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Three-year Follow-Up Results of Lumbar Microendoscopic Discectomy (MED): A Prospective Study in 150 Patients

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Abstract

Background Data: The goal of all described surgical techniques to treat lumbar disc prolapse is removing the offending disc material, decompressing the nerve root, and relieving neurologic symptoms while avoiding complications. The goal of minimum invasiveness is to minimize the added morbidity of a larger exposure; including the creation of perineural scarring. Microendoscopic discectomy (MED) is a minimally invasive technique to treat lumbar disc prolapse. It is unique in that it combines open surgical principles with endoscopic technology. Follow-up will show whether MED will improve upon the long-term results of the "gold standard" procedures.

Purpose: To evaluate the efficacy of lumbar MED, regarding results, safety, complications, stability of effectiveness, incidence of recurrence, instability and redo surgeries after 3 years of follow up.

Study Design: A prospective clinical case study

Patients and Methods: We report 150 patients with lumbar disc prolapse, admitted at the Neurosurgery Department; Alexandria Main University Hospital and operated with MED technique. Patients were followed for 3 years. Clinical and radiological data were collected preoperatively and postoperativly. The degree of pain and disability were assessed using VAS and ODI. The length of the incision, the duration of surgery, and the average operative blood loss were calculated. Patients were followed at 2 weeks, 3 months, 1 year and 3 years.

Results: This study included 150 patients; with 162 levels operated. 138 patients (92 %) had single level and 12 patients (8%) had double level surgery. L4-5 was the most common level. The mean duration of surgery was 55.0 minutes. The mean blood loss was 40.0 cc. The mean duration of hospital stay was 1.3 day. 81.3% of patients returned to their work in less than four weeks. The average length of skin incision was 2.38 cm. Intraoperative complications included four dural tears (2.6%), one (0.6%) pseudomeningocele, one (0.6%) partial nerve root injury (L5 root), and 3 (2%) superficial wound infection. No patient had postoperative instability or recurrences in the follow up period. There was a statistically significant difference between preoperative and postoperative VAS and ODI in the follow up evaluations (at 2 weeks, 3 months, 1 year & 3 years) (P=<0.001).

Conclusion: MED technique allowed nerve root decompression; with minimal complications and preserving normal anatomy, with faster recoveries. For surgeons accustomed to performing endoscopic surgery, the use of MED is a safe and reliable alternative to microscopic discectomy. (2017ESJ124)

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Keywords: lumbar discectomy, microendoscopic discectomy, recurrent disc, minimally invasive surgery, Endospine

Introduction

Open discectomy was considered as the gold standard for the treatment of lumbar disc prolapse by many authors[9,35], and the majority of series[2,6,12,14-16,18,36,42,44,45,47,48,51] reported satisfactory results in 75 to 95% of patients. Though the results of conventional discectomy are equally good, microdiscectomy introduced by Yasargil and Caspar (1977) is now considered the gold standard. The reported satisfactory results of microdiscectomy also range between 88 to 98.5% of patients.[10,21,25] Both procedures are time-tested giving good surgical results in patients having disc prolapse.

MED introduced by Foley et al,[11] combines standard lumbar microsurgical techniques with an endoscope, enabling surgeons to successfully address disc free-fragments and lateral recess stenosis. The endoscopic approach allows even smaller incisions and less tissue trauma This prevent the occurrence of perineurial scarring that makes surgery for recurrent disc prolapse feasible, compared with standard open microdiscectomy[3]. Because MED procedure causes significantly less iatrogenic injury to the paraspinal musculature, it potentially provides additional long-term benefits over conventional open procedures, it decreases the incidence of incidental durotomy due to limited exposure of neural tissue and this is due to preserving anatomical pattern and limited maneuvers. Incidental durotomy is considered a major complication with spine surgeries that ranges between 1.6% to17.4% per complexity of surgery[40]. Many reports[4,30,33,37,49] have proved the efficacy of MED with overall comparable results. Long term follow-up will show whether this technique will improve upon the long-term results of the "gold standard" procedures.

