

Dear Editor,

Thank you very much for your kind letter dated Sep. 28, 2021, and for the Reviewers' reports. Based on your comments and requests for my manuscript (Manuscript NO.: 69132, