LESS

Original Article

Laparosc Endosc Surg Sci 2022;29(2):117-122
DOI: 10.14744/less.2022.32032

Epiduroscopy in the treatment of chronic low back pain: A retrospective study

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ABSTRACT

Introduction: Chronic low back pain is a condition that impairs people's quality of life, has an indirect impact on society, and results in economic labor losses. The results of epiduroscopy performed in our clinic for chronic low back pain were evaluated in this study.

Materials and Methods: Patients who were admitted to our clinic between January 1, 2018, and January 1, 2022, and underwent epiduroscopy due to chronic low back pain were included in this study. Medical records of these patients were reviewed retrospectively, and their pain was assessed using the visual analog scale (VAS) scores in the files, as well as their functional status according to the Oswestry disability index (ODI), and their satisfaction using the Odom criteria. The VAS and ODI values of patients who had epiduroscopy were assessed before, after, and the 2nd, 1st, and the 3rd month after the procedure. The patients were divided into three groups according to the pathology (Group spinal stenosis-SS, Group lumbar disk hernia-LDH, and Group LDH+SS-SLD).

Results: Of the 192 patients, 114 (59.4%) were female and 78 (40.6%) were male. There were 78 patients (40.6%) in Group SS, 62 patients (32.3%) in Group LDH, and 52 patients (27.1%) in Group SLD. There was no statistical difference seen between the groups in pre-operative and post-operative VAS values ($p>0.05$). The 3rd month post-operative data demonstrated no statistical differences in patient satisfaction due to epiduroscopy between groups ($p>0.05$). There was a statistically significant improvement in pre-operative and post-operative VAS and ODI scores ($p<0.05$).

Conclusion: Epiduroscopy techniques produce excellent results in managing low back pain in eligible patients.

Keywords: Epiduroscopy, Low back pain, Odom criteria, Oswestry disability index, Visual analog scale

Introduction

Approximately 80% of people have had low back pain at least once during their lives.[1] This is a significant condition that disrupts people's lives, causes labor losses, and can result in high costs in terms of diagnosis and treatment.[2] Many cases of low back pain may heal with no treatment. However, up to 2–8% of patients requires medical attention and responds well to conservative treatment.[3] Chronic low back pain is defined as pain that lasts longer than 3 months. Chronic low back pain is the second most frequent pain condition among those under the age of 45.[4]

Received: 19.05.2022 **Accepted:** 04.06.2022
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There are a variety of societal, psychological, physical, and professional factors that have an impact on low back pain. Non-specific low back pain is diagnosed in around 85% of patients with low back pain.[5]

In most cases, low back pain is caused by mechanical factors such as spinal stenosis, spondylosis, facet joint disease, or discopathy, as well as non-mechanical factors such as neoplasia, inflammatory, and viral factors.[6]

According to a study, facet joint disorders account for 31% of chronic low back pain, sacroiliac joint dysfunction accounts for 18%, and lumbar disks account for 42%.[7]

Rather than entirely eradicating pain, the primary goal of chronic low back pain treatment should focus on managing it. Managing this condition allows patients to do their daily activities while also removing and/or preventing physical impairment.[4]

Pharmacological, interventional, and surgical treatments are all options for chronic low back pain treatment.

Because of the extensive usage of imaging systems and the use of very small endoscopes, epiduroscopy has become one of the interventional approaches used today. Epiduroscopic operation (epiduroscopy) is a minimally invasive procedure for the imaging of the epidural space. There have been studies on epiduroscopy since the 1930s.[8]

Using spinal epiduroscopy, the epidural space can be visualized, and if epidural adhesions are present, percutaneous adhesiolysis can be performed. This method enables 3D imaging, allowing epidural adhesions to be detached and medication injections into the spinal canal. Discectomy can also be performed with an epiduroscope in eligible patients with lumbar disk herniation, thanks to the development of laser probes. Epiduroscopy is a technique that allows us to see as well as treat the source of low back pain.[9]

During epiduroscopy, patients undergo local anesthesia with sedoanalgesia, and the procedure is started with the patient in the supine position, under sterile conditions, using fluoroscopy. First, a guide needle and then a guide wire are used to insert the introducer needle from the hiatus sacrastrist. The fiber-optic endoscope is then sent through the introducer, and fluoroscopy is used to reach the target area. Isotonic solution is used to cleanse the treatment region. If there are adhesions, they are detached using both isotonic solution and mechanical movement of the endoscope. The YAG laser can be used to reduce disc protrusion if it is present and planned. Epiduroscopic intervention has been used successfully in many studies.[10,11]

The aim of this study was to share the treatment outcomes of patients who were admitted to our clinic with chronic low back pain, who had never had spinal surgery previously, and who underwent epiduroscopy.