Our study has been designed to assess the efficacy of MED as one of the ongoing effort to add more evaluation of this introduced procedure.

Patients and Methods

This is a prospective study included 150 patients suffered from lumbar disc prolapse and admitted at the Neurosurgery Department, Alexandria Main University Hospital. We excluded patients with spondylolisthesis, cauda equina syndrome, multi-level pathology, or the presence of an associated pathology such as acute inflammation, tumor, and infection. Patients follow up period was 3 years.

Clinical, radiological and operative data were collected preoperatively and postoperatively. The degree of pain and disability were assessed pre-operatively using Visual Analogue Scale (VAS) and Oswestry Disability Index (ODI). Preoperative radiological evaluation included plain X-ray of the lumbosacral spine (antero-posterior, lateral neutral and dynamic views), and MRI of the lumbosacral spine. All patients were surgically treated with Destandau mobile microendoscopic system (Endospine, Karl Storz, Tuttlingen, Germany). The length of the incision, the duration of surgery, and the average operative blood loss were calculated.

Immediate postoperatively the degree of pain and disability were reassessed using VAS and ODI. The duration of hospital stay and the post operative analgesia requirements were calculated. Plain X-rays were repeated. Follow up was done at 2 weeks, 3 months, 1 year and 3 years. The degree of pain and disability were reassessed using VAS and ODI. Patients were followed up either at the out patients clinic or contacted by either phone or email. Plain X-rays, MRI and/or Computerized tomography (CT) of the lumbosacral spine were requested whenever indicated. (Figures 2,3)

The Endoscope: (Figure 1)

The microendoscopic system (Endospine, Karl Storz, Tuttlingen, Germany) is movable, the cone shaped operating tube and working insert are not fixed to the operating table and can remain erect and well balanced in the operative field. The working insert has three channels: an 8 mm working channel, a 4 mm suction channel, and a 4 mm telescope channel. During surgery the operating tube and working insert can be moved and adjusted by surgical instruments and/or suction, resulting in spontaneous movement of the surgical field, which is convenient for accessing the decompression region.

Data Analysis:

Data was fed to the computer and analyzed using IBM SPSS software package version 20.0. Qualitative data was described using number and percent. Quantitative data was described using range

(minimum and maximum) mean and standard deviation for normally distributed data while abnormally distributed data was expressed using median. The distributions of quantitative variables were tested for normality using Kolmogorov-Smirnov test, Shapiro-Wilk test and D'Agstino test, also Histogram and QQ plot were used for vision test. For normally distributed data, comparisons between the different periods were done using ANOVA with repeated measures and Post Hoc test was assessed using Bonferroni adjusted. For abnormally distributed data, comparison between different periods were done using Friedman test and pair wise comparison were done using Wilcoxon signed ranks test. Significance of the obtained results was judged at the 5% level[20,22].

Results

The descriptive data of patients reported in this study are summarized in (Tables 1). One hundred and fifty patients were recruited for this study including 100 males and 50 females. The mean age of patients 40.75 years and ranged from 21 to 64 years. 72% of patients were 30-50 years old. All patients presented with back pain and sciatica. Sensory affection in the form of paraesthesia or hypoesthesia was reported in 92% of patients. Motor deficits were reported in 14% of patients.

Totally 162 levels were operated in 150 patients. 138 patients (92 %) had single level affection, while 12 patients (8%) had double level affection. L4-5 was the most commonly affected level (53.7%), followed by L5-S1 level (34.6%) where L3-4 was the least in frequency (11.7%). 126 patients (84%) had posterolateral disc herniation, 16 patients had central canal stenosis (10.7%), and 8 patients had foraminal stenosis (5.3%).

