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# OUTCOME OF ENDOSCOPIC LUMBAR DISCECTOMY FOR THE TREATMENT OF SCIATICA

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## ABSTRACT

**Objective:** To evaluate the outcome of endoscopic lumbar discectomy in patients having sciatica due to single level prolapsed disc.

**Methodology:** This descriptive study was conducted in neurosurgery departments of Lady Reading Hospital and Hayatabad Medical Complex Peshawar from June 2017 to December 2019, after approval from the ethics committee. All patients with straight leg raising (SLR) less than 60 degree, failed conservative treatment and with single level prolapsed disc were included while redo cases, cauda equine syndrome and traumatic disc prolapse associated with fractures were excluded. Per operative and post operative complications were documented. Patients were followed up for 3 months. Data was collected and analyzed with SPSS version 20.

**Results:** One hundred and fifteen endoscopic lumbar discectomies were done. There were 75 (65.2%) male and 40 (34.8%) female patients. Age range was 17 to 63 years with mean age of 31.0±2.13 years. L5-S1 was involved in 67 (58.26%) cases, L4-5 in 42 (36.52%) cases and L3-4 in 6 (5.22%) cases. Procedure time ranged from 35 to 125 min with a mean of 62 minutes. Four cases were converted to open discectomies due to technical difficulties. Sciatica pain relief was achieved in 110 (95.65%) cases. Surgical site infection was observed in 2 (1.74%) cases.

**Conclusion:** Endoscopic discectomy has acceptable rate of complications and good post-operative pain relief.

**Key Words:** Endoscopic lumbar discectomy, Outcome, Sciatica

## INTRODUCTION

Sciatica due to prolapsed lumbar intervertebral disc can be treated both conservatively as well as surgically.<sup>1</sup> The ultimate target is to alleviate the pain along with other symptoms and to make the patient resume a normal life as early as possible.<sup>2</sup> Open lumbar microdiscectomy (OLD) used to be the gold standard but now the era has changed and new trends are evolving rapidly.<sup>3</sup> Conventional open discectomy was modified to microscopic discectomy to reduce tissue damage, chances of spinal instability and show good clinical outcome. So microscopic discectomy was introduced and it became the gold standard over time.<sup>1-4</sup> After the introduction of minimally invasive techniques in various surgical procedures, micro endoscopic discectomy was introduced with encouraging clinical outcomes.<sup>5-8</sup>

Several minimal endoscopic techniques have been introduced over the past one or two decades. The issue with these techniques are the prolong surgical time,<sup>9-11</sup> potentially higher complications and failure rate,<sup>7,11</sup> requiring careful patient selection<sup>12-14</sup> and significant learning curve, thus making it difficult to proceed with the daily routine and no better outcome than conventional surgery. Above all, the outcome is not different

from conventional surgery. Therefore, majority of these techniques are out of favour now. To minimise the problems associated with the new techniques, the latest endoscopic technique was developed with the Easy-Go system. This technique of endoscopic disc surgery has yielded very promising results. The purpose of this study was to evaluate the outcome of the new endoscopic discectomy technique in patients with herniated lumbar disc in terms of post-operative pain relief and development of complications.

## METHODOLOGY

This descriptive study was conducted on 115 patients in neurosurgery departments of Lady Reading Hospital and Hayatabad Medical Complex Peshawar, from June 2017 to December 2019, after institutional ethical approval. Consent was taken from all the patients before their enrollment in the study. Only those patients were enrolled in whom SLR sign was less than 60 degree and prolapsed disc in lumbar region was evident on MRI. Recurrent discs patients were excluded. Detailed history, clinical findings and MRI lumbosacral spine results were documented in patient's proforma before surgery. All patients were operated in prone

position under general anesthesia. Surgical level was identified before incision and reconfirmed before drilling of the lamina. Para median skin and facial stabbing was done at required level. Standard dilator system was used for muscular dilation. The surgical procedure was carried out through a working sheath after dilators removal. A good endoscopic view was achieved with 30° Hopkins optic. Discectomy was performed with or without nerve root retraction. Single stitch skin closure was performed. Post operatively, patients were allowed to sit and were encouraged for immediate mobilization.

