*Research Article / Araştırma Makalesi*

# Lumbar Discectomy Using the Destandau Technique Provides Better Results in the Short Term

## Destandau Tekniğiyle Lomber Diskektomi Kısa Vadede Daha İyi Sonuçlar Veriyor

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**Abstract**

**Background:** The long-term results of patients who underwent lumbar discectomy using the Desdandau technique (EDDT) and standard open technique (SOD) were compared.
**Materials and Methods:** A retrospective screening was made of patients, aged 18-70 years, who underwent single-level lumbar discectomy between 2007 and 2011. A total of 52 patients met the study criteria and were separated into 2 groups according to the surgical technique used, the EDDT group (n: 27) and the SOD group (n:25). All patients were compared using Visual Analogue Scale (VAS), Oswestry Disability Index (ODI) and modified MacNab criteria.
**Results:** The mean follow-up period was calculated as 158.2±9.2 months in the EDDT group and 161.2±11.1 months in the SOD group. The preoperative VAS and ODI values were observed to be similar in both groups (p=0.829); p=0.120 respectively). At the early postoperative visit, VAS and ODI values were lower in the EDDT group (VAS: EDDT: 2.2±0.6; SOD: 4.1±0.8, p<0.001; ODI: EDDT: 15.4±1.6, SOD: 29.1±1.9, p<0.001, respectively), however, there was no significant difference in VAS and ODI scores between the two groups at the last control (VAS: EDDT: 2.1±0.4, SOD: 2.4±0.5, p=0.078; ODI: EDDT: 14.6±2.1, SOD: 15.1±1.2, p=0.033, respectively). According to the modified MacNab criteria, good and excellent results were obtained in 88% of the SOD group and 92% of the EDDT group.
**Conclusions:** The study found that the long-term results of both techniques were similar. However, the Destandau technique had better early results. The endoscopic method seems to be better in terms of early return to daily activities.

**Key Words:** Destandau technique, Open discectomy, Endoscopic discectomy, Lumbar disc herniation

**Öz**

**Amaç**: Desdandau tekniği (EDDT) ve standart açık teknik (SOD) kullanılarak lomber diskektomi yapılan hastaların uzun dönem sonuçları karşılaştırıldı.
**Materyal ve Metod:** 2007-2011 yılları arasında tek seviyeli lomber diskektomi yapılan 18-70 yaş arası hastalar retrospektif olarak tarandı. Toplam 52 hasta çalışma kriterlerini karşıladı ve kullanılan cerrahi tekniğe göre EDDT grubu (n:27) ve SOD grubu (n:25) olmak üzere 2 gruba ayrıldı. Tüm hastalar Görsel Analog Skala (GAS), Oswestry Engellilik İndeksi (ODI) ve modifiye MacNab kriterleri kullanılarak karşılaştırıldı.
**Bulgular:** Ortalama takip süresi EDDT grubunda 158.2±9.2 ay, SOD grubunda 161.2±11.1 ay olarak hesaplandı. Ameliyat öncesi VAS ve ODI değerlerinin her iki grupta da benzer olduğu görüldü (sırasıyla p=0.829; p=0.120). Ameliyat sonrası erken dönemde VAS ve ODI değerleri EDDT grubunda daha düşüktü (VAS: EDDT: 2.2±0.6; SOD: 4.1±0.8, p<0.001; ODI: EDDT: 15.4±1.6, SOD: 29.1±1.9, p<0. 001, sırasıyla), ancak son kontrolde iki grup arasında VAS ve ODI skorlarında anlamlı bir fark yoktu (VAS: EDDT: 2.1±0.4, SOD: 2.4±0.5, p=0.078; ODI: EDDT: 14.6±2.1, SOD: 15.1±1.2, p=0.033, sırasıyla). Modifiye MacNab kriterlerine göre, SOD grubunun %88'inde ve EDDT grubunun %92'sinde iyi ve mükemmel sonuçlar elde edildi.
**Sonuç:** Çalışmada her iki tekniğin uzun dönem sonuçları benzer bulunmuştur. Ancak Destandau tekniğinin erken dönem sonuçları daha iyiydi. Endoskopik yöntem günlük aktivitelere erken dönüş açısından daha iyi görünmektedir.

