Peer Review File

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Reviewer A

- Comment 1: It is important to highlight that the number of patients treated with this type of surgical technique is very low, taking into account the long period of evaluation and selection of cases. (41 patients in 7 years is equivalent to 5 to 6 patients per year). The largest spine centers perform 5 to 6 procedures per week. This influences the constant learning of the surgical technique.

Reply 1: In accordance with your comment regarding the low number of cases per year and that this could influence the learning curve. We make the following change in the text (see page 4, line 154)"

Changes in the text: The limitations of our study reflect its retrospective nature, the limited number of patients per year, approximately 6 or 7 per year, which could influence the learning curve, and the possibility that certain recurrences or complications have not been investigated, as this study was not carried out in a closed health system and patients may have consulted other clinical centers after the follow-up carried out.

- Comment 2: On the other hand, I would like a better explanation of why the number of cases to be compared is randomly chosen. Is there a more uniform interval that can be done? For example, out of 41 cases: the first 20 compared to the second 21? Is there a significant difference? It is logical to think that the more experience and cases performed, the better the surgical times will be. What parameter is taken to choose case 23 as the ideal number of cases? Could it be graphed?

Reply 2: Estimated in response to your comment and marked by the second reviewer, this was due to an error in the statistical analysis methodology which has already been corrected, choosing a more uniform interval, as you indicate between the first 20 and the last 21 cases, showing a significant difference in the variables analyzed. (see page 3 line 77 and line 105 and page 4, line 144)". Thanks to the correction of the method, we were able to add two graphs, which we believe help in the interpretation of the results (See Appendix, page 6, line 173 and page 8, line 253)

First change in the text:

Statistical Analysis

Demographic variables were summarized. A simple linear regression was performed between the OT and the number of operated cases, evaluating their association. The LC of the TELD was analyzed using a CUSUM test for parameter stability for linear regression coefficients, using the CUSUM from recursive residuals introduced in Brown, Durbin and Evans (1975)[11]. Continuous and normally distributed variables were compared with the Student t-test and for the dichotomous variables, Fisher exact test was used.

The frequency of both intraoperative and postoperative complications was evaluated.

All the analysis was conducted using Stata 15 (StataCorp LLC, College Station, TX, USA).

Second change in the text:

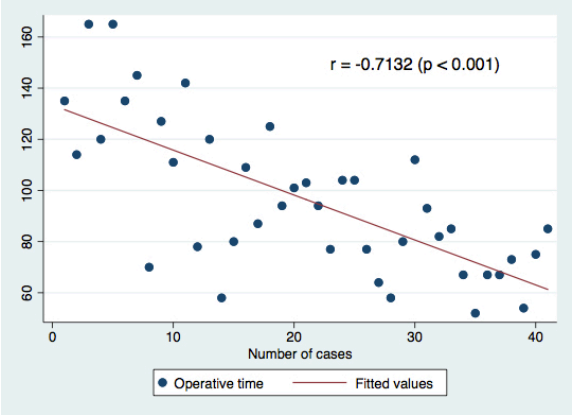
The OT showed a linear regression in relation to the increase in cases (graph 1) reaching an average of 96 minutes (SD=29.85) and the CUSUM of the recursive residuals shows learning of the TELD in the case 20, as shows the CUSUM plot with the 95% confidence bands (Graph 2). When distinguishing between the first 20 cases and the last 21, the OT was 114 minutes (SD=30) and 80 minutes (SD=17), respectively, showing a statistically significant decrease ($p<0.001$) in these last 21 cases. Moreover, the operated level shows a statically significant difference ($p=0.035$), revealing that the most operated levels for the first 20 cases were L4-L5 and L5-S1, and for the last 21 cases were L3-L4 and L4-L5. The recurrent disc herniation rates were 17%, and 12% required reoperation. It is worth mentioning that the last recurrence occurred in the 23rd case, just after reaching the learning of the TELD. Only two postoperative radiculitis were recorded as a post-procedure complication. The rest of the variables are showed in Table 2.

