



Original Article

Comparison among pain, depression, and quality of life in cases with failed back surgery syndrome and non-specific chronic back pain

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Abstract. [Purpose] The aim of this study is to compare patients with failed back surgery syndrome (FBSS) with those with non-specific chronic back pain (NSCBP) in terms of pain, depression, and quality of life levels to explain the effects of surgery experience on low-back pain. [Subjects and Methods] A total of 50 patients with FBSS and 51 patients with NSCBP who consecutively applied to the outpatient clinic from September 2012 to April 2013 were included in the study. Patients completed questionnaires on demographics, body mass index, education level, work history, and pain duration (in months). Lumbar pain at rest, during movement, and at night were measured with a visual analogue scale (VAS). The Short Form 36 scale was used for evaluating quality of life, and the Beck Depression Inventory (BDI) was used for assessing depression. [Results] VAS scores reporting pain at rest and at night and BDI scores were significantly higher in the FBSS group than in the NSCBP group. Role limitations due to physical functioning, which is one of the measures of quality of life, were significantly higher in the FBSS group than in the NSCBP group. [Conclusion] These assessments show that surgery experience in patients with ongoing low-back pain makes their pain and depression worse.

Key words: Pain, Quality of life, Failed back surgery syndrome

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INTRODUCTION

Surgical treatment of back pain is a treatment option for patients who remain severely symptomatic after a course of conservative treatment¹⁾. However, patients who have chronic, disabling low-back pain (LBP) after one or more spinal surgeries are said to have failed back surgery syndrome (FBSS), which has a prevalence of 10–40%^{1, 2)}. If these estimates are correct, there may be over 80,000 “failed” back surgeries per year in the United States. The factors that cause FBSS are foraminal stenosis, pseudo-arthrosis, neuropathic pain, recurrent disc herniation, sacroiliac joint pain, instability, and psychological problems^{2, 3)}.

Admission to hospital and the prospect of surgery are considered extremely depression and pain provoking, resulting in behavioral and cognitive sequelae that can have far-reaching effects on recovery^{4, 5)}. Different patterns of the depression–pain relationship after elective surgery were observed^{6–8)}. Only a few studies collected prospective data to examine the relation-

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ship between depression and outcome of lumbar spinal stenosis surgery. In these prospective follow-up studies, baseline depression was found to be associated with more postoperative pain, more severe symptoms, poorer walking capacity, and less treatment satisfaction⁹⁻¹¹).

LBP is the most common type of musculoskeletal pain, and as an important cause of pain, it causes severe physical, psychological, and economic losses in developed and developing countries⁵. Physical disability, pain, and depression are the most crucial conditions that change quality of life in patients with non-specific chronic back pain (NSCBP)^{12, 13}.

Previous studies have not determined how surgery experience affects pain, depression, and quality of life of patients with ongoing chronic LBP. Thus, we aimed to compare patients with FBSS and those with NSCBP in terms of pain, depression, and quality of life levels to explain the effects of surgery experience on LBP.

SUBJECTS AND METHODS

A total of 50 patients with FBSS (Group 1) and 51 patients with NSCBP (Group 2) who consecutively applied to the Physical and Rehabilitation Medicine polyclinic from September 2012 to April 2013 were included in the study. All subjects were informed about the content, purpose, and execution of the study, and they submitted informed consent forms. The local ethics committee approved the study. Inclusion and exclusion criteria were set as follows:

Inclusion criteria:

- Signed written informed consent
- Had lumbar spinal surgery once and LBP for six months or longer (for Group 1)
- Any surgery experience during lifetime (for Group 1)
- Clinical diagnosis of NSCBP for three months or longer (for Group 2)
- Ability to speak, read, and write Turkish

Exclusion criteria:

- Infections or tumors of the spine
- Systemic bone or joint disorders (e.g., rheumatoid arthritis)
- Unstable cardiovascular and pulmonary diseases
- Polyneuropathies and musculoskeletal system diseases
- Presence of a diagnosed serious psychiatric disorder

Both groups were given a comprehensive physical examination. Patients completed questionnaires on demographics, body mass index, education level, work history, and pain duration (in months). Lumbar pain at rest, during movement, and at night was measured with a visual analogue scale (VAS) with a 10 mm horizontal line, with "0=no pain" on the left side and "10=extreme pain" on the right side. The Short Form 36 (SF-36) scale was used to measure quality of life, and the Beck Depression Inventory (BDI) was used to assess the level of depression.

Measurements: BDI is a self-administered test consisting of 21 questions used for measuring the severity of depression. Each question is scored from 0 to 3, and a total score between 0 and 63 is obtained. Patients whose scores are equal to or greater than 17 points are considered to have high levels of depression¹⁴.

