Treatment Of Disc Prolapsed By Percutaneous Endoscopic Lumbar Discectomy In Patients Less Than 51 years Old.

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ABSTRACT
The endoscopic spinal surgery technique has become exceedingly applied in curative disc prolapse in the lumbar spine because it is less invasive, shorter recovery time, and scar tissue. The purpose of this study is to describe the outcomes of percutaneous endoscopic discectomy. Patients <51 years of age with a prolapsed disc of the lumbar spine were confirmed. Percutaneous endoscopic lumbar discectomy (PELD) was performed from January 2015 to January 2018. Clinical, demographic, postoperative visual analog scale, and Oswestry disability index data were collected at the third, sixth, and eighth months. The results indicated that the PELD approach was successful in 94% of cases post a median follow-up of fourteen months. In addition, half of the cases were discharged from the home after a median period of sixteen hours. This study suggested that PELD is a safe procedure for treating disc prolapse in the under-51 years old.

Key words: Endoscopic, microscopic, open spine surgery, disc prolapsed.

INTRODUCTION
Prolapsed intervertebral discs (PIVD) at the lumbar spine is one of the general causes of lower back pain (LBP) in adults, which is one of the most critical health problems around the world (8). Approximately 10% of episodes of LBP are associated with nerve root involvement, causing severe symptoms, increased risk of becoming chronic, more inability to work, and higher healthcare costs (20). Since endoscopic techniques have entered the field of the spine, many surgeons have taken an interest in endoscopic disc treatment (1). PIVD can be treated with minimally invasive surgery (19) as both percutaneous endoscopic lumbar discectomy (PELD) and interlaminar (PIELD) techniques are equivalent in efficacy and safety (3, 17, 6). It is worth noting that this technique is efficient in treating patients under 75 years of age with lumbar disc prolapse due to minimally invasive surgery, shorter recovery time, and less scar formation than microdiscectomy (13, 18). This study aimed to evaluate PELD as a feasible and safe surgical procedure in patients under the age of 51 years old; as such, a procedure is of particular interest at present. This age group of patients needs this type of operation because it is a productive age that they need to return to their everyday life quickly.

METHODOLOGY
Patients
427 patients with disc prolapse aged <51 years and 287 patients were included in this study between January 2015 and January 2018 at the Baghdad Spine Institution, Iraq. In terms of criteria: Ages less than 51 years old, clinically diagnosed lumbar disc prolapse, PELD was a treatment procedure, MRI-compliant disc prolapse, not responding to medical treatment for 6 weeks and follow-up for at least 1 year. As for exclusion: cases of recurrent disc prolapse, wood canal stenosis, spinal inconstancy, disc calcification, and syndrome of cauda equina. Study data were collected in terms of gender, neurological status, back pain, and leg pain by VAS scores as assessed between (7-9) before surgery and at 3, 6, and 18 months after surgery and discharged by ODI.
satisfactory postoperative score of 3 or more was considered lower than the preoperative VAS score.

**Surgical technique**

**Apply the PTELD approach to patients**

The patients were placed in a prone position with the chest hip below used to free the abdomen. A posterolateral approach was performed. First, local anesthesia was administered at the operation site using an 18-spinal needle gauge starting from the skin to the lateral intervertebral foramen; 10 ml of 1% lidocaine was used, then the needle cap was replaced with a guidewire, then the needle was removed and retained. The guidewire is in position; after that, the trocar was inserted over the guide until it was in the ring, then the sleeve was inserted over the trocar, and then the trocar was removed. Finally, the endoscope was inserted, all this procedure under the c-arm is guided (17). As shown in figure 1.

![Figure 1: PTELD procedure on patients.](image1)

**Apply the PIELD approach to patients**

Patients were placed in the prone position either under spinal or general anesthesia and with fluoroscopy of the C-arm to determine the interlaminar space at the affected level. First, a 0.5 cm incision was made. Second, the paraspinal muscle was incised through the trocar, then the sleeve was inserted over the trocar, the trocar was removed, and the endoscope was inserted (15) As shown in figure 2.

![Figure 2: PIELD procedure on patients.](image2)

**RESULTS**

The results of 287 patients with a prolapsed lumbar disc who received treatment with PELD showed that the average age at presentation was 31.9 years old, and the ratio of males to females was 1:1.2, meaning 55% females 45% males. Leg pain occurred in all patients and for at least six weeks without response to medication and physical therapy. About 183 patients (64%) at the 4-5
level, 72 patients (25%) at the 5-S1 level, 27 patients (8%) at the 3-4 level, and 5 patients (3%) at the 2-3 lumber level. Surgery was performed on 65 patients (21%) with multiple levels of the disc, but only 14 patients were treated at the other two levels of the symptomatic level only. 229 patients (85%) underwent transforaminal, 258 patients (15%) had interlaminar PELD.

Outcomes of patients
The operation time ranged from 45 to 83 minutes, with an average of 54 minutes. 264 patients (92%) fell without pain immediately postoperative. 89% of patients were discharged home within (12-36 hours) with a median of 16 hours, 12 patients re-operated, and 5 patients needed 14 days to feel better. Preoperative VAS score was 7-9 and showed 4.9 at three months, 3.1 at six months, 2.3 at 18 months. The mean postoperative leg pain scores were significantly lower than preoperatively at three months of follow-up and P-value < 0.001. Postoperative back pain was also assessed in both PIELD and PTELD as there was no difference in VAS score tracking upwards (p > 0.05). The ODI value decreased from 70.2% to 38.5% in three months. 22.4% at six months, 17.7% at 18 months and is significantly reduced compared to preoperative ODI (p = 0.002). Median follow-up of 14 months (12-18 months) 95% of patients were satisfied with the surgery.

DISCUSSION
Previous studies have confirmed that treating a prolapsed disc in the lumbar region with PELD has perfect results in up to 90% of patients (2, 5). Also, a case series study conducted (14) showed that the satisfactory outcome after surgery was >95% of patients with non-serological complications. Other studies showed a high success rate (12, 11). The outcome of PELD was much better than microscopic and open discectomy with a shorter surgical time and recovery with final follow-up (7). In this type of operation, there is less damage to the posterior muscle and other spinal structures compared to microsurgery (10, 2), even with a complex degenerative spinal condition, and some authors have demonstrated a successful endoscopic technique in different types of the prolapsed disc (15, 2). The application of local anesthetics at lumbar discectomy has been described in several studies, and its role in significantly reducing postoperative morbidity in patients with chronic diseases (3, 21). The average operation time in the current study was 54 minutes. This time was within the minimum average operation time for the endoscopic technique, usually 40 to 120 minutes (4). No clear difference between PTELD and PIELD in terms of postoperative pain and, as with postoperative complications, was consistent with other analogical research (10, 21). In order to perform endoscopic discectomy for patients, the operator is supposed to have good knowledge of spinal anatomy, high experience in endoscopic techniques, and spine surgery in general.

CONCLUSIONS
This study concluded that PELD is a safe procedure for treating disc prolapse in subjects younger than 51 years of age. However, further randomized studies and more extensive series describing the advantage of PELD in all patients with lumbar discectomy are needed.

REFERENCE:


