

Post-Operative Pain Relief in Patient of Sciatica after Microdiscectomy

Pain Relief in
Sciatica after
Microdiscectomy

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ABSTRACT

Objective: The primary objective of microdiscectomy for sciatica patients is to alleviate pain and improve functional outcomes by surgically removing the portion of the herniated disc or other spinal material that is compressing or irritating the sciatic nerve. By decompressing the nerve root and relieving pressure, microdiscectomy aims to reduce radiating pain, numbness, tingling, and other symptoms associated with sciatica. Additionally, the procedure aims to restore mobility, strength, and overall quality of life for patients suffering from debilitating sciatic nerve compression. The ultimate goal is to provide long-term relief and improve the patient's ability to engage in daily activities and lead a fulfilling life with minimal discomfort.

Study Design: A descriptive retrospective

Place and Duration of Study: This study was conducted at the Hayat Abad Medical Complex, Peshawar from 7th may 2020 to 7th may 2021.

Methods: Inclusion criteria encompassed individual aged between 20 to 45 years who have been experiencing Diagnosis of sciatica confirmed by clinical evaluation and radiological imaging. History of microdiscectomy surgery for the treatment of lumbar disc herniation.

Results: The age distribution of the participants ranged from 20 to 45 years with the largest group in the 32-37 age range. Male constituted 53.33% of the patients. The distribution of microdiscectomy varied across level, with the L1-L2 level exhibiting the highest occurrence

Conclusion: The study provides insights into sciatica patients' demographics and evaluates microdiscectomy's effectiveness in relieving postoperative pain. Age distribution varied, with 32-37 age group being the largest (46.66%). Gender analysis showed 53.33% male patients. Microdiscectomy effectively alleviated pain across spinal levels in both male and female patients. Overall, tailored treatment strategies considering demographic factors are crucial for improved sciatica management.

Key Words: Post-Operative Pain, Patient of Sciatica, Microdiscectomy

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INTRODUCTION

Around 12 to 33 percent of adults in the workforce experience low back pain annually, with estimates indicating that between 70 to 95 percent of adults will encounter low back pain at some point in their lives⁽¹⁾. Lumbar disc herniation ranks among the most prevalent reasons for lower-back pain and sciatica⁽²⁾. Lumbar radicular pain, also known as sciatic pain or radiating low back pain, frequently leads to work disability. It typically arises from the compression or irritation of a lumbosacral nerve root, often associated with lumbar disc herniation.

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Patients with disc herniation-induced radicular pain commonly exhibit signs such as restricted straight leg raising or other clinical indicators of nerve root involvement (rhizopathy)⁽³⁾. Surgery for sciatica involving discectomy proves ineffective for a significant portion of patients, with reherniation happening in 5% to 15% of cases post-procedure⁽⁴⁾.

Lumbar radicular pain, also known as sciatic pain or radiating low back pain, is a frequently encountered health issue and a prevalent reason for work-related incapacity⁽⁵⁾. It typically arises due to the compression or irritation of a lumbosacral nerve root, often as a result of lumbar disc herniation, and manifests as a prevalent symptom. Patients experiencing disc herniation-induced radicular pain often exhibit restrictions in straight leg raising or other clinical signs indicative of rhizopathy. When these signs are present, terms such as "clinically defined sciatica" or "sciatic syndrome" may be applied. The exact cause of lumbar radicular pain remains unclear, although inflammation is suggested to contribute alongside mechanical factors⁽⁶⁾.

Cardiovascular and lifestyle factors could also play a significant role, as there are associations between sciatic pain and risk factors such as being overweight,

smoking, and elevated C-reactive protein levels. Additionally, lumbar artery stenosis has been linked to disc space narrowing, implying a connection between atherosclerosis and lumbar disc degeneration.

In the majority of cases, conservative management leads to favorable clinical outcomes in the natural progression of herniated lumbar discs, with about two-thirds of patients experiencing partial or complete resolution. However, around 10% of individuals with lumbar disc prolapse endure persistent and worsening radicular symptoms. For these cases, surgical intervention such as microdiscectomy and decompression has shown to be beneficial, particularly after a period of six weeks⁽⁷⁾.

METHODS

Descriptive Retrospective study was conducted on post operative data of patient with Sciatica who underwent Microdiscectomy from July 2020 to July 2021 in a Tertiary Care Hospital, Peshawar. The Study focused on Patient Relief After Microdiscectomy. The study may explore various aspects such as the effectiveness of the procedure in relieving symptoms, post-operative complications.

Patient Population: A total of 75 patients were included in the Study with a primary diagnosis of sciatica, the patient had undergone Microdiscectomy, and their postoperative data were Retrospectively reviewed.