Materials and Methods

Our study included patients who were admitted to our clinic with chronic low back pain between January 1, 2018, and January 1, 2022, had never had spinal surgery before, were diagnosed with spinal stenosis and lumbar discopathy, and underwent epiduroscopy. The medical records of the patients were evaluated retrospectively. The pain was assessed using the visual analog scale (VAS), functional status was assessed using the oswestry disability index (ODI), and satisfaction with the Odom criteria. Pre-operative and post-operative 2nd week, 1st, and 3rd month VAS and ODIs, as well as post-operative 3rd month Odom criteria, were examined in patients who had epiduroscopy (Fig. 1).

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee

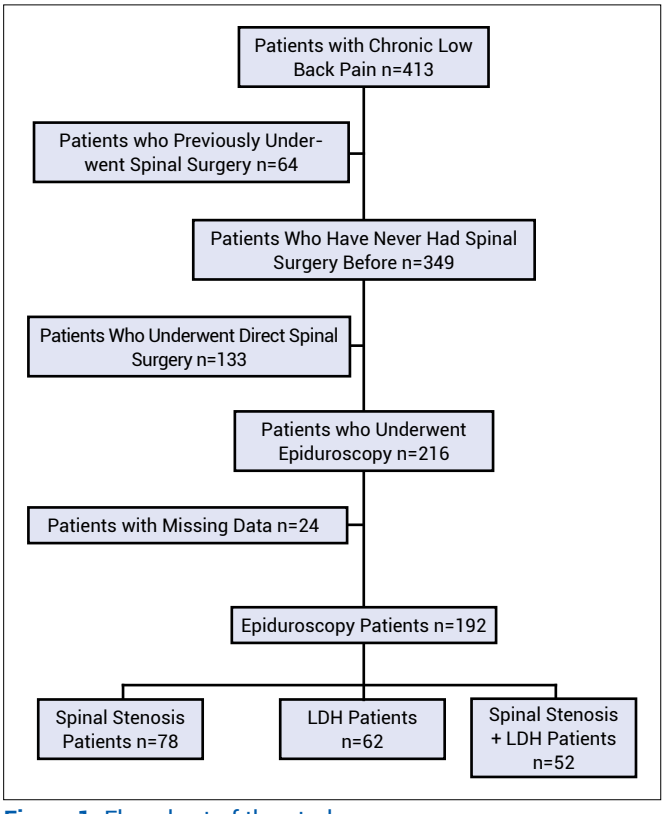

Figure 1. Flowchart of the study.

and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. The study was approved by the Clinical Studies Bioethics Committee of the Medical Faculty of Kahramanmaras Sutcu Imam University (Date April 26, 2022; Session Number: 2022/14; Decision No.: 04).

Statistical Analysis

The statistical analysis was performed using IBM Statistical Package for the Social Sciences software version 20.0. Using G*Power 3.1.1 software, it was determined that this study will require at least 112 patients (power = 95%, α = 0.05). The data were tested for normal distribution using a Kolmogorov–Smirnov test and variance homogeneity analysis. A Chi-square analysis was used to evaluate categorical data, while an ANOVA was utilized to compare numerical data and for repeated measures. To compare numerical data between groups, a post hoc Tukey HSD test was performed. Numbers (n) and percentages (%) were used to present categorical data, while mean orical data, while a (minimum–maximum values) were used to provide numerical data. P<0.05 was considered statistically significant.

Results

A total of 192 patients met the inclusion criteria, of which 114 (59.4%) were female, while 78 (40.6%) were male. Based on their complaints at the time of admission to the hospital, 78 patients (40.6%) had only spinal stenosis (Group SS) and 62 patients (32.3%) had only LDH (Group LDH). In 52 (27.1%) patients, both spinal stenosis and LDH (Group SLD) were present together. Demographic data and distribution of patients by gender are presented in Table 1.