**Anahtar Kelimeler:** Destandau tekniği, Açık diskektomi, Endoskopik diskektomi, Lomber disk hernisi

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## Introduction

Chronic low back pain that does not recover with conservative treatments not only has a negative effect on quality of life, but is also one of the main causes of disability in adults (1). Lumbar disc hernias that do not recover with conservative methods, severe pain spreading to the legs and radicular pain causing loss of strength are treated with surgical methods. Although good results have been reported from open discectomies, minimally invasive methods have currently become more widely used surgical methods. Endoscopic discectomy has started to be preferred by spine surgeons, as there is a smaller skin incision, less muscle damage, less blood loss and shorter hospital stay (2, 3).

Endoscopic discectomy procedures are performed percutaneously using the fully endoscopic method or the endoscopic-assisted discectomy method. The Destandau technique (Endospine) is one of the percutaneous endoscopic discectomy techniques. In 1993, Destandau described his own endoscopic discectomy technique, and in 1999, excellent results were reported in 78 of 91 patients (4). In a later study in 2004, it was reported that excellent results were obtained in 90% of 191 patients treated with the same technique (5).

There are many studies in the literature related to standard open discectomy and endoscopic techniques in lumbar disc hernia surgery. However, no study could be found that has compared the Destandau technique with standard open discectomy.

The purpose of this study was to compare the minimum 12-year follow-up outcomes of patients who underwent endoscopic lumbar discectomy using the Destandau method and patients who underwent standard open discectomy using quality-of-life assessment methods including VAS, ODI, and modified MacNab criteria.

## Materials and Methods

Approval for this study was granted by the Local Ethics Committee of our institution (decision no: 13, dated:11.07.2023). From the personal archives of a single experienced spine surgeon, a retrospective screening was made of patients who underwent standard open discectomy (SOD) or endoscopic lumbar discectomy with the Destandau method (EDDT) between 2007 and 2011 because of a lumbar disc hernia. From an initial sample of 98 patients following the screening, 52 patients with clinical and radiological follow-up data were included in the study. The 52 patients were separated into 2 groups as 25 who underwent SOD and 27 who underwent EDDT.

The study inclusion criteria were defined as age in the range of 18-70 years, and having undergone unilateral discectomy for a single-level lumbar disc hernia. Patients were excluded from the study if they had a history of other spinal surgery, if they had findings of bilateral radiculopathy and/or lumbar disc herniation at two or more levels, or spinal stenosis, and those who underwent reoperation for recurrence after disc surgery. The first 20 patients were also excluded as they were considered to be in the initial learning curve.

The surgical indications for SOD and EDDT were the same: 1) sciatica (Laségue test) with radicular pain not improving with 6 weeks of conservative treatment, and/or a positive femoral nerve tension test (Duncan-Ely test), and 2) the development of progressive neurological deficit together with severe radicular pain (6).

In the physical examinations of all the patients when performing the preoperative clinical and radiological evaluations, attention was paid to the conformity of the radiculopathy of the patients with the radiological neurological findings.

In the radiological evaluation, standing anterior-posterior and lateral radiographs were taken of the whole spine. Lateral radiographs of the lumbosacral region were taken with the foot in flexion and extension, in respect of instability in the lumbar region. Lumbosacral magnetic resonance imaging (MRI) study was also performed to all of the patients preoperatively.

All of the patients were called for follow-up examinations at 2 and 6 weeks postoperatively, then at 3, 6, and 12 months, and annually.

To assess quality of life, a Visual Analog Scale (VAS) and the Oswestry Disability Index (ODI) were administered to patients preoperatively, at 6 weeks postoperatively, and at the final follow-up. Patients were also evaluated according to the modified MacNab criteria at the final follow-up.

### *Surgical Technique*

The surgical procedures were performed under general anaesthesia in all the cases. The patients were positioned prone on a radiolucent operating table with both hips and knees in approximately 50°-60° flexion. Silicone pads were placed appropriately, both for bleeding control, and anti-embolism stockings were placed on both lower extremity. Following sterile draping of the surgical site, the surgical level determined with fluoroscopy and anterior-posterior and lateral radiographs was marked with a skin marker pen.

