

**Peer review file**

**Article information:** <https://dx.doi.org/10.21037/jss-21-73>

**Reviewer A**

Comment 1: Abstract - Lines 26-29: "We describe results from thirteen patients treated with transdiscal screw fixation to demonstrate that transdiscal screw fixation is a safe and acceptable alternative for stabilization and indirect decompression of L5-S1 isthmic spondylolisthesis." In the abstract, can summarize the results that were found in this study.

Reply 1: We have modified our text as advised.

Changes in the text: See page 2, lines 34-36.

Comment 2: Abstract - Lines 26-28: "... thirteen patients treated with transdiscal screw fixation to demonstrate that transdiscal screw fixation is a safe and acceptable.." Change wording, to " thirteen patients treated with transdiscal screw fixation, and demonstrated that this technique is a safe and acceptable alternative for stabilization and indirect decompression of L5-S1 isthmic spondylolisthesis."

Reply 2: These sentences were modified to include the results requested in the above comment. As a result, this wording no longer is relevant.

Changes in the text: See page 2, lines 34-38.

Comment 3: Introduction: Include information regarding issues with screw fixation in general, and how transdiscal screw fixation is a good method for these types of procedures.

Reply 3: Biomechanical studies of transdiscal screws have demonstrated increased stiffness when compared to pedicle screw fixation, potentially correlating with a higher fusion rate. Transdiscal screws also have the additional benefit of an indirect decompression of the foramina, which may avoid a direct decompression by laminectomy, potentially preventing complications associated with direct decompression such as dural tear, nerve injury, and epidural hematoma. This has been added to the introduction.

Change in the text: See page 3, lines 68-72.

Comment 4: Methods- Lines 104-105: "At this point, the lamina is decorticated. Iliac crest bone graft is placed over the lamina". Can combine sentences

Reply 4: We have modified our text as advised.

Changes in the text: See page 5, lines 115-116.

Comment 5: Results - Lines 119-123:" One patient had a subcutaneous seroma that required irrigation and debridement 6 days postoperatively. There were three instances of implant failure including two instances of broken transdiscal screws and one instance of a broken L4 pedicle screw. One patient had nonunion with revision surgery recommended, but the patient was lost to follow-up. "

Include n=XX and %

Example: One patient (n=1/13, 7.7%) had a subcutaneous seroma that required irrigation and debridement 6 days postoperatively. etc... Can include these results in the abstract, as well.

Reply 5: We have modified our text as advised.

Changes in the text: See page 2, lines 34-36. See page 5, lines 123-129.

Comment 6: Results - Lines 111-112: "There were 4 (30.7%) adolescent patients ranging from 12 to 14 years old" Include how many male and how many female adolescent patients.

Reply 6: We have modified our text as advised.

Changes in the text: See page 5, line 122.

Comment 7: Discussion: Include a paragraph, regarding what limitations/disadvantages you have encountered whilst using transdiscal screw fixation. Within 2013 to 2020, are there other/newer methods of avoiding any issues that may occur when using transdiscal screw fixation, if so can explain in the discussion. Highly recommend including other studies as references, that demonstrate methodologies that are similar to your own or slightly different.

Reply 7: Body habitus presents the biggest obstacle to using this technique. From 2013 to 2020, intraoperative navigation and robotic technology have been introduced to spine surgery and described in the placement of transdiscal screws with supposed improved accuracy of screw placement.

Changes in the text: See page 6, lines 152-158.

### **Reviewer B**

Comment: This study has a small single cohort and describe the transdiscal screw insertion technique by open procedure. The results of this report contain the relatively high rate of implant failure because of the influence of small cohort. L5/S transdiscal screw its self had been well known already so far. The L5/S transdiscal screw insertion technique by open procedure was also well known and described in previous reports. So I think that there was no new information from this report and more than 30 patients and 2 years follow up might be required for this type of reports about L5/S transdiscal screw.

Reply: Although the results of L5/S1 transdiscal screws have been published before and with a larger cohort, in our literature review we identified papers that describe the surgical technique (Logroscino et al; Abdu et al). However, these discussions are often limited. The purpose of this paper is to simplify and make the surgical technique reproducible.

Changes in the text: No changes were made to the text.

### **Reviewer C**

Comment 1: The Authors report 4 cases of hardware failure/non fusion in the short follow up. This rate appears to be higher than what is currently reported in the literature. The Authors should comment on the findings and compare with available data.

Reply 1: The non-fusion was associated with an instance of hardware failure, so there are 3 cases. This rate is still higher than what is currently reported in the literature, but may be associated with the fact that our sample size was larger and our length of follow-up was longer than what has been previously published.

Changes in the text: See page 6, lines 139-142.

Comment 2: The Authors report that in these cases fusion "routinely... includes L3 and L4 for adult and only L4 for adolescents".. This recommendation is unclear and the Authors should clarify it better in the discussion maybe providing some literature

support.

Reply 2: There are no biomechanical studies to support this thought process, but the reasoning that adults who are larger may put more stress on the screws resulting in a lower rate of fusion, and thus warranting including another level in the fusion has been added.

Changes in the text: See page 4, lines 92-95.