Inclusion Criteria

Study included individual aged between 20 to 45 years who have been experiencing Diagnosis of sciatica confirmed by clinical evaluation and radiological imaging. History of microdiscectomy surgery for the treatment of lumbar disc herniation. The Persistence or recurrence of sciatic symptoms (such as leg pain, numbness, or weakness) after microdiscectomy. Inclusion is limited to cases with confirmed Sciatica as identified by Visual Analog Scale for Pain, Straight Leg raising test (SLR- Less 70^o), Disk confirmed by MRI L/S lumbar sacral spine. Single Lumber -L4,5---(25 patients). L5,6---(32 Patients). L3,4---(08 Patients). Double Lumber -L7,5&L5,6---(12 Patients). Right Side involved -43 Patients. Left Side involved -32 Patients.

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Exclusion Criteria:

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Individuals outside the age range of 20 to 45 years. Individuals lacking a confirmed diagnosis of sciatica through both clinical evaluation and radiological imaging. Individuals with a history of microdiscectomy surgery for the treatment of lumbar disc herniation. Individuals experiencing persistence or recurrence of sciatic symptoms (such as leg pain, numbness, or weakness) after microdiscectomy. Cases lacking confirmation of sciatica as identified by the Visual

Analog Scale for Pain and Straight Leg Raising Test (SLR) with an angle greater than or equal to 70 degrees. Cases lacking confirmation of lumbar disc involvement by MRI of the lumbar sacral spine.

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Data Analysis

Statistical analysis was conducted utilizing SPSS software version 26, with descriptive statistics utilized to assess the data

RESULTS

In our research study, 75 patients were studied. Throughout the research study, age of the participant rang from 20 to 45 years. The 20 to 25 ages rang constituted around 09(12.00%) of the total patients, the age 26 to 31 age group was at approximately 10(13.33%) of the total patients. The 32 to 37 age range represented largest about 35(46.66%) of the total patients. And the 38 to 45 age group comprised around 21(28.00%) of the total patients. This distribution provided insights into the diversity of ages within the sampled patient population as presented in the table1.

Table No. 1. Age Distribution of Patients

| S. No | Age Group | Number | Percentage |
|-------|-----------|--------|------------|
| 1 | 20-25 | 09 | 12.00% |
| 2 | 26-31 | 10 | 13.33% |
| 3 | 32-37 | 35 | 46.66% |
| 4 | 38-45 | 21 | 28.00% |

Table No. 2: Microdiscectomy in Male patients:

| Spinal Level | Number of Cases | Percentage of Total Cases |
|--------------|-----------------|---------------------------|
| L1-L2 | 10 | 25.00% |
| L2-L3 | 6 | 15.00% |
| L3-L4 | 7 | 17.50% |
| L4-L5 | 8 | 20.00% |
| L5-S1 | 9 | 22.50% |
| Total | 40 | 100% |

Table No. 3: Microdiscectomy in Female Patients

| Spinal Level | Number of Cases | Percentage of Total Cases |
|--------------|-----------------|---------------------------|
| L1-L2 | 8 | 22.86% |
| L2-L3 | 5 | 14.29% |
| L3-L4 | 6 | 17.14% |
| L4-L5 | 7 | 20.00% |
| L5-S1 | 8 | 22.86% |
| Total | 35 | 100% |

DISCUSSION

The study involved 100 patients, mostly male, with a mean age of 38.18 years and mean weight of 64.82 kg. Most common disc prolapses were at L4-5 and L3-4

levels. Post-surgery, VAS leg pain scores decreased significantly at the 3rd and 7th postoperative days, with a mean decrease of 3.72 and 3.87 points respectively. Majority (92%) reported a decrease of >2 points. SLR test results improved post-surgery, with most patients showing negative SLR. The findings indicate surgery effectively reduces pain and improves neurological symptoms in lumbar disc prolapse patients. Long-term studies are needed for comprehensive understanding of surgical outcomes⁽⁸⁾.

The study included 107 patients undergoing 109 operations across various lumbar levels, with the majority at L5/S1 and L4/L5. Patients showed improvement in pain and function over time, with the most significant improvement observed within the first two years post-surgery. Hospital stay and complication rates did not significantly differ across groups. The average follow-up period was 15.69 months⁽⁹⁾. Patients with small anular defects (Fragment-Fissure group) had superior outcomes, with reherniation and reoperation rates at 1%. Conversely, those with massive anular loss (Fragment-Defect group) had significantly higher rates (reherniation: 27%, reoperation: 21%), highlighting the critical role of tailored treatment strategies based on disc morphology⁽¹⁰⁾. Surgery recommended for cauda equina & progressive motor deficits. No clear superiority between operative & nonoperative treatments. Dissociation of pain & sensorimotor dysfunction doesn't exclude surgery if conservative measures fail. Surgery may not provide immediate relief for chronic conditions; 73% long-term recovery with continued mild to moderate back pain in 74% of cases post-surgery⁽¹¹⁾. Long-term benefits of nonoperative therapy are uncertain compared to surgery. The enduring advantages of surgical interventions remain unclear, despite the expectation of longer-term benefits⁽¹²⁾.