### *Endoscopic lumbar discectomy with the Destandau method*

In the Destandau method, a 1.5-2cm skin incision was made at the marked level extending 5mm lateral of the midline. Subcutaneous tissue and the fascia were opened with a no.15 scalpel. Periosteal stripping to a width of 12mm was used to elevate paraspinal muscles from the spinous process and the superior lamina and to expose the interlaminar window. The tube was placed by pushing it to the interlaminar area with trochars, and then the trochars were withdrawn. After confirmation of the entry site with fluoroscopy, the soft tissues at the end of the

tube were cleaned with a punch to provide a visual area. Bleeding control was made with bipolar cautery and a working cannula was placed within the endoscope. There are 4 portals of the working cannula: the first is 4mm for standard 0° optic, the second is 9mm at a slope of 20° to the optic portal for the working instruments, the third is 4mm as the drainage portal, and the fourth is within the nerve retractor, the depth of which can be adjusted by sliding up and down. Then a 0° optic video camera was attached to the endoscope. Resection of the inferior edge of the superior lamina and excision of the ligamentum flavum were performed using Kerrison forceps, and the dural sac and nerve root were exposed. The disc space was reached by gently retracting the nerve root medially. Performing anulotomy with a dissector and when necessary with a no. 11 scalpel, the disc space was reached and discectomy was performed. Free disc fragments were removed. The disc space was washed with isotonic saline. That sufficient decompression of the nerve root had been obtained was checked with a probe as far as the foramen. Then the tube was withdrawn together with the working cannula. The surgical site was washed with saline, bleeding control was checked, and the fascia, subcutaneous tissues, and the skin were closed anatomically (Figures 1-4).

**Figure 1**. 32-year-old male patient. MR images of the patient who was scheduled to undergo endoscopic discectomy using the Destandau technique for a lumbar disc herniation (left paracentral extruded disc herniation at L5-S1 level).

