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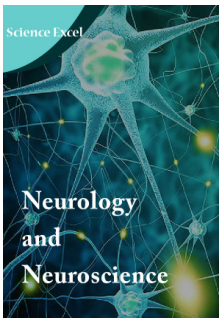
Original Article



Comparison Between Open Microdiscectomy and Endoscopic Discectomy: A Case Series (65 Patients) and Literature Review

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Keywords

lumbar disc herniation, microdiscectomy, endoscopic discectomy, pain relief, dysesthesia.

Abstract

Introduction: *Lumbar disc herniation is commonly treated conservatively, but surgery is necessary when symptoms persist. Open microdiscectomy and endoscopic discectomy are two widely used surgical techniques, with the latter offering a less invasive approach. This study compares their clinical outcomes.* ***Objective:*** *To compare open microdiscectomy and endoscopic discectomy in terms of pain relief, hospital stay, opioid use, return to work, recurrence rates, and complications.* ***Methods:*** *A retrospective analysis of 65 patients (30 open microdiscectomy, 35 endoscopic discectomy) who underwent surgery between 2023 and 2024. Key parameters, including pain relief (VAS scores), opioid use, complications, and return to work, were compared. Results: Both techniques showed similar pain relief and surgery duration. Endoscopic discectomy had a significantly higher rate of dysesthesia (34.3% vs. 3.3%, p=0.0051). Return to work at 60 days showed no significant difference (p=0.7018). Reoperation rates were low in both groups (3.3% vs. 5.7%).* ***Discussion:*** *Both approaches provided effective pain relief, but endoscopic discectomy was associated with a higher rate of dysesthesia. Return to work was more influenced by personal factors than the surgical technique. Both techniques showed low reoperation rates and good long-term outcomes.* ***Conclusion:*** *Open microdiscectomy and endoscopic discectomy are comparable in terms of pain relief, recovery, and reoperation rates, though endoscopic discectomy has a higher risk of dysesthesia. The choice of technique should be based on patient and surgeon factors.*

Introduction

Lumbar disc herniation is one of the most common conditions affecting the spine, with conservative treatments being the first line of management. Recent studies show that conservative treatments, such as physical therapy and medication, are effective for the majority of patients [1,2]. However, when symptoms persist for more than six weeks, surgery may be necessary [3,4].

Among surgical options, open microdiscectomy and endoscopic discectomy stand out as widely used techniques for relieving nerve compression [5, 6]. Microdiscectomy, a traditional approach, involves the removal of the herniated disc through a larger incision with direct visualization, while endoscopic discectomy is less invasive, using an endoscope to visualize the affected area and allow for disc removal through smaller incisions [7,8].

Both techniques have their advantages and disadvantages, but the choice between them depends on various factors, including the surgeon's experience and the complexity of the case [9,10].

Objective

The aim of this study is to compare the clinical outcomes of open microdiscectomy and endoscopic discectomy in relation to the following parameters: pain relief (measured by the Visual Analog Scale - VAS), length of hospital stay, opioid usage, time to return to work, recurrence rates, and complications (such as dysesthesia and reoperation).

Methods

This was a retrospective study that included 65 patients who underwent lumbar discectomy between 2023 and 2024, using both techniques. Thirty patients underwent open microdiscectomy, while 35 patients underwent endoscopic discectomy.

The study included patients who had symptoms of lumbar disc herniation persisting for more than six weeks despite conservative treatment. Exclusion criteria included a history of prior lumbar surgery, vertebral instability, tumors, infections, and spondylolisthesis greater than grade 2, according to Meyerding's classification.

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Results

The mean duration of surgery was 1 hour and 30 minutes in both groups, with no significant difference between the techniques.

In the open microdiscectomy group (n=30), 17 patients were male, and 13 were female (Figure 1). One patient was a smoker, and none were diabetic. The reoperation rate was 3.3% (n=1). The mean preoperative VAS score was 9, improving to 1.65 postoperatively. Nine patients (30%) required opioid analgesics at 15 days postoperatively. Only one patient (3.3%) developed postoperative dysesthesia. No patient required hospital readmission, and 13.3% of patients (4 patients) did not return to work after 60 days due to pain or dysesthesia. The levels operated were L4-L5 (50%) and L5-S1 (50%) (Table 1).