The mean duration of surgery was 55.0 minutes and ranged from 40.0 to 150.0 minutes. The longer duration of surgeries were encountered in the early cases of the study. Also the duration of surgery was longer in double level patients, central disc herniation, and foraminal stenosis. The mean blood loss was 40.0 cc and ranged from 30 to 300 cc, and in 84% of patients it was less than 100 cc. Most common source of bleeding encountered was epidural bleeding and was controlled by bipolar cautery, patties and gel foam.

124 patients (82.7%) received usual analgesics postoperatively (Diclofenac), while only 26 patients (17.3%) needed stronger postoperative analgesia (Opioids). The duration of hospital stay after surgery ranged from 1 to 7 days (Mean 1.3 day). The period to return to work ranged from 2 to 12 weeks (Mean 3.78 weeks); 122 patients (81.3%) returned to their work in less than four weeks postoperatively, while 28 patients (18.7%) required more than four weeks. The length of skin incision ranged from 2.1–3.2 cm (Mean 2.38 cm).

Intraoperative complications included four patients of dural tears (2.6%); all were repaired intraoperatively using muscle graft and fibrin glue. Two of them (1.3%) developed CSF leaks; and were managed 3 to 7 day course of acetazolamide postoperatively. One patient (0.6%) had pseudomeningocele, and was operated after two months for open pseudomeningocele repair. We had one patient (0.6%) of partial nerve root injury (L5 root) and the patient had partial foot drop and paraesthesia postoperatively, that responded to pregabalin. Although the partial foot drop improved gradually over the period of follow up (36 months), it did not recover completely. Three patients (2%) had superficial wound infection and no patients had deep wound infection or discitis. No patients either encountered postoperative instability in the follow up period, nor recurrent disc herniation (defined as ipsilateral disc herniation, at the same operated level).

Over all 123 patients complete the whole study follow up. There was a statistically significant difference between preoperative and immediate postoperative VAS of leg pain, and in the follow up postoperative evaluations (at 2 weeks, 3 months, 1 year & 3 years) (P=<0.001). There was a statistically significant difference between preoperative and immediate postoperative ODI, and in the follow up postoperative evaluations (at 2 weeks, 3 months, 1 year & 3 years) (P=<0.001) (Table 2).

Table 1. Distribution of the Studied Patients According to Different Parameters (N=150)

Parameters		Value
Sex	Male	100 (66.7%)
	Female	50 (33.3%)
Age (years)		40.75 ± 9.75
Age Distribution	20-	16 (10.7%)
	30-	57 (38.0%)
	40-	51 (34.0%)
	50-	21 (14.0%)
	60-	5 (3.3%)
Preoperative clinical presentation	Back pain	150 (100.0%)
	Sciatica	150 (100.0%)
	Sensory Affection	138 (92.0%)
	Motor Deficit	21 (14.0%)
	Sphincter Disturbance	0 (0.0%)
Level	Single level	138 (92.0%)
	Double level	12 (8.0%)
levels of operated disc prolapse	L3-4	19 (11.7%)
	L4-5	87 (53.7%)
	L5-S1	56 (34.6%)
Site of LDP	Posterolateral	126 (84.0%)
	Foraminal	8 (5.3%)
	Central	16 (10.7%)
Duration of surgery (minutes)		55.0 (40.0 – 150.0)
Time Distribution	<60	76 (50.7%)
	≥60	74 (49.3%)
Blood Loss (cc)		40.0 (30.0 – 300.0)
Post-operative analgesia	Diclofenac	124 (82.7%)
	Opioids	26 (17.3%)
	Hospital Stay (days)	1.0 (1.0 – 3.0)
Return to work (weeks)	≤4	122 (81.3%)
	>4	28 (18.7%)
Length of skin incision (cm)		2.38±1.51
Operative complications	Dural tear	4 (2.6%)
	Partial nerve injury	1 (0.6%)
	Conversion to open discectomy	0 (0.0%)
Early postoperative complications	CSF leak	2 (1.3%)
	Superficial wound infection	3 (2.0%)
	Deep wound infection	0 (0.0%)
	Discitis	0 (0.0%)
	Paraesthesia	1 (0.6%)
	Pseudomeningocele	1 (0.6%)

Qualitative data was expressed using number and percent. Normally quantitative data was expressed in (Mean±SD) while abnormally quantitative data was expressed in Median (Min–Max)

Figure 1. From left to right; the obturator of the operating tube of the endoscope, Destandau Endospine working insert, Destandau Endospine operating tube, and the nerve protector. The working insert has three channels: an 8 mm working channel, a 4 mm suction channel, and a 4 mm telescope channel.