**Figure 2**. Placement of the endoscope in the L5-S1 inerlaminar space.

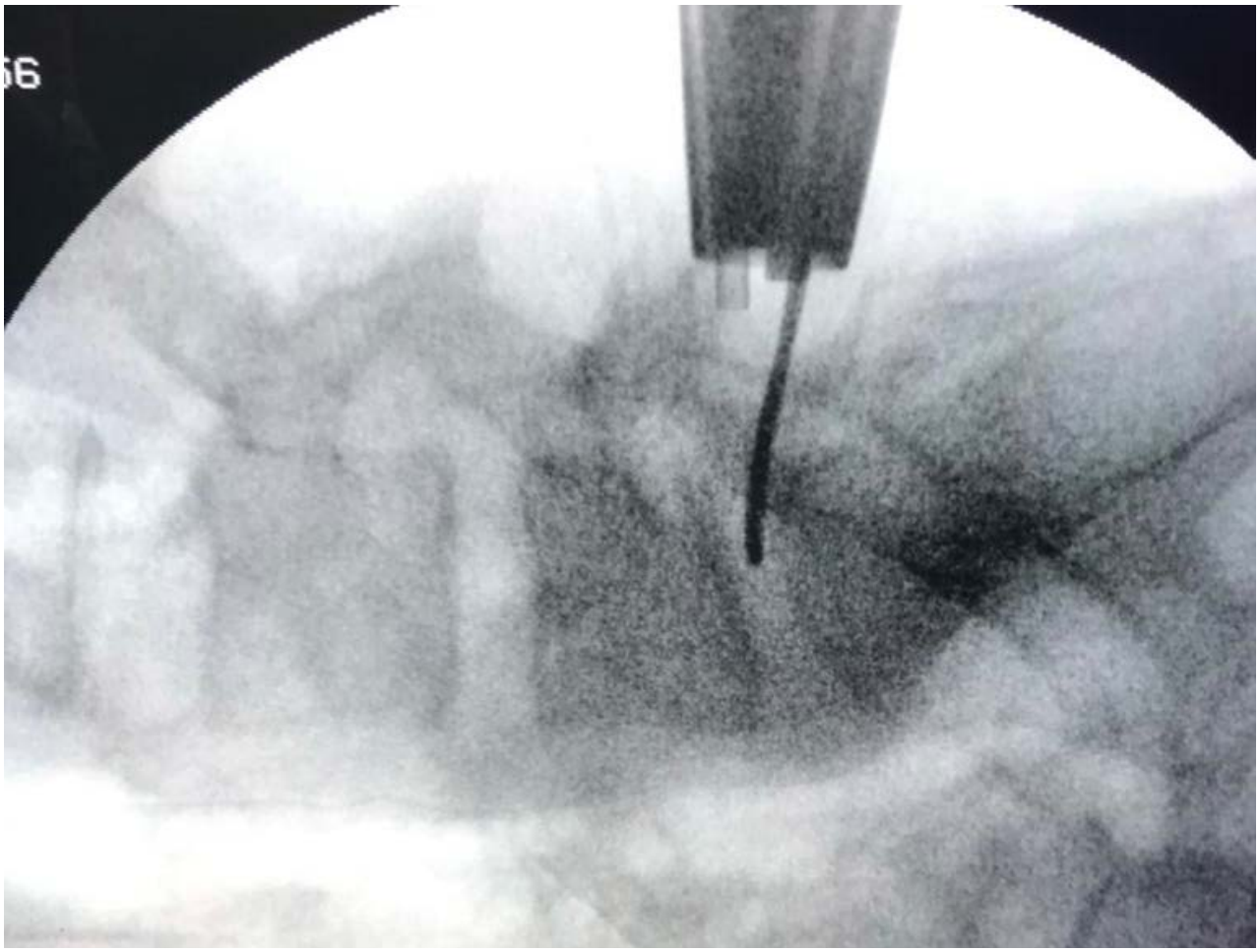

**Figure 3**. Fluoroscopic verification of the level by inserting a probe into the L5-S1 disc space.

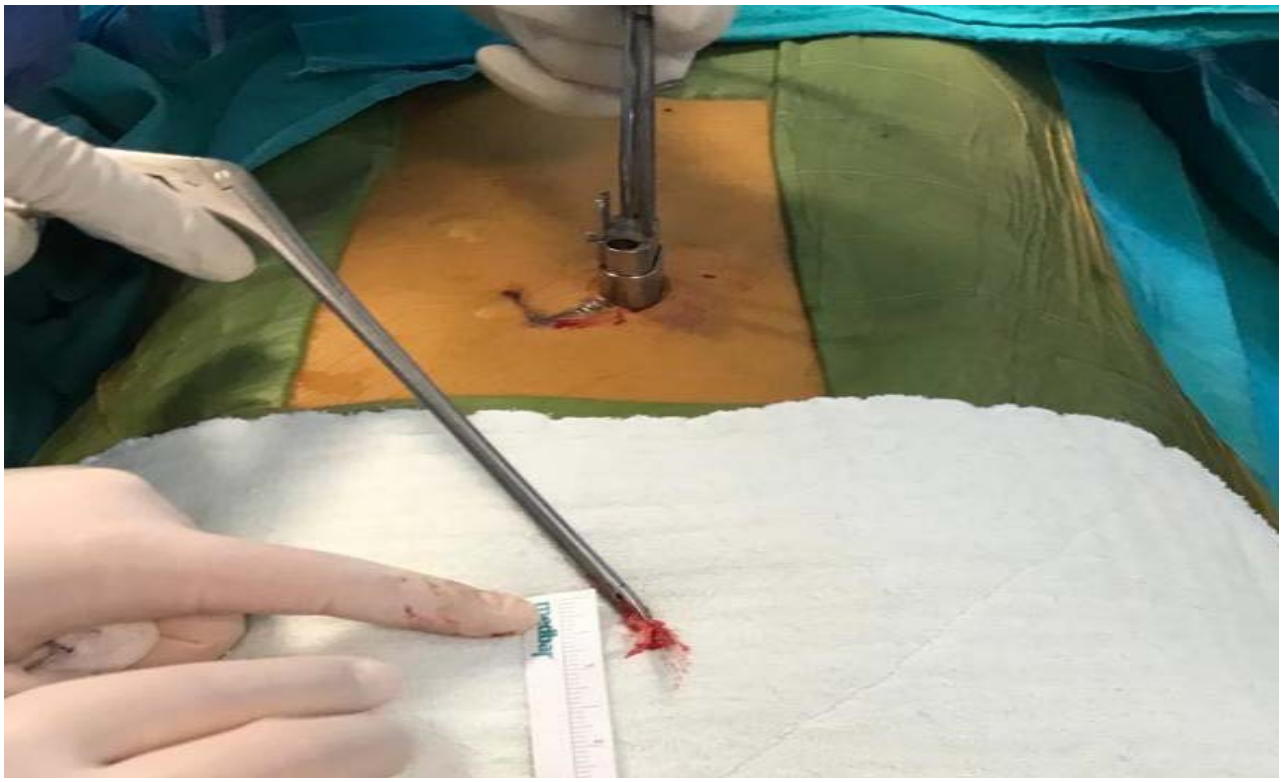

**Figure 4**. Removal of the extruded disc.

***Standard open lumbar discectomy***

For the patients undergoing standard open discectomy, the surgery level was determined with fluoroscopy, then entry was made with a 6-10cm long incision. After passing through skin, subcutaneous tissue and the fascia, the paraspinal muscles were stripped subperiosteally from the spinous process and lamina. Reaching the interlaminar space, partial superior and inferior laminectomy was performed with Kerrison forceps. Following excision of the ligamentum flavum, the nerve root was identified. With the help of a nerve hook, examination was made around the nerve root. By pushing the nerve root medially, the herniated disc was reached and removed. Entering the disc space, free disc fragments were removed. Sufficient decompression was seen to have been obtained by tracing the nerve root as far as the foramen. The surgical site was washed with isotonic saline. Bleeding control was checked then the layers were closed antomically.

Postoperative in-bed movement was permitted and at the $6^{th}$ hour, the patient was seated bedside. Patients who were hemodynamically stable were mobilised on the evening of the same day.

***Statistical Analysis***

Statistical analysis was conducted using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY, USA), and significance was determined with a threshold of $p < 0.05$. Descriptive statistics were employed to present continuous variables, including mean and standard deviation (SD), while categorical variables were expressed as numbers and percentages. To compare categorical variables across different groups, chi-squared tests were performed. To assess the normal distribution of continuous variables, both visual methods (such as histograms and probability graphs) and analytical methods (including Kolmogorov-Smirnov and Shapiro-Wilk tests) were employed. For normally distributed datasets, independent samples t-tests were utilized, whereas the Mann-Whitney U test was applied for variables with a non-normal distribution. Additionally, the Wilcoxon signed-rank test was used to compare preoperative and final data.

