

Peer Review File

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Reviewer:

In this study, a novel electromagnetic-based navigation for PTELD is introduced for treating LSS. The whole paper is in good shape and provides valuable information in the clinical application of electromagnetic-based navigation for PTELD. Nevertheless, there are still some places that need to be revised.

Comment 1: The current title didn't include the treating effect in shortening surgery duration, reducing intraoperative pain, and decreasing blood loose. I recommend modifying the title that can comprehensively summarize the whole content.

Reply 1: Special thanks to you for the good suggestions. The novel electromagnetic-based navigation technique for PTELD in LSS patients has been demonstrated safe and valuable. When compared with fluoroscopy group, it has achieved similar results of clinical symptoms improvement and reduced intraoperative pain, with additional significant benefits of lower radiation exposure and higher efficiency in foraminoplasty. So, the title could be modified as follows: Novel Electromagnetic-Based Navigation for Percutaneous Transforaminal Endoscopic Lumbar Decompression in Patients with Lumbar Spinal Stenosis Reduces Radiation Exposure and Enhances Surgical Efficiency Compared to Fluoroscopy: a randomized controlled trial.

Changes in the text: We have modified our text as advised (see Page 1, line 4).

Comment 2: In Abstract, line 41-42, I recommend adding the P-value of VAS and ODI scores comparing with the preoperative condition.

Reply 2: That's a good suggestion for us to add the P-value of VAS and ODI scores comparing with the preoperative condition in abstract. The VAS scores for back

($P < 0.001$) and leg ($P < 0.001$) pain improved significantly in both groups after surgery, as did the ODI ($P < 0.001$) scores.

Changes in the text: We added the P-value of VAS and ODI scores comparing with the preoperative condition in abstract. (see page 2 and 3, line 42 and 43).

Comment 3: In Abstract, line 45-46, the narrative order of results should be consistent within results part.

Reply 3: Special thanks to you for your good comments. The narrative order of conclusions was revised consistent with results part. The EMN system used in PTELD for patients with LSS compared to fluoroscopy enhances efficiency for foraminoplasty, reduces intraoperative pain and levels of radiation exposure. It results in outcomes comparable with results using fluoroscopy.

Changes in the text: We have modified the narrative order of conclusions as advised (see page 3, line 46-50)

Comment 4: All the referring numbers should be labelled beyond the full stop.

Reply 4: Special thanks to you for your good comments. All the referring numbers have been labelled beyond the full stop in the revised text.

Changes in the text: All the referring numbers have been labelled beyond the full stop in the revised text. (see page 6 and 9, line 122, 123 and 176)

Comment 5: Line 157, referring number should be labelled after et al.

Reply 5: Special thanks to you for your suggestion. The referring number was modified after et al.

Changes in the text: We have modified our text as advised (see page 9, line 176)

Comment 6: Verb tenses in Discussion should be carefully checked up.

Reply 6: Special thanks to you for your good comments. We have carefully checked up the verb tenses in discussion and revised the improper parts.

Changes in the text: We have modified our text after carefully examination. (see page 11, line 217 and 219)

Comment 7: In Discussion, line 208-209, I recommend to briefly narrate the pathogenesis of LSS.

Reply 7: Special thanks to you for your kind suggestion. LSS is characterized by narrowing of the spinal canal as a consequence of bone and soft tissue degeneration, including osteophyte formation, degeneration of the ligamentum flavum, disc herniation, and facet hypertrophy. We added a briefly narration about the pathogenesis of LSS.

Changes in the text: We added a briefly narration about the pathogenesis of LSS in discussion. (see page 12, line 236-239)

Comment 8: In Discussion, line 220-225, I recommend adding P-value while narrating the results.

Reply 8: That's a good suggestion for us to add the P-value while narrating the results. The excellent and good improvement rate in all patients was 90.6%, and the VAS ($P<0.001$) and ODI ($P<0.001$) scores improved significantly in both groups after surgery. We did not observe significant differences between the groups with respect to reductions in the VAS (Back, $P=0.980$; Leg, $P=0.724$) and ODI ($P=0.243$) scores. Improvements in walking ability ($P=0.354$) and Macnab criteria assessments ($P=0.929$) at the 12 months' follow-up with the use of subjective patient assessments did not differ between the treatment groups.

Changes in the text: We added the P-value while narrating the results in discussion. (see page 13, line 254-257)

Comment 9: In Discussion, line 220-225, “During surgery... the margin of the facet joint” doesn’t make sense and needs to be revised.

Reply 9: Thanks for your good suggestion and comment. A brief narration is with the aid of real-time 3D navigation views, which was used to replace the previous sentence. We have revised the content in discussion.

Changes in the text: We have revised the content in text. (see page 13, line 262 and 264)

Comment 10: In figure legends of Fig.1, Fig.3, and Fig.6, the labelling letter should be placed in brackets at the end of sentences.

Reply: Special thanks to you for your kind suggestion. We would place all the labelling letter in brackets at the end of sentences.

Changes in the text: We have revised the figure legends in text. (see page 20 and 21, line 415-417, 420-423, and 430-432).

Comment 11: The typeface should be unified as Times New Roman in references and tables.

Reply 11: Special thanks to you for your kind suggestion. The typeface of references and tables were unified as Times New Roman.

Changes in the text: We revised the typeface of references and tables. (see page 16-20, line 331-410)