



## To Compare the Efficacy of Conservative Management with Surgery for Treatment of Chronic Low Back Pain: A Randomised Prospective Cohort Study

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### Abstract

**Background:** Low back pain is a common medical problem in general population with high morbidity and healthcare costs. The optimal management strategy, including the role of surgical intervention, remains controversial. We conducted a randomized prospective cohort study to compare the efficacy of surgery and conservative management for chronic low back pain.

**Materials and Methods:** This randomized prospective cohort study was conducted on 130 patients with low back pain. Patients were divided randomly into Group I (Conservative management) and Group II (surgical management). Follow up of patients was done at intervals of 1 week, 4 weeks, 3 months and then 6 month, 1 year and 2 years. Visual Analog Scale (VAS) was used for assessment of pain for all patients. Modified Mc Nab Scale was used as post operative/management tool to assess intensity of low back pain and quality of life.

**Results:** There was a gradual decline in VAS score for Group I till follow up whereas an early and sharp decrease in VAS score was seen for Group II till 3 months after which it increased on an average till last follow up. Mac Nab scale showed gradual improvement in condition of patients over a period of time for Group I with more patients showing improvement by 1 year. Mc Nab scale showed good results starting within first week only up to 3 months for Group II. Later there was some deterioration/static scores in group 2 particularly, and patients were almost in same state at 2 years of follow up for both the groups.

**Conclusion:** A gradual improvement in condition occurs by conservative management for chronic low back pain. Surgical management provides immediate good results but in some patients pain relief may not last for long period. More studies comparing the two treatment options can give better insight into the selection of treatment option for the patients with chronic low back pain and may validate our results.

**Keywords:** Conservative management, Low back pain, surgical management, Visual Analog Scale, Modified Mac Nab criteria.

## Introduction

Low back pain affects millions of people worldwide and is a common symptom affecting 70–85% of the population at some stage in their life.<sup>1,2</sup> It may present as acute or chronic situation. When it persists beyond three months, it becomes chronic low back pain, which is the most common reason for limitation of functional capacity in young people.<sup>2</sup> Thus it is not only a disease affecting health but also the financial independence of a person by hampering his day to day work schedule and acts as economic burden on society.<sup>3</sup> Though many treatment options have been tried and available but none comes with a complete cure of the problem. The management through traditional non surgical methods include analgesia, physiotherapy and counselling. Other conservative and alternative therapies include acupuncture, natural healing, respiratory control and meditation.<sup>1</sup> Only a few conservative therapy options show a significant effectiveness specially when it is a case of acute low back pain.<sup>4</sup> Some authors suggest surgical management as an alternative whenever there is failure of non surgical options to treat chronic low back pain. Surgical approach includes the cal sac and root decompression with or without spinal fusion technique, which reduces pain and disability by eliminating motion of the degenerative spinal segment.<sup>5</sup> A rise in surgical fusion approach has been observed in United States in recent decades which is not always associated with improved efficacy.<sup>6</sup> Several cohort studies has been done to resolve this lack of consensus on whether conservative management or surgical approach should be followed.<sup>7,8,9</sup> This study was undertaken to know and compare the efficacy of conservative management and surgical approach for treatment of chronic low back pain. A randomized prospective cohort trial was conducted to compare the efficacy of two approaches for lumbar and lumbosacral degeneration with or without intervertebral disc herniation with follow up.

## Materials and Methods

This randomised prospective cohort study was conducted on patients who reported to Department of neurosurgery OPD for chronic low back pain over a period of 9 months from June 2015 to February 2016. A total of 130 patients were enrolled and were divided randomly into Group I (Conservative management) and Group II (surgical management). 65 of these patients were randomized for conservative management. 9 patients out of this were converted to surgery while 8 were lost to follow up. Other 65 patients were randomized for surgery initially out of which 7 were lost to follow up. Thus out of 130 patients, 15 were lost to follow up and total sample size observed was 115. Final total number of patients for conservative management was 48 and those for surgical management was 67. Follow up of patients was done at intervals of 1 week, 4 weeks, 3 months and then 6 month, 1 year and 2 years.