Third change in the text:

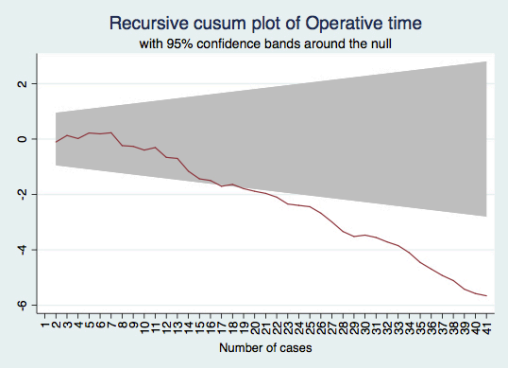
On our part, when distinguishing between the first 20 and the last 21 operated patients, we could observe a statistically significant decrease in OT ($p=0.0001$), and after the 23rd case we didn't observe a recurrent disc herniation. Regarding complications, these occurred in the 14th and 22nd cases, similar to that of other reports[22,23].

Added graphics:

Graph 1: Surgical time graph. Linear reduction in time related to the increase in the number of surgeries performed.



Graph 2: Recursive CUSUM plot of Operative time shows that the plot of the recursive cusum process crosses the 95% confidence bands in the 20th case, which means that the learning of the TELD has been reached.



- Comment 3: Additionally, no mention is made of the complications presented in the first cases. There are reports in the literature about the inability to find the hernia, excessive bleeding and even hardware failure.

Reply 3: The complications of this procedure are well reported in the literature, being, as you mention, the inability to find the hernia, excessive bleeding, hardware failure and even incomplete resection of the hernia or postoperative radiculitis, the latter being one of the most frequent. As we mentioned in the results (see page 3, line 115) the complications recorded in our case series were two post-procedure radiculitis.
Changes in the text: none

- Comment 4: Finally, Was the Kaplan Meier test applied to identify recurrence of herniations? Or Deaths? The title mentions "survival rate". I would like to see more emphasis on why use a survival scale? Is recurrence linked to inexperience? These questions would be worth to be addressed.

Reply 4: Again, and in relation to your previous comment, based on your review we consider that the statistical method was not adequate, which is why we decided to modify it together with the modification of the title of the work, which we now consider more appropriate. (see page 1, line 1 and page 3, line 77)
Changes in the title: "**Transforaminal Endoscopic Lumbar Discectomy: Learning Curve of a Case Series Performed by a Single Surgeon with a Minimum Follow-up of 6 Months.**"
Changes in the text:

Statistical Analysis

Demographic variables were summarized. A simple linear regression was performed between the OT and the number of operated cases, evaluating their association. The LC of the TELD was analyzed using a CUSUM test for parameter stability for linear regression coefficients, using the CUSUM from recursive residuals introduced in Brown, Durbin and Evans (1975)[11]. Continuous and normally distributed variables were compared with the Student t-test and for the dichotomous variables, Fisher exact test was used.

The frequency of both intraoperative and postoperative complications was evaluated.

All the analysis was conducted using Stata 15 (StataCorp LLC, College Station, TX, USA).

Reviewer B:

- Comment 1: More work could be done for the tables and writing to accurately reflect that clearly to evaluate learning curve the cohort was divided into two - first half and second half, and that the baseline characteristics of these patients really did not differ - in some ways Table 1 and Table 2 should be merged with the last 3 parts of Table 2 becoming its own table (outcomes per se).

Reply 1: Thanks for your comments. We modified table two by combining it with table 1, but differences between the two groups evaluated. (See Appendix, page 8, line 256)

Changes in the text: *Table 2: Comparison between the first 20 TELD versus the last 21*

	First 20		**Last 21**		**p-value**
Age	46.5 ± 17		53.9 ± 13,2		0.14
Variable	N	%	N	%	
Sex					0.33
Female	6	30	9	47	
Male	14	70	10	53	
Smoking – Yes	8	40	3	16	0.15
Symptoms					0.20
Sciatica	14	70	9	47	
Cruralgia	6	30	10	53	
Level					**0.035**
L1-L2	0	0	1	5	
L2-L3	0	0	3	14	
L3-L4	3	15	6	29	
L4-L5	8	40	9	43	
L5-S1	9	45	2	9	
Location					0.63
Central	0	0	1	5	
Lateral recess	10	50	7	33	
Foraminal	7	35	10	48	
Extraforaminal	0	0	1	5	
Lateral and Foraminal Recess	1	5	0	0	
Foraminal and Extraforaminal	2	10	2	9	
Laterality					0.11
Left	10	50	16	76	
Right	10	50	5	24	
Dh episode					0.86
First episode	14	70	16	76	
First recurrence	5	25	4	19	
Second recurrence	1	5	1	5	
Post TELD recurrence	5	25	2	9	0.24
Reintervention	3	15	2	9	0.66
Surgical time (min)*	**Minutes**				
	114± 30		80 ± 17		**0.001**

- Comment 2: Additionally, subheadings to guide the reader through the methods may also be helpful, such as Patient Population, Surgical technique, Data Collection, Data Analysis etc. For the other sections it could be done, but is not as helpful.