## Results

The 27 patients in the EDDT group comprised 11 (41%) females and 16 (59%) males with a mean age of 49.92±2.06 years (range, 18-67) and mean follow-up of 158.2±9.2 months (range,146-188). Right-side discectomy was performed on 8 (30%) patients and left-side discectomy on 19 (70%). The 25 patients in the SOD group comprised 9 (36%) females and 16 (64%) males with a mean age of 44.9±3.52 years (range, 21-70) and mean follow-up of 161.2±11.1 months (range, 151-184). Right-side discectomy was performed on 17 (68%) patients and left-side discectomy on 8 (32%). In both groups the discectomy level was L4-L5 and L5-S1 in >70% of the patients (Table 1).

**Table 1.** Demographic characteristics and basic information of the patients

| **Variables** | **SOD (n=25)** | **EDDT (n=27)** |
|---|---|---|
| **Age, year** | 44.9±3.52 (range, 21-70) | 49.92±2.06 (range, 18-67) |
| **Gender F/M, n (%)** | 9 (%36) /16 (%64) | 11 (%41) / 16 (%59) |
| **Follow-up time, month** | 161.2±11.1 (151-184) | 158.2±9.2 (146-188) |
| **Side R/L, n (%)** | 17 (%68) / 8 (%32) | 8 (%30) /19 (%70) |
| | **Level Of Discectomy** | |
| | **SOD, n (%)** | **EDDT, n (%)** |
| **L1-L2** | 1 (%4) | 1 (%3.7) |
| **L2-L3** | 1 (%4) | 3 (%11) |
| **L3-L4** | 5 (%20) | 1 (%3.7) |
| **L4-L5** | 9 (%36) | 10 (%37) |
| **L5-S1** | 9 (%36) | 12 (%44) |

*SOD: standard open discectomy; EDDT: endoscopic discectomy with Destandau's technique; F: female; M: male; R: right; L: left*

The mean VAS values of the EDDT patients were observed to be 8.1±0.8 (range, 6-10) preoperatively, 2.2±0.6 (range, 1-4) at 6 weeks postoperatively, and 2.1±0.4 (range, 1-3) at the final follow-up examination. The mean VAS values of the SOD patients were observed to be 8.2±0.6 (range, 6-10) preoperatively, 4.1±0.8 (range, 2-6) at 6 weeks postoperatively, and 2.4±0.5 (range, 1-4) at the final follow-up examination (Table 2). When comparing the VAS values between the two cohorts, it was observed that the preoperative scores were similar ($p=0.829$). At the early post-operative assessment at week 6, a statistically significant reduction in VAS values was observed in the EDDT group ($p<0.001$). However, there was no statistically significant difference between the two groups at the final follow-up assessment ($p=0.078$) (Table 2).