Figure 2. Images of male patient 42 years old complaining of low back pain and left sciatica along left S1 distribution. (A,B) Preoperative MRI lumbosacral spine T2W image sagittal and axial view showing left L5-S1 disc prolapse. (C,D) Immediate postoperative CT lumbosacral spine axial view, soft and bone windows, showing the extent of the fenestration.

Table 2. Descriptive Analysis of the Studied Patients According to VAS and ODI in Different Period

Prameters	Preoperative (N=150)	Postoperative				
		Immediate (N=150)	2 weeks (N=150)	3 months (N=150)	1 year (N=138)	3 years (N=123)
VAS (leg pain)	8.2(6-10)	1.8(1-7)	1.6(0-7)	1.2(0-4)	1.2(0-3)	1.2(0-3)
P value		<0.001*	<0.001*	<0.001*	<0.001*	<0.001*
ODI	74.92±6.86	24.31±8.84	18.47±5.81	16.83±4.58	16.51±4.90	16.0±5.12
P value		<0.001*	<0.001*	<0.001*	<0.001*	<0.001*

P: p value for comparing between pre and each other period

*: Statistically significant at P≤0.05

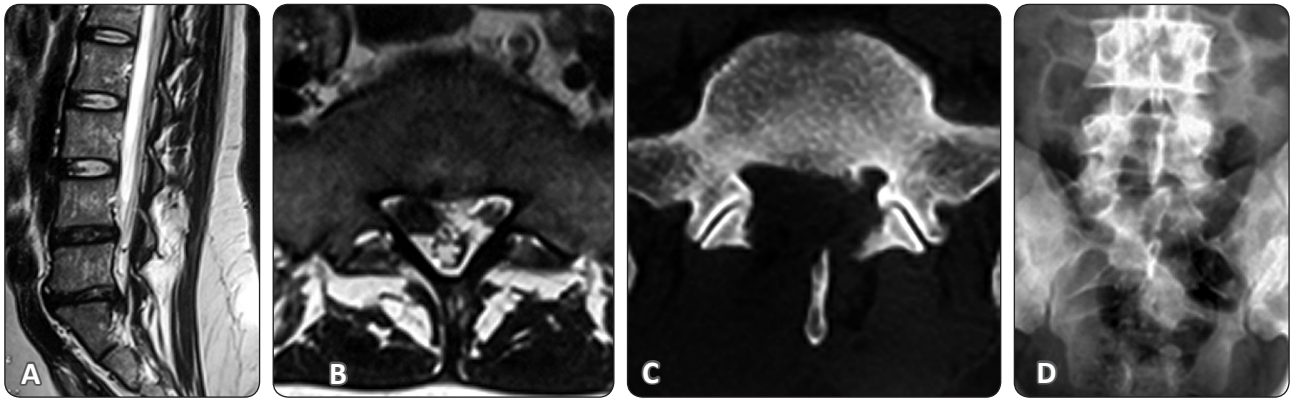

Figure 3. Images of female patient 29 years old complaining of low back pain and right sciatica along right S1 distribution. (A,B) MRI lumbosacral spine T2W image sagittal and axial views showing right L5-S1 lumbar disc prolapse. (C) CT scan bone window, axial view, showing the extent of the fenestration. (D) Plain x-ray AP view, immediately postoperative showing evidence of right L5-S1 fenestration.

