Fang-Fang Ji
Science Editor
World Journal of Orthopedics
RE: WJO-40534

Dear Mr. Ji,

Thank you for your consideration of our manuscript: WJO-40534, entitled "Intra-operative CT Guided Navigation for Pediatric Pelvic Instrumentation: A Technique Guide." We appreciate the time you and the reviewers have dedicated to improving our manuscript. The manuscript is improved by having incorporated the feedback. We hope that you find the revised submission suitable for publication in the World Journal of Orthopedics.

Reviewer Comments:

Reviewer #1 -

Comment 1: Navigation probe are utilized in reference to an anatomical anchor point for the registration process. Reference point translation may lead to errors, which may be serious. Are there methods to prevent this and do you have any salvage if this really happens to prevent catastrophic results?

Author Response: *To ensure stable fixation of the anchor point we prefer to use a robust spinous process with at least 4 tines (of a possible 8) attached to the bone. This limits intra-operative frameshift due to movement of the anchor point relative to the spine anatomy. Additionally periodic checks comparing the navigation information to the actual anatomy are critical for safe instrumentation processes with image guidance techniques.*

Comment 2: In your paper, similar already well-known results were obtained in comparison with other large-scale studies, meta-analysis, or review, mainly the safety of navigation assisted instrumentation to reduce screw breach. For instance, Neurosurgery 80:S86–S99, 2017. Please specify the novelty of your study.

Author Response: *We identified the steps for safely using CT-guided technology for S2AI instrumentation. Both the instrumentation (S2AI) and techniques (3D technology) are well known and documented, we simply detail how we reproducibly use both in pediatric spinal deformity. The article referenced is a review of advancing (3D) technology in spine surgery while our article is a review of our technique.*

Reviewer #2 –

Comment 1: Methods section should be added in order to report the complete procedure. The authors described only a surgical technique without mentioning pre-operative preparation, patient position, surgical approach and aftercare. Furthermore, no surgical indication and contraindication were reported. Please add.

Author Response: The technique aspect of our paper functions as a methods section detailing the complete procedure including positioning as well as the table used. Aftercare for patients with S2AI screws is no different than those with any other posterior pelvic instrumentation, thus they receive the same care as posterior spinal fusion patients. Indications for instrumentation to the pelvis vary, however, general thoughts include if the pelvic obliquity cannot be reverse corrected on a traction radiograph then a fusion to the pelvis is required to achieve both stable sitting position and coronal alignment.

Comment 2: In Discussion section, the authors reported a satisfied 10 years a CT guided approach, could be interesting for the readers to know the report your personal experience including number of surgeries, how many per year, complication and misplacement rate, comparison with the freehand technique literature/authors data.

Author Response: The authors perform approximately over 20 cases annually requiring pelvic instrumentation with associated pediatric spinal deformity and pelvic obliquity. We are yet to encounter a patient with aberrant anatomy that we cannot safely place S2AI instrumentation and are currently without a misplaced screw given the described technique.

Comment 3: The comparison of cost, radiation safety for patient/surgeon/staff, reliance on technology and associated risks with the learning curve between the freehand and CT guided technique should be amplified, as the number of references, and the literature data reported in discussion section.

Author Response: The number of references has been increased in the discussion section.

Comment 4: The authors concluded that in their institution the intra-operative CT dose is extremely low and all faculty are prepared to place without image guidance if the technology fails intra-operatively. Should be interesting to know why and how many time have the technology failed, and compare the intraoperative time between CT Guided cases, CT Guided fail cases, and freehand cases.

Author Response: Since moving to this technique the technology is yet to fail requiring free hand instrumentation.