The SF-36 is a scale widely used to measure the quality of life. It was specifically developed to measure quality of life for those with physical diseases. It is used to assess negative as well as positive aspects of health status and is very sensitive in detecting small changes in disability. It involves eight issues: physical functioning, social functioning, role limitations due to physical problems, bodily pain, mental health, role limitations due to emotional problems, vitality, and general health perception. Subscales evaluate patient health from 0 to 100, with 0 indicating poor health and 100 indicating good health¹⁵.

Statistical analysis: SPSS for Windows version 10.0 was used for the statistical evaluation of data. Conformity of continuous variables with normal distribution was investigated using the Kolmogorov-Smirnov test. All variables were found to be distributed normally. Evaluation of nominal data was performed using the Pearson's χ^2 with Yates' correction test. Independent samples t-test was used for inter-group comparisons. P-value less than 0.05 was considered statistically significant.

RESULTS

The mean patient age was 52.2 ± 12.6 years in the FBSS group and 45.8 ± 10.0 years in the NSCBP group. The two groups did not differ significantly in demographic characteristics, such as age, gender, body mass index, education level, or duration of pain ($p > 0.05$) (Table 1).

As shown in Table 2, BDI scores and pain scores at rest and at night were significantly higher in the FBSS group than in the NSCBP group ($p < 0.05$) (Table 2).

Role limitations due to physical functioning, which is one of the measures of quality of life, significantly increased in the FBSS group than in the NSCBP group ($p = 0.02$). No statistically significant differences were found in other terms of measures of quality of life (Table 3) between the groups.

Table 1. Demographic data of patients

| | Group 1 (FBSS) (n=51) | Group 2 (NSCBP) (n=50) |
|-------------------------------------|--------------------------|---------------------------|
| Age (years) | 52.2 ± 12.6 | 45.8 ± 10.0 |
| Gender (%) | 12 (23.5%) | 11 (22.0%) |
| Male | | |
| Female | 39 (76.5%) | 39 (78%) |
| Education level (%) | 33 (64.7%) | 33 (66%) |
| Primary school | | |
| High school | 14 (27.5%) | 12 (24%) |
| University | 4 (7.8%) | 5 (10%) |
| Occupational group (%) | 34 (66.7%) | 36 (72%) |
| Housewife | | |
| Clerical work | 6 (11.8%) | 3 (6%) |
| Worker | 11 (21.5%) | 11 (22%) |
| BMI (kg/m ²) (Av ± SD) | 31.6 ± 5.2 | 32.2 ± 4.3 |
| Duration of pain (months) (Av ± SD) | 8.9 ± 6.3 | 9.1 ± 7.0 |

BMI: body mass index; Av: average; SD: standard deviation; FBSS: failed back surgery syndrome; NSCBP: non-specific chronic back pain, *p<0.05

Table 2. Comparison of the pain and depression scores of the two groups

| | Group 1 (FBSS) (n=51) | Group 2 (NSCBP) (n=50) |
|------|--------------------------|---------------------------|
| VASr | 3.8 ± 1.5 | 3.2 ± 1.2* |
| VASm | 5.6 ± 1.6 | 5.4 ± 1.1 |
| VASn | 3.5 ± 2.1 | 2.1 ± 1.4* |
| BDI | 16.5 ± 5.5 | 13.2 ± 5.5* |

VAS: visual analogue scale; r: rest; m: motion; n: night; BDI: Beck Depression Inventory; FBSS: failed back surgery syndrome; NSCBP: non-specific chronic back pain, *p<0.05

Table 3. Comparison of the quality of life of the two groups

| | Group 1 (FBSS) (n=51) | Group 2 NSCBP (n=50) |
|----------------------|--------------------------|-------------------------|
| Pain | 53.5 ± 18.2 | 54.0 ± 13.3 |
| Physical functioning | 41.2 ± 22.5 | 49.7 ± 21.1 |
| P. Role limitations | 19.6 ± 36.8 | 30.0 ± 43.9* |
| General health | 51.2 ± 7.1 | 48.7 ± 8.8 |
| Vitality | 50.4 ± 10.5 | 48.6 ± 12.4 |
| Social functioning | 46.3 ± 7.2 | 44.5 ± 6.3 |
| E. Role limitations | 56.2 ± 50.9 | 55.3 ± 47.6 |
| Mental health | 59.6 ± 7.3 | 54.4 ± 11.1 |

FBSS: failed back surgery syndrome; NSCBP: non-specific chronic back pain; P: physical; e: Emotional, *p<0.05

DISCUSSION

This study mainly found that the FBSS group had worse at-rest and at-night VAS scores and BDI scores than the NSCBP group. In the quality of life assessment, no significant differences were found except role limitations due to physical functioning between the two groups. These assessments show that surgery experience in patients with ongoing LBP makes their pain and depression worse.