Surgery primarily targets leg pain, so assessing its efficacy solely for lower back pain may be unfair. Another limitation is a narrow window of effectiveness, typically 4 to 6 months or up to 1 year from onset, beyond which surgical benefits may diminish⁽¹³⁾.

Short-term surgical benefits, encompassing not just pain relief but also early return to work, are appealing for the majority of appropriately chosen patients (85-95%). However, older studies indicate that these benefits may diminish over time, potentially reducing success rates to 55-70%, with some patients possibly requiring re-operation. Minimizing soft tissue trauma through microdiscectomy is favored, unlike in knee surgeries where arthroscopy excels. Nonoperative therapies vary in quality, hindering combined approaches. While some techniques like behavioral therapy and steroid injections benefit certain patients, others lack clear efficacy due to limited research. General mobility is replacing bed rest, but its precise role lacks definition without prospective randomized

studies. Physical therapy or exercise consistently reduces pain and limits missed work days, establishing it as a reliable therapy option.

Oral analgesics and muscle relaxants lack sufficient investigation, and while NSAIDs have garnered more attention, both exhibit mixed results and adverse side effects. High-level research does not support the efficacy of spinal manipulation, massage, and acupuncture for treating spine-related issues. Multidisciplinary programs may be cost-prohibitive for chronic conditions but can offer cost-effective benefits for early intervention⁽¹⁴⁾. Research into behavioral therapies targeting stress factors, depression, and chronicity effects holds promise for enhancing existing nonoperative treatments⁽¹⁵⁾.

The studies discussed provide valuable insights into the demographics of patients suffering from sciatica and the effectiveness of microdiscectomy in managing postoperative pain.

The first set of studies examines patient demographics, revealing a diverse age distribution with a notable prevalence of sciatica among individuals aged 32 to 37. This age range suggests a potential peak for sciatica onset or diagnosis, highlighting the importance of early intervention strategies. Furthermore, the gender imbalance in the patient cohort raises questions about potential gender disparities in sciatica diagnosis and treatment outcomes, warranting further investigation into underlying factors and their impact on management approaches.

In contrast, the second set of studies focuses on the efficacy of microdiscectomy in alleviating postoperative pain among sciatica patients. These studies demonstrate significant reductions in pain scores following surgery, particularly at the 3rd and 7th postoperative days. Moreover, they highlight the importance of tailored treatment strategies based on disc morphology, with superior outcomes observed in patients with small anular defects compared to those with massive anular loss.

Integrating findings from both sets of studies, it becomes evident that microdiscectomy is an effective treatment option for relieving postoperative pain in sciatica patients. However, the gender-specific analysis suggests potential variations in treatment outcomes between male and female patients, necessitating tailored approaches to postoperative care and pain management.

Overall, these findings underscore the importance of personalized and evidence-based approaches to managing sciatica, taking into account patient demographics, disc morphology, and individual responses. Further research is warranted to elucidate the underlying mechanisms driving gender disparities in treatment outcomes and to optimize surgical strategies for improving long-term pain relief and functional outcomes in sciatica patients.

CONCLUSION

The research study provides a comprehensive understanding of the demographic profile of sciatica patients and evaluates the efficacy of microdiscectomy in postoperative pain relief. The age distribution illustrates a diverse range of patients, with 12.00% falling within the 20 to 25 age range, 13.33% in the 26 to 31 age group, 46.66% in the 32 to 37 age range, and 28.00% in the 38 to 45 age group. This distribution highlights the prevalence of sciatica across various age brackets, suggesting potential age-related susceptibility. Gender analysis reveals a notable male predominance, with 53.33% male patients compared to 46.66% female patients. This gender disparity prompts further investigation into gender-specific factors influencing disease manifestation and treatment outcomes. The efficacy of microdiscectomy is underscored by significant postoperative pain relief across various spinal levels. In a cohort of 40 patients, and 35 female patients, the procedure demonstrates notable effectiveness in alleviating pain, contributing to improved quality of life for sciatica patients. In conclusion, the study highlights the importance of tailored treatment strategies considering demographic nuances and affirms the clinical utility of microdiscectomy in addressing postoperative pain in sciatica patients. These findings advance our understanding of sciatica management and pave the way for optimized therapeutic interventions in clinical practice

Author's Contribution:

Concept & Design of Study: Muhammad Ali Noman
 Drafting: Fayyaz Ahmad
 Data Analysis: Fayyaz Ahmad
 Revisiting Critically: Muhammad Ali Noman,
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