Discussion

Foley and Smith[11] believed that MED is superior to other percutaneous techniques for combining the standard lumbar microsurgical technique with endoscopy to address free-fragment or large contained disc pathology and lateral recess stenosis through an even smaller incision than OD and with fewer traumas. The improved optical conditions allow better differentiation of the anatomic structures with gentler manipulation of the nerve root and dural sac.

In our series, there was a statistically significant difference between preoperative VAS (for leg pain) 8.2 (Range 6-10) and immediate postoperative VAS 1.8 (Ranged from 1-7), and in all postoperative evaluations up to 3 years; it remained 1.2 (Ranged from 0-3) (P=<0.001). Our results were comparable to others.[17,19,23,38,39,46] In Choi et al,[7] series the mean preoperative VAS was 7.89 (Ranged from 6-10). At the last follow-up examination, after an average period of 18 months postoperatively, the mean VAS was 1.58 (Range 0-7), this improvement was statistically significant (P<0.001). In Righesso et al,[34] series the mean preoperative VAS was 7.9 (Ranged from 6-10), immediately postoperative it was 2 (Range 1-4), and at the last follow-up examination after an average period of 24 months postoperative, the mean VAS was 1 (Range 0-6), the improvement in the VAS was statistically significant (P<0.001). In Teli et al,[42] series the mean preoperative VAS was 8 (Range 7-9), immediately postoperative it was 3 (Range 2-4), and at the last follow-up examination, after an average period of 24 months postoperatively the mean VAS was 2 (Range 1-3). The improvement in the VAS in the different studied periods was statistically significant (P<0.001). In Casal-Moro et al,[5] series VAS score was 7.9 preoperatively; with this being 1.2 at 2 months postoperative, 1.1 at 1 year, and 1.7 at final review (5 years). The improvement in the VAS in the different studied periods was statistically significant (P<0.05).

Regarding ODI in our series, there was a statistically significant difference between preoperative and immediate postoperative ODI, and in all the designated follow up postoperative evaluations (at 2 weeks, 3 months, 1 year & 3 years) (P=<0.001). In Choi et al,[7] series the mean ODI was 57.43 (Range 34-89). At the last follow-up examination, after an average period of 18 months postoperatively, the mean ODI improved to 11.52 (Range 2-40). The improvement in the ODI was statistically significant (P<0.001). In Righesso et al,[34] series the mean preoperative ODI was 54 (Range 28-100), 6 months postoperative 10 (0-40), and at the last follow-up examination, after an average period of 24 months postoperatively, the mean ODI improved to 10 (0-22). The improvement in the ODI was statistically significant (P<0.001). In Teli et al,[43] series the mean preoperative ODI was 40, the mean postoperative ODI was 15, and at 6 months postoperative the mean ODI was 12, and after 24 months postoperatively it was 12. The improvement in the ODI was statistically significant (P<0.001). In Casal-Moro et al,[5] series The mean preoperative ODI score was 69.6, with this value falling to 14.1 at 2 months postoperatively, 10.7 at 1 year, and 16.6 after 5 years (P<0.05). They obtained a statistically significant improvement (P<0.05).

The duration of surgery ranged from 40–150 minutes (Mean 55 minutes). Our figures match well with most of the publications discussing MED as an alternate to standard microscopic discectomy.[4,5,13,18,28-30,34,43] It is of value to mention that in double level patients, more time was consumed to expose two levels from a single incision. We had to make the skin incision centralized between those two levels. In central disc herniation and foraminal stenosis patients, the use of a high speed drill was essential, and again this made the duration of the surgeries for those patients longer. We also emphasis on the use of bipolar coagulation to control bleeding especially, in foraminal disc prolapse and foraminal stenosis.

The length of skin incision ranged from 2.1–3.2 cm (Mean 2.38 cm). Righesso et al,[34] series had slightly less skin incision length, which ranged from 1.9-2.3 (Mean 2.1 cm). In Teli et al,[43] series they had an average skin incision length of 1 cm. These smaller values may be attributed to the differences in the diameter between the cone shaped operating tube of Endospine (used in our study) and the tubular retractors used in other series (METRx; Medtronic Sofamor Danek, Memphis, TN).