LBP causes 51.7% of musculoskeletal system diseases, and 75–80% of patients experience chronic LBP for some period during their lives¹⁶. Chronic LBP causes the quality of life of patients to deteriorate, causes physical and psychological problems, and reduces quality of life by restricting daily living activities and creating functional limitations^{5, 17}. Moreover, a close relationship exists between depression and pain. Intensity of pain and depression negatively affect an individual's quality of life¹⁸. Depression causes sadness, pessimism, and ultimately a decrease in motivation¹⁹. Some studies in the literature conducted on LBP suggested that chronic LBP increases the prevalence of depression^{8, 19}. Takahashi et al.⁴ observed that psychosocial factors could play an important role in cases of LBP disproportionate to the patients' functional limitations. A significant proportion of people with chronic pain have psychiatric symptoms in addition to their LBP diagnosis. A cause and effect relationship between psychiatric disorders and physical pain cannot be fully determined. The psychiatric disorders that are related to chronic pain often are not the precursor to pain. This situation develops as a result of pain. Chronic pain is often accompanied by psychiatric problems, including depression, anxiety, insomnia, and burnout; these problems increase symptoms of pain and decrease the pain threshold^{20, 21}. Chronic pain can also cause physical dysfunction and social isolation. All of these situations reduce the quality of life for people.

Chronic post-surgical pain is a clinical condition persisting for at least three months following a surgical intervention in which additional, particularly neuropathic symptoms are observed²²). This kind of pain may occur following major surgery and minor procedures²²). For back surgery, temporary relief after surgery followed by pain recurrence within a few weeks of surgery suggests infection⁵). When pain occurs months after surgery, re-herniation, battered root syndrome (inflammation of the nerve root as a result of surgical manipulation), epidural fibrosis, or arachnoiditis is suspected. Failure several years following surgery may be caused by loss of spinal instability or spinal stenosis, either at the previous surgical site or at an adjacent level^{2, 3}). Based on our results, pain scores are high in patients with FBSS. However, to the best of our knowledge, scholarship about the association between chronic post-surgical pain and pain in FBSS is seriously lacking.

Clinicians have long been aware that many patients experience some form of post-surgical depression in the six months following an invasive procedure^{23–25}). However, some researchers believe that being depressed after surgery is “understandable” and “unworthy of diagnosis or treatment”^{6, 7}). As most people with post-surgical depression emerge from depression after about six months, many doctors consider post-surgical depression either benign or even helpful as it keeps people inactive. Nevertheless, researchers have discovered that depressed patients are more likely to have other complications^{5, 7}). They are less able to cooperate in their after-care, particularly in rehabilitative therapy. For people who have an existing history of depression and anxiety, recovery from post-surgical depression is neither guaranteed nor as straightforward as some surgeons expect^{6, 7}). Previous studies have assessed the psychological factors affecting the outcome of orthopedic surgery, and they found that outcome measures are influenced by post-surgical depression^{5, 24, 25}). Health problems are often accompanied by psychiatric disorders. This varies depending on the disease; its prevalence is between 20–67%. Psychiatric comorbidity in people with medical illness is a serious risk factor for prognosis^{26–28}). Jürgen et al.²⁹) conducted a study (low-back/joint disorder) in female patients with musculoskeletal pain. This study included patients with depression and without depression. It reported that in patients with fibromyalgia or myalgia, depression was found to reduce the quality of life²⁹). Rahimi et al.³⁰) achieved significant findings of an association between low-back pain and level of depression. According to the results of our study, depression is a more frequent condition among those who experienced failed back surgery.

The present study has some limitations. Mainly, we did not evaluate pre-surgical psychological factors in the FBSS group. We did not have any exclusion criteria for ongoing neuropathic pain for each group. Moreover, the participants were not evaluated in terms of comorbid diseases that could trigger their depression. Another limitation is that there were no interviews with patients for psychiatric diagnosis.

In conclusion, recent studies cannot explain how the lumbar spinal surgery experience affects pain, depression, and quality of life outcomes. Chronic post-surgical pain and post-surgical depression are topics that are currently prevalent in the literature. The relationship between pain and psychological factors is an issue that should be investigated, especially in patients with FBSS.

This study, which compared LBP patients with no history of surgery and ongoing LBP patients who had lumbar surgery in terms of the parameters of pain, depression, and quality of life, is expected to shed light on further studies.

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