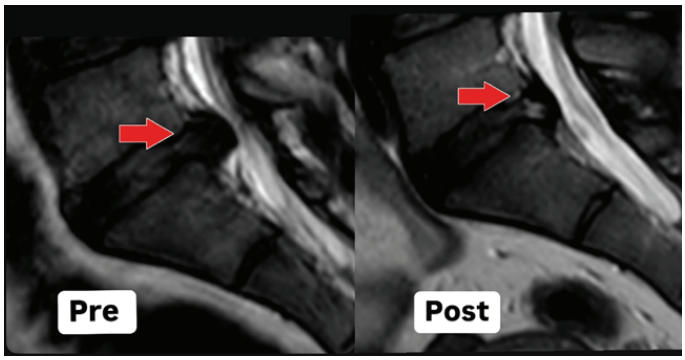

Figure 1. *Example of a patient who underwent open microdiscectomy for lumbar disc herniation at the L5-S1 level, shown preoperatively and postoperatively.*

Table 1. *Microdiscectomy Group (n=30)*

Characteristics	Value
Number of Patients	30
Male/Female	17/13
Smokers/Diabetics	1/0
Reoperation Rate	3.3% (1 patient)
Pre/Postoperative Mean VAS	9 / 1.65
Opioid Use at 15 Days	30% (9 patients)
Postoperative Dysesthesia	3.3% (1 patient)
Hospital Readmission	0%
Did Not Return to Work	13.3% (4 patients)
Operated Levels	L4-L5 (50%), L5-S1 (50%)

In the endoscopic discectomy group (n=35), 17 patients were male and 18 were female, with one smoker and one diabetic patient (Figure 2). The reoperation rate was 5.7% (n=2). The mean preoperative VAS score was 9, improving to 2.36 postoperatively. Nine patients (25.7%) required opioids at 15 days, and 12 patients (34.3%) experienced transient dysesthesia. There were no hospital readmissions. Seven patients (20%) did not return to work after 60 days due to pain or dysesthesia. The levels operated included L4-L5 (24 cases), L5-S1 (12 cases), and L3-L4 (5 cases) (Table 2).

The statistical analysis of the comparison between the two groups was performed in two main aspects: the rate of dysesthesia and return to work after 60 days (Table 3).

Table 2*: Endoscopic Discectomy Group (n=35)*

Characteristics	Value
Number of Patients	35
Male/Female	17/18
Smokers/Diabetics	1/1
Reoperation Rate	5.7% (2 patients)
Pre/Postoperative Mean VAS	9 / 2.36
Opioid Use at 15 Days	25.7% (9 patients)
Transient Dysesthesia	34.3% (12 patients)
Hospital Readmission	0%
Did Not Return to Work	20% (7 patients)
Operated Levels	L4-L5 (24), L5-S1 (12), L3-L4 (5)