Operatively; the procedure was well tolerated, with minimal operative and postoperative (immediate and late) complications. Most of the complications occurred in the first ten patients in this series. Most of the clinical series using this technique show low morbidity; which is usually related to dural tears.[17,23,24,31,38,39,46] In our series we had four patients of dural tears (2.6%); two of them (1.3%) developed CSF leaks; and one (0.6%) developed pseudomeningocele. We had one patient (0.6%) of partial nerve root injury (L5 root) that responded to pregabalin. Our results match well with most of the published data regarding this aspect. In Li et al,[24] series only one patient had a dural tear (1.5%). In Wang et al,[46] series 3 patients had dural tears (1.5%). Sencer et al,[39] had 6 patients with dural tears (3%). Hussein et al,[17] had 3 dual tears (1.6%). Kullarni et al,[23] had a relatively larger incidence of dural tears; 11 patients (5%). Similarly, Soliman et al,[39] had 2 dural tears (4.8%). In Perez-Cruet et al,[30] series eight patients had dural tears (5%), which were all repaired intraoperatively or with lumbar drainage, and one patient with a delayed pseudomeningocele formation (0.7%), and there were no root injuries. In Choi et al,[7] series there were two patients (3%) of injury to the thecal sac with minimal cerebrospinal fluid (CSF) leakage that did not require open repair. In Schizas et al,[37] series one patient (7%) had dural tear which was treated with fibrin glue. In Brayda-Bruno and Cinnella,[4] series dural tear was present in 5% of patients. In Garg et al,[13] series in the MED group, 5 dural leaks occurred, of which 4 were in the first 25 patients and one in the next 30 patients; all were controlled using gel foam, foot elevation, and a 3-day course of acetazolamide, two patients had transient S1 dermatome neuralgia after an L5-S1 discectomy, and non had nerve root damage. In Jhala et al,[18] series there were minor dural punctures in 7 patients (7%) which did not require repair or open surgery conversion, but there was one patient of nerve root damage (1%) which required open surgery conversion. In Teli et al,[43] series 8.7% of patients had dural tears, and 3% had root injuries. In Oertel et

al,[29] series there were neither dural tears nor nerve root injuries. In Casal-Moro et al,[5] series the most frequent of the intraoperative complication was incidental durotomy, which occurred in 5 patients (4.1%). In three of these patients it was necessary to perform open surgery for suture. No long-term sequelae, delayed leaks, fluid collections, or pseudomeningocele were observed. We speculate that paraspinal muscle preservation and closure after the removal of the retractor might favor the sealing of the dural tissue treated either with muscle graft, gel foam, fibrin glue or any combination of these. This information has the effect of making open conversions for dural repairs unnecessary when tears are produced during lumbar MED.

Regarding the duration of hospital stay after surgery; with our patients it ranged from 1-7 days postoperatively (Mean 1.3 day). The patients which needed more hospitalization were mainly those with dural tears and the patient with partial nerve root injury. Our results were like many published data; in Jhala et al,[18] reported 1-2 days, Garg et al,[13] reported 3 days, Righesso et al.[34] reported 1 day, Schizas et al,[37] reported 1.83 days, Casal-Moro et al,[5] reported 1.9 days, Teli et al,[42] reported 54 hours, and Katayama et al,[19] reported 36 hours. Shorter hospital stays were reported by Choi et al,[7] who reported 12 hours, and Perez-Cruet et al,[31] and Brayda-Bruno and Cinnella,[4] who reported 7.7 hours (Range 2-24 hours).

There was no conversion to open discectomy in any of our patients. Neither there were any wrong level surgeries. Unlike Oertel et al,[29] who reported that the endoscope was abandoned and the procedure microsurgically continued in 4 patients (5%). In Choi et al,[7] series there were two patients (3%) who required conversion to an open procedure after abandonment of interlaminar endoscopic discectomy. Garg et al,[13] in their study, reported the incidence of failure and complication after MED was similar to other studies of microdiscectomies and conventional discectomies. There was no problem in identifying the correct interspace.

