

Management of Low Back Pain - Call for an Integrated Interventional Approach

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Received date: April 26, 2017; Accepted date: November 13, 2017; Published date: November 17, 2017

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Abstract

Introduction: Using advanced imaging, neurophysiologic and precision diagnostic techniques spinal pain can be diagnosed in only 50 to 80% of the patients. 20 to 50% remain incorrectly diagnosed. Furthermore axial and periaxial pattern of pain from ligaments, muscles, intervertebral discs and facet joints overlap significantly. Therefore patients continue to suffer because of diagnostic dilemma and also pose a therapeutic challenge. Rarely does low back pain involve only a single pain generator, therefore it is unlikely that a single treatment, such as surgery will result in the best outcome for the majority of the causes of low back pain.

Materials and method: All cases of Low back Pain reporting to tertiary care service hospital from 2012 to 2016 were evaluated. Cases which responded to conservative management were excluded.

Observation: A total of 374 cases were offered pain intervention procedure. Of these 45 (12%) required a second interventional procedure as the pain relief was poor. All cases were followed up for 6 months and pain relief was recorded as Good, satisfactory or poor as told by the patient. We found that 78% reported good relief, 18% reported satisfactory relief while 4% reported poor relief from pain.

Conclusion: Scientific evaluation of interventional pain treatments is difficult due to lack of any objective test for pain. Also we cannot have true controls. A single interventional procedure may not suffice in all cases. The Surgeon needs to adopt other modalities to provide pain relief to the ailing patient.

Keywords: Low back pain; Interventional pain treatments

Introduction

Back pain is second only to the common cold as a cause of lost time from work and results in more loss of productivity than any other medical condition. Although being a common condition, the diagnosis of the pain generating structure and mechanism of pain generation remains to be completely understood. As the diagnosis is uncertain so is the treatment. Traditional concepts for treatment of lumbar disc degeneration have aimed at symptomatic relief by removing the offending disc and limiting motion in the lumbar spine. Understanding the pathophysiological basis of disc degeneration is essential for the development of treatment strategies that target the underlying mechanisms of disc degeneration rather than the downstream symptom of pain. Researchers are working on novel treatment strategies which aim to induce disc regeneration or to replace the degenerated disc. These strategies involve stem cells, growth factors, and gene therapy. At present, treatment options for degenerative disc disease remain suboptimal, and the novel treatment strategies are not accepted as the standard of care. A brief outline is provided of our present understanding of this pain mechanism based on the current available body of literature. In current scenario it is also proposed that medical care providers should adopt a multi-disciplinary approach in order to provide pain relief. The treatment modalities should include physical therapy, pharmacotherapy, interventional local pain modulating therapy and surgical intervention.

Materials and Methods

This was a retrospective study in which all cases of Low back Pain reporting to a tertiary care service hospital in the national capital of India from 2012 to 2016 were evaluated. Following initial clinical and radiological evaluation, patients with no significant neurological deficits were offered a trial of conservative management which included analgesics and physiotherapy with follow up for at least four weeks. Patients irrespective of sex were included in this study.

The age groups included were between 15 years to 75 years. Patients who had already undergone a spinal surgery or suffered from congenital neural tube defects or spinal infection were excluded from this study. Cases which responded to conservative management were excluded from the study. Cases who had persistence of symptoms were offered intervention procedure keeping in view the clinical and radiological features.

The intervention procedures ranged from transforminal, facetal blocks to disc removal and lumbar spinal fusion surgery. All procedures were performed by a single Neurosurgeon. Following each intervention procedure, patients were reevaluated for pain symptoms. In case the pain relief was not satisfactory a second intervention procedure was offered after 4 weeks. All patients were followed up for six months. At the end of six months the pain status was reassessed. Complications following each procedure were recorded. All collected data was analyzed and conclusions drawn.