There was no difference between pre-operative and post-operative VAS scores between groups (p>0.05) (Table 2). There was no difference between pre-operative and post-operative ODI scores between groups (p>0.05) (Table 2). The results of the post-operative 3rd month indicated that

Table 1. Distribution of demographic data by gender

	Male	Female	p
Age (year)	60.77 (33–85)	62.65 (28–91)	0.265
Condition			
Spinal stenosis	23 (12%)	55 (28.6%)	0.018*
Lumbar disk herniation	27 (14.1%)	35 (18.2%)	
Spinal stenosis+Lumbar disk herniation	28 (14.6%)	24 (12.5%)	
Total	78 (40.6%)	114 (59.4%)	
VAS score			
Pre-operative	7.47 (5–10)	7.35 (4–10)	0.531
Post-operative day 0	5.83 (3–9)	5.94 (3–8)	0.533
Post-operative 15th day 0	2.60 (1–5)	2.89 (1–5)	0.028
Post-operative 1st month	1.44 (1–3)	1.89 (1–4)	<0.001*
Post-operative 3rd month 1st month	2.59 (1–4)	3.18 (2–5)	<0.001*
ODI Score			
Pre-operative	61.58 (40–84)	57.67 (30–88)	0.027
Post-operative day 0	44.45 (28–82)	43.61 (21–68)	0.592
Post-operative 15th day 0	21.01 (8–42)	22.03 (8–48)	0.347
Post-operative 1st month	10.73 (5–29)	14.56 (6–33)	<0.001*
Post-operative 3rd month 1st month	21.51 (7–39)	24.73 (12–42)	0.002*
Satisfaction according to the modified ODOMiedcriteria			
Excellent	13 (6.8%)	12 (6.2%)	0.549
Good	50 (26%)	74 (38.5%)	
Fair	14 (7.3%)	25 (13%)	
Poor	1 (0.5%)	3 (1.6%)	

p<0.05 is considered statistically significant; *p<0.05 according to the Student's t-test.

Table 2. Patient's age, VAS, and ODI scores, and satisfaction rates according to modified ODOM criteria by groups

	Group SS	Group LDH	Group SLD	p
Age	71.06±7.49 (52–91)	49.71±7.65 (28–62)	62.63±5.08 (41–71)	<0.001
VAS				
Pre-operative	7.53±1.36 (4–10)	7.11±1.4 (5–9)	7.56±1.18 (5–9)	0.119
Post-operative day 0	6.03±1.18 (3–8)	5.76±1.11 (4–9)	5.87±1.12 (3–8)	0.381
Post-operative 15th day 0	2.86±0.91 (2–6)	2.79±0.94 (2–6)	2.62±0.89 (1–5)	0.326
Post-operative 1st month	1.83±0.76 (2–6)	1.68±0.70 (1–3)	1.54±0.67 (1–3)	0.07
Post-operative 3rd month 1st month	3.03±0.09 (2–5)	2.85±0.85 (1–5)	2.9±0.93 (1–5)	0.471
p	<0.001[a]	<0.001[a]	<0.001[a]	
ODI				
Pre-operative	60.18±12.65 (26–68)	56.68±12.59 (38–84)	60.94±12.48 (38–82)	0.141
Post-operative day 0	44.65±10.45 (26–68)	42.87±11.04 (24–82)	44.19±10.13 (21–62)	0.601
Post-operative 15th day 0	22.06±7.29 (10–47)	21.5±8.06 (11–48)	21.08±7.46 (8–40)	0.761
Post-operative 1st month	14.19±6.29 (5–33)	12.55±5.75 (5–29)	11.77±5.34 (6–28)	0.56
Post-operative 3rd month 1st month	24.05±6.75 (12–42)	22.5±7.36 (7–42)	23.58±7.62 (9–41)	0.442
p	<0.001[a]	<0.001[a]	<0.001[a]	
Patient satisfaction according to the Modified ODOM criteria				
Excellent	10 (5.2%)	6 (3.1%)	9 (4.7%)	0.642
Good	51 (26.6%)	38 (19.8%)	35 (18.2%)	
Fair	16 (8.3%)	16 (8.3%)	7 (3.6%)	
Poor	1 (0.5%)	2 (1%)	1 (0.5%)	

P<0.05 is considered statistically significant, [a]According to the repeated measures ANOVA, p<0.05, [b]According to the Mann–Whitney U-test, p<0.05.

patient satisfaction in terms of epiduroscopy did not differ between patient groups (p>0.05). Intragroup evaluations showed statistically significant improvement in VAS and ODI scores before and after the procedure (p<0.05 for all groups) (Table 2).