Regarding postoperative infection, three of our patients (2%) had superficial wound infection, but no patients had deep wound infection or discitis. Brayda-Bruno and Cinnella,[4] reported 0.7% superficial wound infection, similarly in Katayama et al,[19] reported 1% superficial wound infection rate. Perez-Cruet et al,[30] reported one patient (0.7%) superficial wound infection, and Choi et al,[7] reported no patients of infection. On the contrary, Jhala et al,[18] reported 4 patients (4%) of postoperative discitis, and Teli et al,[43] reported 1.4% rate of spondylodiscitis.

It is worth mentioning that the surgical treatment of symptomatic lumbar disc herniation is now focused on nerve root decompression with preservation of the bony and ligamentous stabilizers of the spine. Various techniques of discectomy have been devised in accordance with this principle and irrespective of the technique used, primary disc surgeries have generally known to give good results.[14,19,39] The rate of recurrent disc herniation ranges from 3-20%[8,27,41] and it constitutes a major cause of failed back syndrome.[19] In our patients, we neither encountered postoperative instability in the follow up period, nor recurrent disc herniation (defined as ipsilateral herniation and at the same operated level). Choi et al,[7] reported no instability after 18 months follow up and only one patient (1.5%) had recurrence on the same side. Perez-Cruet et al,[30] reported no recurrences up to 24 months postoperative follow up. Jhala et al,[18] reported four patients (4%) with recurrence at the same level that occurred within 2 months of primary surgery. Oertel et al,[29] reported four patients who suffered from recurrent disc prolapse (5%) in the first year postoperative. Nakagawa et al,[28] reported 3% rate of recurrent disc herniation. Brayda-Bruno and Cinnellaseries,[4] reported recurrence rate of 2.6%. Garg et al,[13] reported one patient had a recurrence of disc herniation after 7 months. Kullarni et al,[23] reported a rate of recurrence 1.5%. Yadav et al,[50] reported recurrence occurred in 2 patients (0.5%).

The performance of successful minimally invasive spinal surgery is overwhelmed with several technical challenges, including the limited tactile feedback, two-dimensional video image quality of three-dimensional anatomy, and the manual dexterity needed to manipulate instruments through small working channels, which all account for a very steep learning curve. Knowledge of possible complications associated with particular minimally invasive spinal procedures can aid in their avoidance. Complications

such as iatrogenic instability or hastened degeneration at an adjacent level can potentially be reduced using these techniques by maintaining the integrity of normal anatomic tissue structures (i.e. muscular and ligamentous attachments) while limiting retraction-related injuries (i.e. muscle denervation)[32].

Conclusion

Using MED technique, allowed nerve root decompression; with minimal risk of complications and preserving normal anatomy, with faster recoveries. It is possible to address all types of disc herniation. With the 3 years follow up period of our study, MED showed minimal incidence of recurrence and minimal incidence of delayed instability. We think that for surgeons accustomed to performing endoscopic surgery, use of MED is a safe and reliable alternative to microscopic discectomy.

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الملخص العربي

متابعة نتائج استئصال الانزلاق الغضروفي القطني باستخدام المنظار الجراحي: دراسة مستقبلية لمائة وخمسون مريضاً لمدة ثلاث سنوات

البيانات الخلفية: الهدف من التقنيات الجراحية لعلاج الانزلاق الغضروفي القطني هو إزالة الضغط الواقع علي جذور الأعصاب، وتخفيف الأعراض العصبية مع تجنب المضاعفات. الهدف من الحد الأدنى من التدخل هو تقليل المرضية المضافة من التعرض الأكبر، بما في ذلك خلق تندب حول الجذور العصبية. استئصال الانزلاق الغضروفي القطني بالمنظار الجراحي هو أحد التقنيات الأقل تدخلاً؛ وهي تقنية فريدة من نوعها في أنها تجمع بين المبادئ الجراحية المفتوحة مع التكنولوجيا بالمنظار. ستظهر المتابعة الأطول ما إذا كانت هذه التقنية ستحافظ علي ثبات نتائجها أم لا.