Observation

A total of 374 cases were offered pain interventional procedure. Of these 45 (12%) required a second interventional procedure as the pain relief was poor. All cases were followed up for 6 months and pain relief

was recorded as Good, satisfactory or poor as reported by the patient. We found that 78% reported good relief, 18% reported satisfactory relief while 4% reported poor relief from pain. All findings were tabulated (Tables 1 and 2).

Procedure done	No of cases	First line Rx	Second Line Rx	RELIEF-Good	RELIEF-Satisfactory	RELIEF-Poor
Discectomy ± Foraminotomy	164	151	13	141 (86%)	16 (10%)	06 (4%)
Single level open Lumbar stabilization	56	52	04	40 (72%)	21 (38%)	00 (0%)
Facet block	72	59	13	46 (64%)	21 (30%)	04 (6%)
Epidural Steroids	30	22	08	24 (82%)	03 (9%)	03 (3%)
Vertebral Augmentation	27	27	00	25 (92%)	02 (8%)	00 (0%)
Percutaneous Stabilization	19	16	03	15 (80%)	02 (10%)	02 (10%)
Implantable Therapy	04	00	04	01 (25%)	01 (25%)	02 (50%)
Intradiscal Therapy (RF Coablation)	02	02	00	00	02(100%)	00

Table 1: Tabulation of the case details along with the level of pain relief.

Male	270
Female	104

Table 2: Sex distribution of cases offered pain interventions (Total 374).

Results

Of the total cases reporting with low back pain 374 were offered some intervention procedure. Following the intervention 78% reported good relief from pain, 18% reported satisfactory relief, while 4% were not satisfied following the intervention. 12% patients required a second procedure as the initial procedure did not offer satisfactory pain relief. None of the operated patient had any serious complication. Of the open surgery case 6 developed superficial wound infection which healed with wound dressings and parenteral antibiotics.

Discussion

The interventional pain management services have been found to having a steady increase in its clientele in the past decade. From 2000 to 2011 the interventional pain management services have increase by 228%. This fact only proves that pain mitigation does not rest wholly within the realm of the spine surgeon [1]. The intervention spectrum includes Epidural steroids, Facet interventions, Intra discal Therapies, Vertebral Augmentation, Implantable Therapies. The present armamentarium that exist with the neuro spine surgeon includes minimally invasive disc volume reducing procedures, neural decompressive procedures, lumbar fusion procedures, disc arthroplasty and posterior dynamic stabilization. The motion preserving procedures claim the benefit of preventing adjacent segment disease [2].

Clinical trials evaluating disc arthroplasty with conventional fusion procedures have shown equivalent results compared with circumferential fusion for the treatment of discogenic pain [3]. Posterior dynamic stabilization limits motion in the interspace thereby

reducing discogenic pain [4,5]. However 29 to 47% patients develop adjacent segment disease [6]. The newer modalities under research include biologic growth factors, stem cells, and gene transplant. They reverse the ongoing degenerative process to some extent but the same does not translate to significant clinical improvement [7]. Whatever be the treatment modality that is being offered, pain relief may not be very predictable. This is because there are generally more than one pain generators and each one of them needs to be specifically addressed. Chronic low back pain patients require a multidisciplinary approach and some researchers recommend a follow up period of up to 36 months [8].

Present strategy aims to remove pain generator with surgery but fails to stop the degenerative cascade hence does not provide long term relief. Scientific evaluation of interventional pain treatments is difficult due to lack of any objective test for pain. Also we cannot have true controls. A single interventional procedure may not suffice in all cases. The Surgeon needs to adopt other modalities to provide pain relief to the ailing patient. Future modalities aim to reverse the degenerative cascade by stem cell therapy, biologics and gene therapy.

These newer modalities are still in experimental stage but offer exciting possibilities. Future research into RNA interference, Viral Vector gene therapy and micro RNA may go ahead and surpass cell based therapies in times to come [9]. These newer treatment modalities have the potential to become the standard of care in the near future. As on date the astute clinician must realize that winning over back pain due to degenerative disc disease requires a multidisciplinary approach. Sometimes you win, other times you learn.

Conflict of Interest

None

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