Reply 2: Dear according to your comment, the subtitles would help guide the reader in the method section (see page 2, line 52)
Changes in the text:

METHOD:

Patient Population

Retrospective review …

Data Collection

The clinical records of …

Statistical Analysis

Demographic variables were ….

- Comment 3: It does not seem the case selection differed in the latter half, therefore what is the putative change? A decrease in surgical time for example does not explain lower recurrence rates.

Reply 3: According to your comment. Thanks to the correction in the statistical method, we were able to observe changes between the selection of the first 20 and the last 21 cases, such as the level of surgery or the surgical time, these being statistically significant, which could be explained with the best experience of the surgeon for the indication of the procedure as well as a development of his ability for this
Changes in the text: none

Reviewer C

- Comment 1: there is no mention of the most common complication encountered in TELD, which is post-operative dysesthesia rates.

Reply 1: Thanks for the feedback. Since it is not a work that talks about complications, we did not want to delve much into this topic, however, in the results we show the complications registered in our series of cases, which were interpreted as radiculitis. (see page 3, line 115)
Changes in the text: none

- Comment 2: L5/S1 disc herniations, especially lateral recess ones, can be challenging to reach through the transforaminal approach. Their first 23 cases had 9 L5/S1 discectomies, however only 2 in the last 18. Why was this the cause? Did the surgeon recognize the challenges with approaching discs at this level? Often times an interlaminar endoscopic approach is more suitable at this level.

Reply 2: Totally agree with your comment. Thanks to the correction made in the statistical analysis, we were able to observe a significant relationship between the level operated on in the first 20 cases and the last 21 (see page 3, line 110), which could mean, as you correctly indicate, the surgeon's recognition of the complexity in the approach disc herniations at the L5-S1 level. Based on this we make our recommendation (see page 4, line 151).
Changes in the text:
Moreover, the operated level shows a statically significant difference (p=0.035), revealing that the most operated levels for the first 20 cases were L4-L5 and L5-S1, and for the last 21 cases were L3-L4 and L4-L5.

- Comment 3: While the authors do breakdown the zone of disc herniation, there is no subgroup analysis specifically comparing learning curve of foraminal (and presumably easier cases to approach for TELD) to lateral recess/central discs, which can be more challenging.

Reply 3: The location of the hernia was evaluated as a variable to determine if it influenced the learning curve, however, despite the correction in the statistical method, it did not reach a significant value (See Appendix, page 8, line 256), perhaps due to the low number of patients, which we consider as negative aspect of our study (see page 4, line 154)
Changes in the text: none

- Comment 4: Finally, one of the primary endpoints is disc reherniation. It is unclear from the paper the explanation for this. Is it that there was a true recurrent disc herniation, or was there incomplete discectomy at the initial surgery which led to reoperations in the early 23 case group? If it was a true recurrent disc herniation, what was done differently in the last 18 cases to prevent this? Smaller or less aggressive annulotomy? Annuloplasty? The lack of details here limits interpretation and clinical application of the findings.

Reply 4: Dear, as far as we know, there is no work in the literature that performs an MRI after TELD to evaluate hernia resection. We assume that if a patient remains asymptomatic for a certain time after surgery, and then pain starts again, and in a new MRI a hernia appears again at the same level and with the same laterality, it is a recurrence.
It could be argued that the greater experience of the surgeon developed on a case-by-case basis decreases the risk of recurrence, perhaps as you indicate by smaller or less aggressive annulotomy.

In any case, and according to your comment, the evaluation of survival was not being correctly addressed in this study, which is why the statistical analysis was modified, eliminating the analysis of survival and modifying the title to make it more consistent with the purpose of the study
Changes in the title: "**Transforaminal Endoscopic Lumbar Discectomy: Learning Curve of a Case Series Performed by a Single Surgeon with a Minimum Follow-up of 6 Months.**"
Changes in the text:

Statistical Analysis

Demographic variables were summarized. A simple linear regression was performed between the OT and the number of operated cases, evaluating their association. The LC of the TELD was analyzed using a CUSUM test for parameter stability for linear regression coefficients, using the CUSUM from recursive residuals introduced in Brown, Durbin and Evans (1975)[11]. Continuous and normally distributed variables were compared with the Student t-test and for the dichotomous variables, Fisher exact test was used.

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