According to the evaluation of patient satisfaction at the post-operative 3rd month, the excellent and good results of the surgical application with epiduroscopy were higher in all groups than the moderate and bad results, and patient satisfaction was better. However, there was no difference in patient satisfaction with the application of epiduroscopy according to the disease type (Table 2 and Fig. 2).

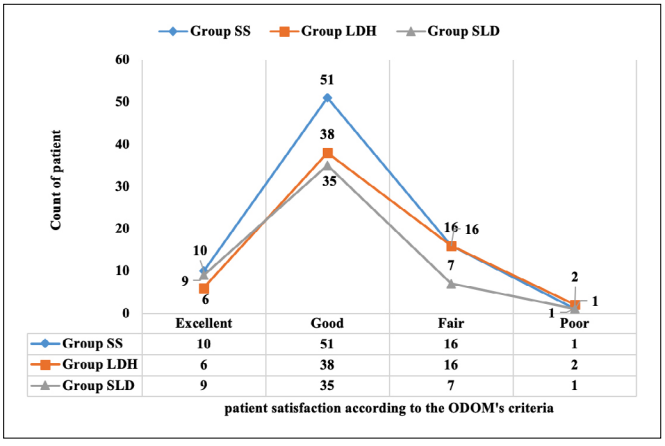

Figure 2. Patient satisfaction according to Modified Odom Criteria at post-operative 3rd month according to the groups.

Discussion

Low back pain is a major problem that has a negative impact on people's lives. Although it has individual impacts, it also has a huge social impact due to functional loss, low quality of life, and workforce loss.[12]

Recurrent attacks are reported by 80% of patients. Although 90% of individuals heal within 3 months, 5–15% acquire chronic low back pain. Spine-related medical conditions are the most common among those under the age of 45, resulting in significant labor and economic loss.[13,14]

Epiduroscopy, one of the interventional procedures for the management of low back pain, is currently being utilized successfully in many clinics. Percutaneous treatments are the preferred approaches for managing low back pain.

In this study, we evaluated the change in the quality of life of patients undergoing posterior epiduroscopy for chronic low back pain. The results showed significant increases in patients' quality of life and patient satisfaction after epiduroscopy.

Epiduroscopy is a relatively new minimally invasive technique for treating chronic low back pain. Although the number of prospective studies on the effects of epiduroscopy is limited, retrospective studies have major clinical and financial implications.[15-17]

Very good results were obtained in the studies on the treatment of low back and radicular pain caused by discopathy, and it was preferred as a good treatment option. [18] Patient satisfaction rates were also shown to be high in satisfaction scale studies.[19]

Conclusion

Interventional pain treatments for the lumbar region are becoming increasingly popular. It should not, however, be overlooked that treatment plans should be based on multidisciplinary applications. Choosing and applying the right treatment with the right indication is critical for enhancing the likelihood of treatment success as well as improving patient's quality of life by increasing their satisfaction. For patients who do not respond to conservative treatment, the interventional techniques to be used before surgery should be chosen based on the patient's and diseases clinical characteristics, with the least invasive option being used first. Epiduroscopic procedures improved patient satisfaction and quality of life, as shown in our study.

In individuals who are eligible for this treatment, as observed in our study, excellent outcomes are obtained in the management of low back pain.

Disclosures

Ethichs Committee Approval: The study was approved by the Clinical Studies Bioethics Committee of the Medical Faculty of Kahramanmaras Sutcu Imam University (Date April 26, 2022; Session Number: 2022/14; Decision No.: 04).

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Authorship Contributions: Concept – E.C.K., K.Z.Y., A.A.B.; Design – E.C.K., K.Z.Y.; Supervision – E.C.K., K.Z.Y.; Materials – E.C.K., K.Z.Y.; Data collection and/ or processing – E.C.K.; Analysis and/ or interpretation – E.C.K., A.A.B.; Literature search – E.C.K., A.A.B.; Writing – ECK, AAB; Critical review – E.C.K., K.Z.Y., A.A.B.

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