**Table 2.** Statistical analysis of VAS values for EDDT and SOD patients (*Mann Whitney U test)

| Variables | SOD (n=25) | EDDT (n=27) | p |
|---|---|---|---|
| **PO** | | | 0.829* |
| **Mean±sd** | 8.2±0.6 | 8.1±0.8 | |
| **Median(min-max)** | 8.3 (6-10) | 8.6 (6-10) | |
| **EPO** | | | <0.001* |
| **Mean±sd** | 4.1±0.8 | 2.2±0.6 | |
| **Median(min-max)** | 4.3 (2-6) | 2.4 (1-4) | |
| **LC** | | | 0.078* |
| **Mean±sd** | 2.4±0.5 | 2.1±0.4 | |
| **Median(min-max)** | 2.6 (1-4) | 2.3 (1-3) | |

*SOD: standard open discectomy; EDDT: endoscopic discectomy with Destandau's technique; PO: preoperative; EPO: early postoperative; LC: last control; ODI: oswestry disability index*

The ODI values of the EDDT patients were determined to improve from mean 69.2±2.1 (range, 61-79) preoperatively to 15.4±1.6 (range, 10-29) at 6 weeks postoperatively and mean 14.6±2.1 (range, 8-29) at the final follow-up examination. The ODI values of the SOD patients were determined to be mean 68.7±1.6 (range, 60-79) preoperatively, 29.1±1.9 (range, 16-39) at 6 weeks postoperatively and 15.1±1.2 (range, 10-33) at the final follow-up examination (Table 3). When examining the ODI scores within the two different study cohorts, it was apparent that the preoperative scores showed a significant degree of similarity (p=0.120). At the first post-operative assessment at week six, a statistically significant reduction in ODI scores was observed in the EDDT-treated cohort (p<0.001). However, there was no statistically significant difference between the two study cohorts at the final follow-up assessment (p=0.033) (Table 3).

**Table 3.** Statistical analysis of ODI values for EDDT and SOD patients (*Mann Whitney U test)

| Variables | SOD (n=25) | EDDT (n=27) | p |
|---|---|---|---|
| **PO** | | | 0.120* |
| **Mean±sd** | 68.7±1.6 | 69.2±2.1 | |
| **Median(min-max)** | 69.1 (60-79) | 69.6 (61-79) | |
| **EPO** | | | <0.001* |
| **Mean±sd** | 29.1±1.9 | 15.4±1.6 | |
| **Median(min-max)** | 31.3 (16-39) | 16.9 (10-29) | |
| **LC** | | | 0.033* |
| **Mean±sd** | 15.1±1.2 | 14.6±2.1 | |
| **Median(min-max)** | 16.1 (10-33) | 14.9 (8-29) | |

*SOD: standard open discectomy; EDDT: endoscopic discectomy with Destandau's technique; PO: preoperative; EPO: early postoperative; LC: last control; ODI: oswestry disability index*

In the evaluations made acording to the modified MacNab criteria, the results obtained in the SOD group were evaluated as excellent in 19 (76%), good in 2 (12%), fair in 1 (4%) and poor in 2 (8%). In the EDDT group, the results were evaluated as excellent in 22 (81%), good in 4 (11%), fair in 1 (3.7%) and poor in 1 (3.7%) (Table 4).

Incidental dural tear was seen in the EDDT group, which did not require repair, and with tight closure of the fascia, no problems were seen during follow-up of the patient. In 1 patient, a symptomatic herniated disc recurred in the same localization as the surgery at 3 months postoperatively. Follow-up was conservative as the patient refused surgery.

In the SOD group, repair of a dura injury was performed in a patient. In 2 patients, recurrence of symptomatic disc hernia occurred at 6 and 9 months, respectively. Revision discectomy was performed to a patient and the other was followed up conservatively.