Group I patients were managed with physiotherapy, counseling, multi modal analgesia/pharmacotherapy first. If not relieved of pain then c-arm guided periradicular/ epidural/ facetal infiltrations/blocks were given with different agents. VAS for pain was assessed for all the patients. Indication for surgery or Group II were clinic-radiologic correlation, signs of neurogenic claudication, early sensory or motor signs or symptoms, deterioration of bladder bowel functions, patients with history of minimum one year of back pain, VAS >6, history of no response to conservative management and degenerative changes of lower lumbar spine on MRI were generally included for surgical treatment. Patients with generalized spinal degenerative disease, unwillingness for surgery, any psychiatric illness, established sensory motor or bladder bowel involvement and radiological findings such as, infection, inflammatory diseases spondylothesis, neoplasm, new or old fractures were excluded for surgical treatment group. Surgical procedures comprised of posterior decompression with pedicle screw and rod fixation, posterior decompression with pedicle screw and rod

fixation with PLIF and posterior decompression with pedicle screw and rod fixation with TLIF in our series.

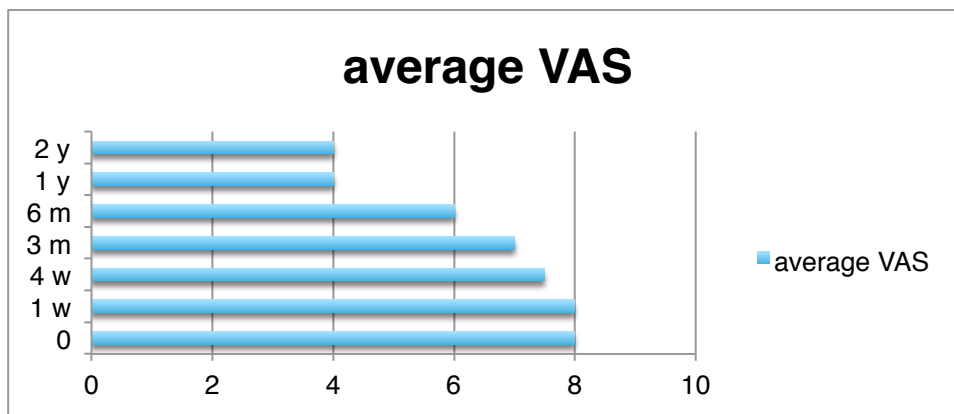
Modified Mc NAB criteria was used as post operative/management tool to assess low back pain. Grading was done as follow:

- Excellent: No pain with no restriction of mobility, Return to normal work and level of activity
- Good: Occasional nonradicular pain, Relief of presenting symptoms, Able to return to modified work
- Fair: Some improved functional capacity, Still handicapped and/or unemployed
- Poor: Continued objective symptoms of root involvement, Additional operative intervention needed at index level irrespective of length of postoperative follow-up

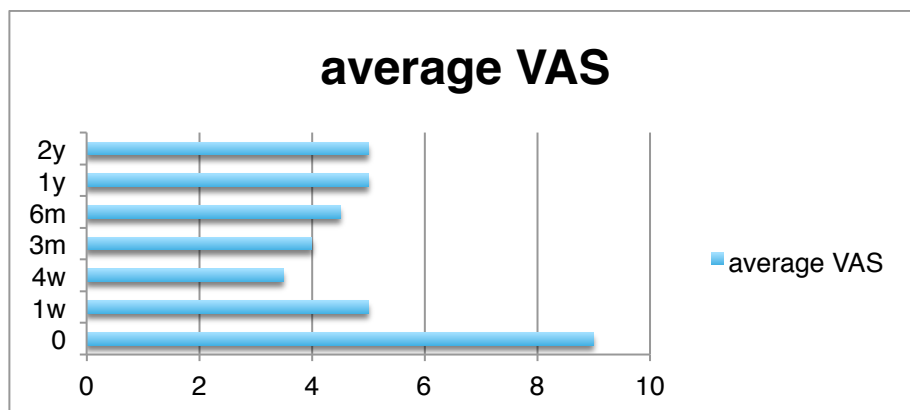
**Results**

The outcome was measured on VAS score and Mac Nab criteria. In group 1, average VAS before starting of treatment was 8 which did not change in one week. It was recorded as 7.5 at 4 weeks, 6 at 6 months, 4 at 1 year, and remained the same in rest of follow up time period.