الغرض: تم إجراء هذه الدراسة لتقييم فعالية استئصال الانزلاق الغضروفي القطني باستخدام المنظار الجراحي فيما يتعلق بالنتائج والسلامة والمضاعفات والاتساق واستقرار الفعالية، وقياس معدل حدوث ارتجاع للانزلاق الغضروفي أوعدم الاستقرار الفقاري خلال 3 سنوات من المتابعة.

تصميم الدراسة: دراسة مستقبلية اشتملت 150 مريضا تم تشخيصهم بالانزلاق الغضروفي القطني بقسم جراحة المخ والأعصاب؛ مستشفى جامعة الإسكندرية الرئيسي. وسيتم إجراء التدخل الجراحي لهم باستخدام المنظار. ستتم المتابعة الدورية للمرضى خلال 3 سنوات.

المرضي والطرق: سيتم جمع بيانات المرضى والكشف عليهم والفحوصات والأشعات؛ بالإضافة لسجلات التدخل الجراحي. وسيتم تقييم درجة الألم والعجز باستخدام مقياس التماثل البصري ومؤشر العجز أوسويستري. تم قياس الجرح، ومدة الجراحة، ومتوسط فقدان الدم. تم إعادة تقييم درجة الألم والعجز بعد الجراحة. وتمت المتابعة بعد أسبوعين وبعد ثلاثة أشهر، وبعد سنة وثلاث سنوات.

النتائج: شملت هذه الدراسة 150 مريضاً وتم إجراء 162 انزلاق غضروفي لهم؛ حيث كان 138 مريضاٌ (92%) يعاني من انزلاق غضروفي واحد، في حين أن 12 مريضاً (8%) كانوا يعانون من انزلاقين غضروفيين. متوسط مدة الجراحة بلغ 55.0 دقيقة. متوسط خسارة الدم بلغت 40.0 سم^3. بلغ متوسط مدة الإقامة في المستشفى يوماً واحداً. 81.3% من المرضى عادوا إلى عملهم في أقل من أربعة أسابيع بعد الجراحة. كان متوسط طول شق الجلد 2.38 سم.

شملت مضاعفات أثناء العملية أربع حالات قطع بالأم الجافية (2.6%). وحدثت بحالة واحدة (0.6%) إصابة جزئية بجذور الأعصاب. وثلاث حالات (2%) حدث بها التهابات سطحية بالجرح. لم تواجه أي حالات عدم استقرار فقاري بعد العملية الجراحية في فترة المتابعة، ولا انزلاق غضروفي مرتجع في نفس مستويات الجراحة.

كانت هناك فروق ذات دلالة إحصائية بين مقياس التماثل البصري ومؤشر العجز أوسويستري قبل العملية الجراحية وفي متابعة التقييمات بعد العملية الجراحية في الفترات المحددة.

الاستنتاج: باستخدام تقنية المنظار الجراحي، يمكن استئصال الانزلاق الغضروفي القطني مع الحد الأدنى من المضاعفات والحفاظ على التشريح الطبيعي، مع استرداد سريع للحياة الطبيعية للمريض. أظهرت المتابعة لمدة ثلاث سنوات بعد التدخل الجراحي ثبات النتائج، وانخفاض معدل حدوث انزلاقات غضروفية مرتجعة أوحدوث عدم الاستقرار الفقاري المتأخر. ونحن نري أن الجراحين الذين اعتادوا على إجراء الجراحة بالمنظار هو بديل آمن للتقنية المجهرية. وإتقان هذه التقنيات يؤدي إلى انخفاض كبير في المضاعفات وآلام ما بعد الجراحة وعودة المرضى إلى أنشطتهم اليومية في وقت أقرب من الإجراءات المفتوحة التقليدية.