**Table 4.** Results of evaluation according to modified MacNab criteria.

| Variables | SOD n (%) | EDDT n (%) |
|---|---|---|
| **Excellent** | 19 (%76) | 22 (%81) |
| **Good** | 3 (%12) | 4 (%11) |
| **Fair** | 1 (%4) | 1 (%3.7) |
| **Poor** | 2 (%8) | 1 (%3.7) |

*SOD: standard open discectomy; EDDT: endoscopic discectomy with Destandau's technique;*

## Discussion

In this study, compared at least 12-year clinical outcomes of patients who underwent standard open lumbar discectomy with endoscopic lumbar discectomy using the Destandau method.

Discectomy surgery is a frequently applied treatment method for symptomatic lumbar disc hernias. For many years, standard open discectomy was applied as the gold standard in lumbar disc hernias, and success rates have been reported as mean 73% (7).

In 1975, Sadahisa Hijikata first described the percutaneous endoscopic discectomy method. It was reported that the percutaneous endoscopic discectomy procedure can be performed to patients under local anaesthesia or general anaesthesia as outpatients or inpatients. It was also reported that patients can be discharged after 24 hours or staying one night (8). It has been shown that 72.2% of patients undergoing microdiscectomy and 95% of patients undergoing endoscopic discectomy can return to their previous occupation. In studies that have compared endoscopic discectomy and microdiscectomy, the endoscopic method has been reported to be better in respect of both muscle damage and nerve conduction studies (9-11).

Compared to open surgery, there is less soft tissue cutting during surgery in the endoscopic method and less postoperative pain with less blood loss. Thus early postoperative ambulation results in a shorter stay in hospital and an earlier return to work. In addition, as it is a mobile system that can be controlled with both hands, it provides a good surgical field of vision and because it can be fixed in the upper and lower positions, it allows safe surgery. Moreover, the learning curve develops with experience such as accustomisation to the 2-dimensional view of the endoscopic camera, orientation, depth perception, and hand-eye-co-ordination. Therefore, the first 20 cases, which were at the stage of the learning curve, were excluded from this study.

The Destandau method is one of the techniques used in endoscopic disc surgery. In his first cases of endoscopic disc surgery, Destandau reported a success rate of 78% to 90%. While the existing literature includes studies reporting that 78% to 96% of patients achieve excellent results and return to work using the Destandau method, there is a notable lack of long-term studies comparing its results to those of open discectomy (3, 12-17).

In a study by Dey et al., 614 patients applied with discectomy with the Destandau technique were evaluated at 24 hours, 1 month, and 1 year postoperatively according to VAS values, ODI scores and the MacNab criteria. Most patients were mobilised in the evening of the same day, and 51% were discharged on the same day, 44% on the first day postoperatively, and 5% on the second day. According to the modified MacNab criteria, the results were evaluated as 78% excellent, 19% good, 3% fair, and 1% poor. At 1 year postoperatively, 96% of patients reported that pain had completely recovered (13). In the current study, the mean follow-up of our patients was longer compared to the study of Dey et al. (SOD: 161.2±11.1; EDDT: 158.2±9.2 months). However, our number of patients was small (52 patients in total) and our study is a comparative study with standard open discectomy. In our study, patients who underwent Destendau technique had better outcomes in terms of VAS and ODI values at early postoperative follow-up (week 6), but there was no significant difference between the two groups in terms of VAS and ODI values at long-term follow-up (Table). According to the modified MacNab criteria, Dey et al. reported 97% excellent good outcome after a mean follow-up of 36.08 months, whereas in our study 88% of SOD and 92% of EDDT patients had excellent good outcome at long-term follow-up.

Kaushal et al. presented the results of 300 patients who underwent endoscopic discectomy using the Destandau technique with a minimum follow-up of 12 months and a maximum follow-up of 24 months (14). In 5 patients there was a minor dura tear, superficial delayed wound healing in 20, and discitis in 6. Of the total patients, 285 were discharged from hospital in the evening of the same day as surgery. The treatment applied was reported to be successful according to the MacNab criteria and other evaluation scales, and the ability of the patients to return to their previous work. The results were evaluated as 90% excellent and good, 8% fair, and 2% poor. Kaushal et al. presented the results of a study that focused primarily on short-term outcomes. In contrast, our study found that 92% of patients who underwent discectomy using the Descandau method had excellent or good results; however, these results were evident only after a minimum follow-up of 12 years. In our study, one patient in the EDDT group experienced a small intraoperative dural tear that did not require surgical intervention. Subsequently, the fascia was securely closed and no complications were observed during the follow-up period. In a separate case within this group, a symptomatic disc herniation recurred after 3 months. However, the patient declined further surgical intervention and was managed conservatively. In the SOD group, one patient experienced a dural injury requiring repair. In addition, two patients experienced recurrence of symptomatic disc herniation at 6 and 9 months postoperatively, respectively. As a result, one patient underwent revision discectomy, while the second patient elected conservative management.