Patients' demographic details, management details and procedure outcome were documented. The collected information were analyzed in statistical package of social sciences (SPSS) version 20.

## RESULTS

Age range of the patients was 17 to 63 years with a mean age of 31.0±2.13 years. There were 75 (65.2%) males and 40 (34.8%) females. Out of all, 62 were right sided and 53 were left sided disc prolapse. L5-S1 was involved in 67 (58.26%) cases, L4-5 in 42 (36.52%) cases and L3-4 in 6 (5.22%) cases. Surgical time ranged from 35-125 minutes with a mean of 62 minutes for a single level procedure. Four cases were converted to open discectomies, out of which, 3 patients were switched due to a technical difficulty and in the fourth patient, nerve root was fixed in the lateral recess by the prolapsed disc from underneath. Surgical site infection was observed in 2 (1.74%) cases.

Sciatica pain relief was achieved in 110 (95.65%) cases while five (4.35%) patients had remnant leg pain. Out of all, 110 patients were without regular pain medication at first follow up visit. The rest five required analgesics for back pain or pseudo radicular pain.

## DISCUSSION

In the modern era of technology, there has been increasing demand from patients for minimally invasive spine surgery. However, at the same time, neither the surgeon nor the patient can compromise on the safety of procedure. Many of the minimally invasive endo-

scopic devices are associated with frequent complications because of the long learning curve, prolong surgical timings, limited indications and high cost. We opted for "Easy-Go endoscopy system" to minimize the above mentioned problems and yet effectively carry out the procedure.<sup>15</sup> Prolapsed disc is more common in young age and male population because male people are involved in hard laborious jobs and consequently they suffer prolapsed disc more frequently as compared to female population. Other local researchers had similar findings in their studies.<sup>16</sup>

In the present study, we encountered 1 case of per operative dural injury which is similar to the findings by another study which found only 1% per op dural injury in Percutaneous Endoscopic Lumbar Discectomy (PELD).<sup>17</sup> Most patients had no sciatica pain at discharge and at one month after surgery. These findings are in line with other studies results.<sup>15</sup> PELD reduces incidence of spondylodiscitis, which was noted only in 2 patients with surgical site infection where as no case of spondylodiscitis was seen in post operative review. Gu et al noted reduced rate, where out of 209, only 1 patient was documented for disc infection.<sup>18</sup> Over all, both microscopic and endoscopic discectomies yield excellent results in expert hands.<sup>19,20</sup>

Literature shows that between 5 to 20% of patients remain unsatisfied after discectomy for a number of reasons.<sup>21, 22</sup> A study including 307 cases, recorded 90 percent satisfaction rate for endoscopic discectomy.<sup>23</sup>

No patients in our study was noted to have developed iatrogenic nerve root injury but 2 of our patients had numbness in legs. They already had numbness before surgery but their symptoms were masked by severe pain. The cause of low back pain after lumbar disc surgery is still a bit unclear. Factors like epidural fibrosis, pre-existing degenerative spine or segmental instability, psychological disturbance and job compensation are some reasons that may cause persistent low backache. Literature has indicated this problem in almost similar frequency after surgery.<sup>22-24</sup>

The results of endoscopic surgery in terms of pain relief and associated complications are within the range of the published data in various parts of the world. However, we believe that no definite conclusions can

be drawn as control group was missing. Therefore, large scale, randomized controlled trials are recommended in the future to give evidence of clinically superior results with the endoscopic system.

## CONCLUSION

The study concluded that endoscopic discectomy has shown minimum number of complications and has proved to be a good post operative pain relief procedure.

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### Author's Contribution

RJR Conceived the idea, made the project plan, carried out data collection and wrote the manuscript. MNK did data collection as per methodology, did data collection and did statistical analysis. MIUH did data collection as per methodology, refined the manuscript. SU did data collection, literature search and bibliography. Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

### Conflict of Interest

Authors declared no conflict of interest

### Grant Support and Financial Disclosure

None

### Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.