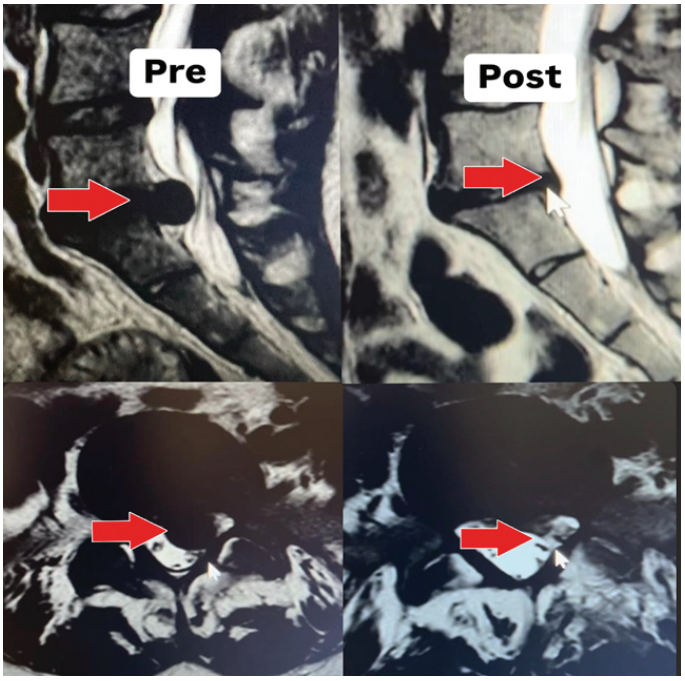

Figure 2. *Example of a patient who underwent endoscopic discectomy for lumbar disc herniation at the L5-S1 level, shown preoperatively and postoperatively.*

Table 2*: Statistical Results*

Aspect	P-value	Interpretation
Dysesthesia Rate	0.0051	Statistically significant difference. The higher dysesthesia rate in the endoscopic group suggests the influence of the working channel.
Return to Work at 60 Days	0.7018	No statistically significant difference. The difference may be attributed to random variation.

Regarding the dysesthesia rate, the p-value was 0.0051, indicating a statistically significant difference between the groups. The higher rate of dysesthesia observed in the endoscopic group is unlikely to be a casual result, suggesting that the working channel used in this technique could be a contributing factor to this outcome.

As for the return to work at 60 days, the p-value was 0.7018, indicating no statistically significant difference between the groups. The observed difference in return to work rates can likely be attributed to random variation, rather than a real effect of the surgical technique.

Discussion

The results of this study show that both microdiscectomy and endoscopic discectomy have similar efficacy in terms of pain relief and length of stay [11,12]. The most notable difference was the rate of dysesthesia, which was significantly higher in the endoscopic group [13,14]. This is consistent with the existing literature, which suggests that the use of the working channel in endoscopic discectomy may irritate nearby nerve structures, leading to a higher incidence of dysesthesia [15,16]. On the other hand, microdiscectomy, with its more traditional approach, may present a lower risk of complications related to nerve irritation [17,18].

Regarding return to work, the results indicated that there was no significant difference between the groups, suggesting that factors other than the surgical technique, such as individual pain tolerance and occupational requirements, may influence this aspect [19,20]. Previous studies also suggest that the time to return to work after lumbar discectomy may be more influenced by personal factors than by the technique used [21,22].

Although the reoperation rate was slightly higher in the endoscopic group, the values were low in both groups, indicating good long-term efficacy for both techniques [23, 24]. The hospital readmission rate was zero for both groups, which is a positive indicator of safety for both approaches [25,26].

We believe that the learning curve associated with the lumbar endoscopic technique may have contributed to the higher rate of dysesthesia observed in patients operated on by this method [27,28].

As with any recently introduced technique, lumbar endoscopy presents complication rates related to the learning curve. However, being a minimally invasive approach, it is likely to show superior recovery outcomes in the long run when compared to lumbar microdiscectomy. This potential explains the growing interest in the technique [29,30].

Considering that, even in its early stages, endoscopy shows similar results to microdiscectomy, it is reasonable to assume that, with the natural reduction of complications over time, clinical outcomes will improve [31]. On the other hand, in countries with large territorial dimensions and resource limitations, such as Brazil, the lower cost of lumbar microdiscectomy represents a relevant short-term advantage, especially given the high demand on the healthcare system [32,33].

Conclusion

The study demonstrates that both open microdiscectomy and endoscopic discectomy show similar clinical outcomes in terms of pain relief, length of stay, and reoperation rates. However, endoscopic discectomy presents a significantly higher rate of dysesthesia, likely due to nerve irritation related to the use of the working channel. The return to work at 60 days showed no significant difference between the groups, suggesting that individual factors, such as pain tolerance, may have a greater impact on this parameter. The choice of surgical technique should be individualized, taking into account the patient's anatomy, the surgeon's experience, and the patient's preference.

Conflict of Interests

The authors have no conflict of interests to declare

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