In group II, initial average VAS was 9 which became 5 in immediate post operative period and at one week, it became 4 at 3 months follow up, 4.5 at 6 months follow up, increased to 5 at 1 year follow up, and remained the same in rest of follow up time period. Results for Modified Mac Nab criteria for Group I and Group II at intervals of 1 week, 4 weeks, 6 months, 1 year and 2 year were recorded. (Table 1, Table 2)



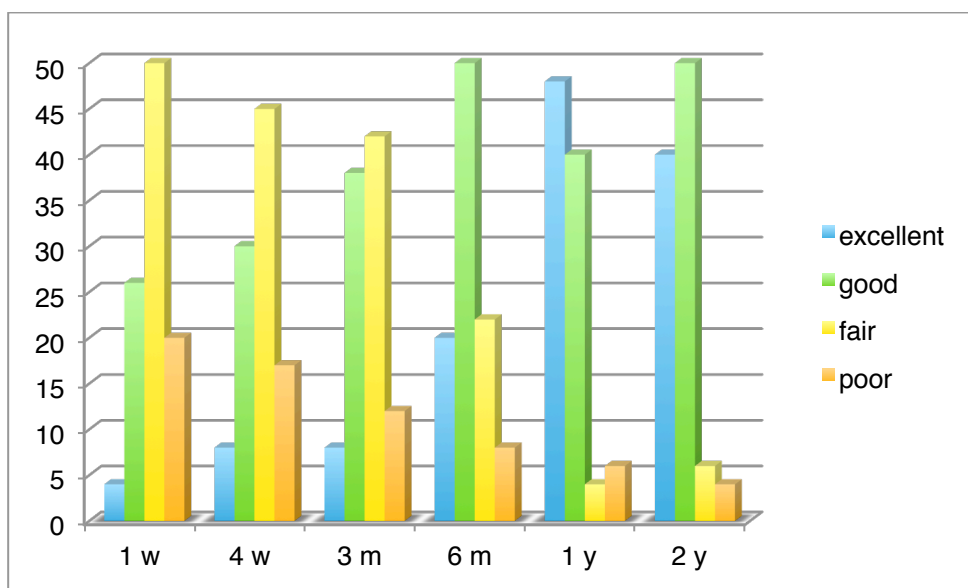
**Group 1: Average VAS vs Time Period bar chart**



**Group 2: Average VAS vs Time period bar chart**

**Table 1: Modified Mac Nab criteria for Group I**

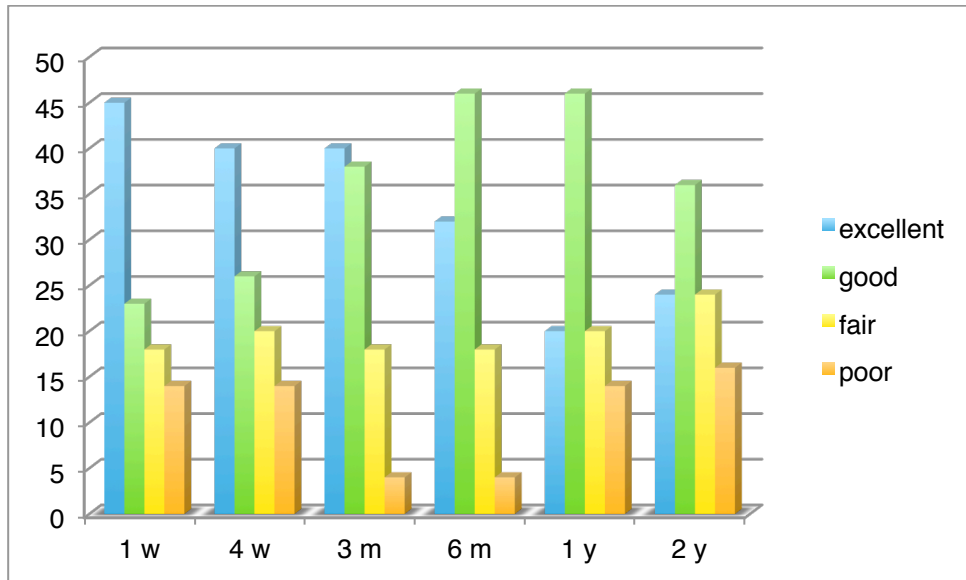
GROUP I	Excellent	Good	Fair	Poor
1 week	4	26	50	20
4 weeks	8	30	45	17
3 months	8	38	42	12
6 months	20	50	22	8
1 year	48	40	4	6
2 years	40	50	6	4