Similarly, Mostofi et al. conducted a study of 359 patients evaluating lumbar discectomy using the Destandau method (15). Their results showed an impressive 95% rate of excellent or good results when judged by the MacNab criteria. However, it is important to note that these results are short term, similar to the studies conducted by Dey (13) and Kaushal (14).

There are no long-term studies in the literature directly

comparing the Destandau technique with the open discectomy technique. In a multicenter retrospective study published in 2021, Rajamani et al. conducted a comparative analysis of the 2-year outcomes of various discectomy procedures (3). These procedures included open discectomy, microdiscectomy, microendoscopic discectomy, interlaminar endoscopic lumbar discectomy, transforaminal endoscopic lumbar discectomy, and the Destandau technique. According to the data presented in this study, the Destandau method was associated with shorter operative durations, reduced hospitalization periods, smaller incision sizes, and diminished blood loss in comparison to open discectomy. In the study, it was reported that during the 6-month follow-up period, there was a statistically significant elevation in VAS back scores for both open discectomy and microdiscectomy procedures when compared with the Destandau technique and other discectomy methods. However, there were no statistically significant differences observed in VAS leg scores and ODI scores among all discectomy methods at this time point. Furthermore, at the second-year evaluation, the study findings indicated that there were no significant differences observed in both back and leg VAS scores and ODI scores among all discectomy methods (3). In Rajamani's study, the reported outcomes spanned 6 months, 1 year, and 2 years. While endoscopic approaches exhibited comparable results to open techniques in the medium and long term, they appeared to yield superior outcomes in the immediate postoperative phase. In our own investigation, during the early postoperative period, notably better results were observed in terms of ODI and VAS scores with the Destandau method as compared to open discectomy. However, upon final evaluation, VAS and ODI scores, as well as modified MacNab scores, demonstrated no significant differences between the two approaches.

In the current study, the mean VAS values at 6 weeks postoperatively were 2.2±0.6 in the patients who underwent discectomy with the Destandau technique, and 4.1±0.8 in the patients who underwent standard open discectomy. The difference between the two groups was determined to be statististically significant (Table 2). At 6 weeks postoperatively, there was seen to be a greater decrease in the level of pain in the EDDT group patients compared to the SOD patients. This result was considered to be important in respect of both reducing the need for postoperative analgesia and in enabling an early return to work.

When ODI scores were examined in the current study, preoperative scores were similar between the two groups, and at 6 weeks postoperatively, the mean score in the EDDT group was found to be significantly lower than that in the SOD group (Table 3). The significant decrease in ODI values at 6 weeks post-operatively in the patients who underwent discectomy using the Dandau technique is important in terms of returning to previous activity levels in the early post-operative period (Table 3). When the results were evaluated according to the MacNab criteria, it was seen that excellent results were obtained in 81% and good results in 11% of the EDDT patients and excellent results in 76% and good results in 12% of the SOD patients.

This study had several limitations, primarily due to its retrospective design and the relatively small patient cohort. A second limitation was the lack of randomization in the selection of surgical techniques, as the choice was made by the patients themselves. Finally, important data such as duration of surgery and blood loss could not be included in the study due to lack of documentation.

In conclusion, the results of this study demonstrated that although the long-term clinical results were similar for both the endoscopic lumbar discectomy with the Destandau technique and the standard open lumbar discectomy, the endoscopic lumbar discectomy with the Destandau technique seems to be more advantageous in terms of less pain in the early postoperative period and an early return to daily life. However, prospective, controlled studies with larger sample sizes are needed to determine whether the Destandau technique is superior to alternative open or endoscopic approaches.

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***Ethical Approval:*** *Approval for this study was granted by the Local Ethics Committee of our institution (decision no: 13, dated:11.07.2023).*

***Author Contributions:***
*Concept: H..G, A.C.B.*
*Literature Review: H.G., A.C.B.*
*Design : H.G., A.C.B.*
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