Author’s response to reviews

Title: A case report of severe degenerative lumbar scoliosis associated with windswept lower limb deformity

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Author’s response to reviews:

Reviewer 1:
This is a well-written paper. The authors presented a unique degenerative scoliosis case. Some modifications still be addressed before possible acceptance.

Reply__Thanks for your careful reading and we are pleased to note the favorable comments in your opening sentences. We also greatly appreciate your valuable suggestions concerning improvement to this paper and have revised the manuscript which we hope to meet with your approval.

1, Abstract, Line 6: DS should be degenerative scoliosis.
Reply__this has been revised now (Line 6, Page 2).

2, Did the authors have a MDT discussion with joint surgeons? If yes, what was the suggestions from joint surgeons?
Reply__Yes, we have a discussion with joint surgeons before spine surgery. The joint surgeons found her major problem is poor lines of force in lower limbs, rather than the hip or knee osteoarthritis. If we want to correct this patient’s LLD and pelvic obliquity, we need to try legs force lines correction by osteotomy of paramorphia femur and tibia preferentially. For this patient, we suggested her to receive lower limb correction in advance of spine surgery, but she refused. (Line 7-13, Page 5)

3, I think the post-op coronal imbalance is related to pelvic obliquity, the iliac fixation may be needed in the primary surgery. This should be discussed more in depth.
Reply__Yes, I totally agree with you. With the pelvic fixation in the primary surgery, this patient should have much better coronal balance immediately after surgery. It’s a relative indication and superiority with pelvic fixation.
However, we are not sure whether the walking postural change or abnormal gait will come alone with pelvic fixation in such patient with structural leg length discrepancy and pelvic obliquity. Up to now, this is still unclear. That is another important reason the patient finally choose stop fusion at L5 after an adequate preoperative communication. In future, the pelvic fixation in such patients with structural LLD should be a worthy subject for study. This part has been added in the discussion section now. (Line 12-16, Page 6)

4, Fig 1 and 2, too many measurements on the images, only necessary lines should be kept, such as the line between iliac crests, the line showing balance.
Reply__Fig 1 and 2 have been reedited and some unnecessary lines have been removed now.

Reviewer 2:
GENERAL COMMENTS: the report is interesting and may be accepted for publication. They present a case of windswept deformity secondary to rickets associated with a lumbar degenerative scoliosis surgically treated successfully without surgery for the limbs deformity.
Reply__Thanks for your careful reading and we are pleased to note the favorable comments in your opening sentences. We also greatly appreciate your valuable suggestions concerning improvement to this paper and have revised the manuscript which we hope to meet with your approval.

REQUESTED REVISIONS:
I've some comments: Add a better description of the scoliosis (cobb angle, sva, coronal balance, curve patterns, etc) before and after surgery in the abstract. Add a limitation that longer follow up may be required due to the post operative coronal imbalance .
Reply__Both the description of scoliosis and the limitation have been added in the abstraction section now. (Line 14-16, Page 2 and Line 23-25,Page 2).

I would separate discussion and conclusions.
Reply__these two sections have been separated now.

Some literature review about treatment of scoliosis in patients with length differences between the inferior limbs is mandatory.
Reply__Unfortunately, we did not find any case series studies or comparative studies about treatment of scoliosis in patients with structural LLD in the literatures.
We have added a note to this in the discussion section now. (Line 15-16, Page 6.)

Some discussion about the fact the fixing the pelvis/ iliac of this patient would lead to loss of her capacity to use the pelvis to walk, similarly to a neuromuscular scoliosis where patients may need the pelvis to walk.
Reply__Exactly, with the pelvic fixation in the primary surgery, this patient should have much better coronal balance immediately after surgery. But the pelvic fixation in such patient with structural LLD and pelvic obliquity may lead to her walking postural change or gait problem. In current, the rigorous evaluation of pelvic/iliac fixation in structural LLD patients is still lacking. This is main reason why we did not take the pelvic fixation into account in the first time.
This part has been added into the discussion section now. (Page 6, Line 12-16)
I would at the end of the discussion limitations of this case, especially long term follow up and the risk of late deterioration due to coronal unbalance.

Reply__The limitation of this case has been state in this revise version (Line 22-24, Page 6).

Finally, the three interrogative questions at the conclusions should be discussed better in the discussion, and, at the conclusion, only state that further studies are necessaries to solve these issues.

Reply__We have discussed the issues, like the sequence of spine and lower limbs surgery, more deeply in the discussion section now (Line 7-13, Page 5 and Line 3-6 Page 7).

And in the end of this paper, we state further studies are necessaries to solve these issues. (Line 9-11, Page 7)

Considering the surgery, only one level was fixed at T9 which may be risky. some discussion about this is necessary. PJK may happens due to rod broken.

Reply__Yes, you are absolutely right. We chose this kind of fixation is mainly to save her in-patients costs. After surgery, we asked her to wear the brace strictly for 3 months (Line 8-9, Page 4). Fortunately, the fixation is stable and the posterior bone graft is fused in the 2 years follow-up. But in future, the long-term risk of rod broken and PJK still exist and require further follow-up. We have added this in the discussion now (Line 24-27, Page 6).