**Bar Diagram 1: (Modified Mac Nab criteria: Group 1)**

**Table 2: Modified Mac Nab criteria for Group II**

GROUP II	Excellent	Good	Fair	Poor
1 week	45	23	18	14
4 weeks	40	26	20	14
3 months	40	38	18	4
6 months	32	46	18	4
1 year	20	46	20	14
2 years	24	36	24	16



**Bar Diagram 2:** (Modified Mac Nab criteria: group 2)

### Discussion

Chronic low back pain may result from a combination of multitude of factors as compared to acute low back pain which may arise from causes like disc herniation, acute injury etc. Patients may seek different types of treatments to relieve the pain which may mainly be categorised as conservative management and surgical treatment.

Recently, a lot of attention has been diverted by conservative treatment option for management of low back pain. Some studies through randomised controlled trials have been conducted to assess their efficacy and outcome.<sup>9, 10</sup>

Though various studies have also been done for assessment of positive predictive factors for surgical decision making for low back pain but it still persists with dilemma for the treatment option to be opted amongst patients as well as physicians.<sup>3, 11</sup>

Assessment of their pain which is a highly relevant complaint of these patients can give better insight into the patients' comfort and selection of treatment strategy. Thus this feature should be assessed through preferable prospective measurements.<sup>12</sup>

Thus this random cohort study was done to assess and compare two approaches for intervertebral disc herniation through VAS score and Mac Nab

Criteria. Patients were evaluated at intervals of 1 week, 4 weeks, 3 months, 6 months, 1 year and 2 years. There was a gradual decline in VAS score for Group 1 till follow up whereas an early and remarkable improvement in VAS score was seen for Group II till 3 months after which it increased gradually till last follow up. Mac Nab scale showed gradual improvement in condition of patients over a period of time for Group I with more patients showing improvement by 1 year. Mc Nab scale showed good results starting within first week only up to 3 months for Group II. Later there was deterioration in condition of some patients, and patients were almost in same state at 2 years of follow up for both the groups. Thus this study found a gradual improvement in condition occurring through conservative management of low back pain. Surgical therapy provided immediate excellent results but relief of pain may not last for long period.

There were few limitations of this study. A study has observed that under normal conditions also, chronic low back pain patients may simultaneously seek many other non surgical or conservative management of their problem.<sup>13</sup> Thus, one limitation of this study could be non account of surgical patients if going for any non surgical co-interventions.

Also, Usually randomised studies in such comparisons may present with limitations as blinding of patients for the selection of treatment option is not possible because of involved patient anxiety and ethical concern.<sup>14</sup> Through this study we were more determined to know the outcome and efficacy of selected treatment strategy in routine practice.

### Conclusion

Further studies comparing the efficacy of conservative management and surgical treatment for patients with chronic low back pain can validate the results of present study. Assessment of pain is an important criteria to assess the efficacy. This evaluation should be done in routine clinical practice in a multidisciplinary setting with long follow up period. The results can provide help in selection criteria and can give an insight into prognosis of two treatment strategies. This will further help the patients as well as physicians to improve their capability for better choice of optimal treatment.

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