Goldberg et al. performed a randomized double-blinded and placebo-controlled clinical trial utilizing a short course of oral steroids from 2008-2013 in patients with acute sciatica. Patients were randomly assigned to receive a 15-day tapering course of oral prednisone (5 days each of 60mg, 40mg, 20mg, total dose of 600mg) with a matching placebo. The authors did not find a statistically significant improvement in leg pain and patient comfortability compared to placebo group, however the authors did find slight improvement in physical function of patients receiving prednisone, a synthetic corticosteroid drug used to treat certain inflammatory diseases [7].

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Received: June 05, 2017; **Accepted:** June 22, 2017; **Published:** June 23, 2017

Rasmussen-Burr et al. published a meta-analysis of ten randomized clinical trials comparing a variety of NSAIDs to placebos. Overall, no clear statistically significant results were observed in showing the benefits of NSAIDs to the placebo drugs. Additionally, a significant increase of adverse incidents was noted within the cohort receiving NSAIDs versus the placebo group [9].

Stafford et al. described in their manuscript the overall dismal results and subsequent minimal role of epidural steroids injections for the treatment of acute and chronic sciatica. The overarching results were quite dismal, and shed a negative light on the effect of epidural steroid injections for the treatment of acute and chronic sciatica versus the control group. The minimal benefits from these studies demonstrated an acute decrease in associated pain at times, however these results were short lived as pain returned within two weeks for a vast majority of study participants. Leading to a conclusion that no collective or clear consensus exists for the management of sciatica pain with epidural steroid injections [4].

The above studies collectively indicated a lack consistency and standardization within literature which describes the treatment of patients presenting with acute sciatica. What is needed to identify the best practices for such patients are more randomized double-blinded and placebo-controlled studies of conservative treatment strategies such as neuropathic medicines and other anti-inflammatories. While Lyrica and oral steroids may not have proven to be a viable treatment course for sciatica, there may be other medications that have different biochemical mechanisms of action that could be more effective, selective, fast-acting and long-lasting. Further randomized controlled studies that are placebo controlled need to be performed with alternate medications such as Topamax, anti-depressants, clonidine, and others that have been utilized sparingly as “last resort” options for conservative pain control. However, the overarching question still remains, is there a role for studying a combined standardized surgical

approach followed by protocol-appropriate conservative strategy with oral medications and therapy? We believe that a more focused approach on studying conservative routes is critical to improving care for our patients, allowing for a more cost-effective healthcare system, and aiding physicians in their continued quest to heal those that suffer from and are debilitated by unrelenting sciatica pain.

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