

Dear Editors and Reviewers,

Thank you for your letter and for the reviewer's comments concerning our manuscript entitled "Multiple stress fractures of unilateral femur: A case report and literature review". We found the comments to be valuable in revising our paper for imparting maximal knowledge about our case to future readers. We carefully addressed each in our manuscript, which we hope will meet with your approval to move forward to the next step in the publication process.

The main corrections in the paper and our detailed responses to the reviewer comments are as follows:

#### **Reviewer 1**

Q1. There are many published predisposing factors associated with a stress fracture.

Although the authors state blood biochemistry and Urinalysis were normal, there is no detailed data about Calcium, vitamin D level, bone density, or iPTH level. Please provide these detailed biochemistry data.

Answer: We appreciate your careful review of our case. The suggested biochemistry data have been added to our paper, in the section describing laboratory examinations (page 4, paragraph 8,10, line 103-105,112-113) in the revised version. Specifically, the patient's laboratory tests showed serum calcium level of 2.26 mmol/L (normal range: 2.02-2.7 mmol/L), parathyroid hormone level of 42 pg/mL (normal range: 15-65 pg/mL) and 25-hydroxyvitamin D level of 13.83  $\mu$ g/L (normal range:

11.1–42.9  $\mu\text{g/L}$ ). Bone mineral density (lumbar spine and proximal femur) was normal (T value: 0.36).

Q2. Theoretically, coxa vara substantially modifies the biomechanical conditions of the femoral neck, increasing the effect of direct muscle pull and leading to fatigue of opposing muscle groups; such modifications would appear to favor the appearance of stress fractures. There is no long-standing scanography to reveal the true femoral neck-shaft angle and deformity of coxa vara deformity. Body height and BMI have also been related the lower limb deformity. Would the authors provide these body structure parameters?

Answer: We have no long-standing scanography findings to report. The femoral neck-shaft angle was measured at  $107^\circ$  from the X-ray of the right hip (as shown in Figure 1), which can diagnose coxa vara deformity. The patient weighed 60 kg and had a height of 165 cm, giving a body mass index of  $22\text{ kg/m}^2$ . This information was added to the revised manuscript (page 4, paragraph 4, line 90-91).

Q3. THA with a long stem was chosen in this concurrent femoral neck and proximal femoral fracture. However, hemiarthroplasty will be preferred if there is no acetabular wearing in this case. Would you explain the reason for THA rather than hemiarthroplasty?

Answer: Currently, there is no consensus regarding the choice between hemiarthroplasty (HA) and total hip arthroplasty (THA) for self-sufficient and physically active patients with normal cognition. According to the literature[1,2], THA is indicated in patients who had good pre-fracture levels of physical activity,

self-sufficiency, and walking ability, as this option provides excellent functional outcomes with a limited risk of reoperation. HA is indicated in patients with limitations to physical activities, self-sufficiency, and walking ability before the fracture. We chose THA for the following reasons: 1. This patient was a 62-year-old female, with no health problems and thus a longer life expectancy; 2. The patient was self-sufficient and physically active, making THA a better choice; and 3. THA has been associated with superior patient satisfaction and better postoperative function, especially in younger and more active ambulant patients.

1. Lewis D P , Wver D , Thorninger R , et al. Hemiarthroplasty versus Total Hip Arthroplasty for the management of displaced neck of femur fractures: A Systematic Review and Meta-Analysis[J]. The Journal of Arthroplasty, 2019, 34(8).
2. Olivier G . Hemiarthroplasty or total hip arthroplasty in recent femoral neck fractures?[J]. Orthopaedics & traumatology, surgery & research,2019;105:95-101.

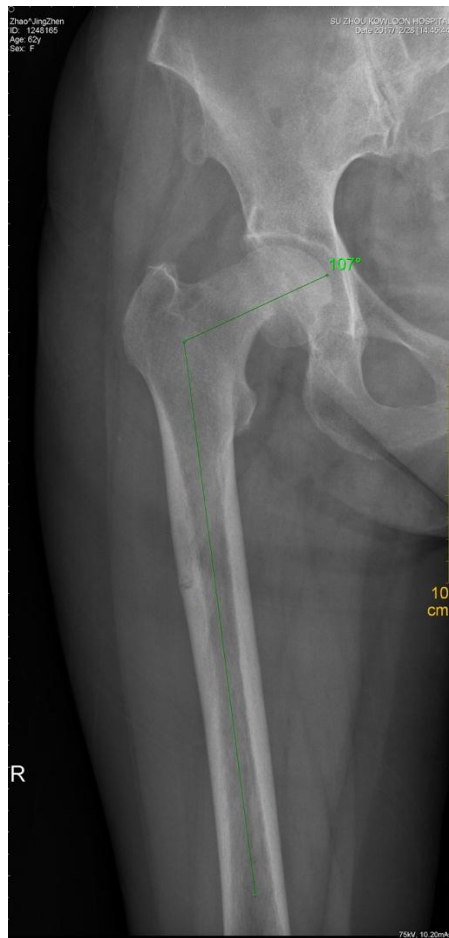


figure 1

## Reviewer 2

Q1. Nevertheless the content of the manuscript and its clarity may be improved, to identify surely as “stress fractures” the lesions reported. I strongly suggest to add, among figures, the radiological findings of the proximal femur obtained by CT; also the report by the radiologist would be very appreciated. Furthermore, the pathological features from intraoperative samples of the femoral neck, and the report by the pathologist, would be of great help.

Answer: Thank you for your careful evaluation of our case report and helping us to improve it. We chose two typical CT figures for presentation in the manuscript. Both CT reports and pathology reports are consistent with the clinical diagnosis.

## Reviewer 3

Q1. Very coherent, nice to read.

Answer: Thank you