Author’s response to reviews

Title: The patterns of loss of correction after posterior wedge osteotomy in ankylosing spondylitis-related thoracolumbar kyphosis: a minimum of five-year follow-up

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Author’s response to reviews:

Dear Dr. Longo,

We really appreciate the reviewers’ constructive comments and suggestions on our manuscript entitled "The patterns of loss of correction after posterior wedge osteotomy in ankylosing spondylitis-related thoracolumbar kyphosis: a minimum of five-year follow-up" (BMSD-D-17-00453).

We have studied reviewers’ comments carefully and tried our best to make necessary corrections. A detailed response to each reviewer/editorial point raised was provided as follows and all changes to the manuscript are indicated in the text by highlighting.

Response to the reviewers’ comments:

Takahashi Jun (Reviewer 1):

1. The reviewer’s comment: This study shows excellent middle-term surgical results for extremely difficult cases. Please describe the measures taken to prevent pseudarthrosis.

Please also specify the following.

- The diameter and material of rods used.

- Were there special precautions for use of bone grafts? Was iliac bone or artificial bone used? If artificial bone was used, please specify the type.
Response: Special thanks for your comments. The measures taken to prevent pseudarthrosis consisted of: (1) the decancellation bone from the osteotomized vertebral body and the cortical bone chips from spinous process were placed tightly on the surfaces of laminae posteriorly and posterolaterally; (2) the decancellation of bone was uniform throughout the vertebral body to produce a symmetric closure and to achieve complete bone apposition centrally and laterally at the osteotomy site; and (3) after ensuring that there is no compression of dural sac and nerve root, the width of osteotomized gap of the posterior elements should be as narrow as possible to avoid a wide defect between two adjacent laminae. (The related content is added on line 179-187 of page 7)

Among the 24 patients, three types of rods were used: (1) 6.35mm stainless rod in 7 patients; (2) 5.5mm titanium rod in 9 patients and (3) 6.35mm titanium rod in 8 patients. The details regarding the use of bone grafts were described as above-mentioned. Neither iliac bone nor artificial bone was used for fusion. (The related content is added on line 99-103 of page 4)

2. The reviewer’s comment: Please describe the type and duration of use of postoperative external fixation.

Response: Regarding postoperative external fixation, all patients were allowed to mobilize with a thoracolumbosacral orthosis for 3 months. (The relevant content is added on line 103-104 of page 4)

3. The reviewer’s comment: Please describe postoperative lifestyle guidance.

- Was heavy lifting prohibited?

If yes, describe the duration and weight limitations.

- Was farm work or heavy labor determined on an individualized basis?

Response: In terms of postoperative lifestyle guidance, generally, heavy lifting (over 10kg) should be avoided within 9 months after surgery. Meanwhile, farm work or heavy labor need to be determined on an individualized basis. Additionally, patients should be encouraged to abstain from alcohol and cigarette to prevent non-union, implant failure and to improve the clinical outcomes. (The related content is added on line 256-260 of page 9)

Fethullah Öner (Reviewer 2): This is certainly an interesting study and the cases are well defined and described. My only concern is that only 24 out of 155 patients are included. It would be better to show in a flow diagram how many cases why were excluded. This would assure the readers that there was no selection bias in this study.

Response: Thank you for your comments. The detailed descriptions were added in the Methods section to show reasons that 24 patients were included. A flow diagram in the Figure 4 also demonstrated the process of selection of patients. We hope these descriptions and the flow
diagram will assure that there was no selection bias in the current study. (The related content is added on line 91-95 of page 4 and Figure 4)

We would like to express our great appreciation to you and reviewers again for comments on our paper. We hope that the revision is acceptable and look forward to hearing from you soon.

Best wishes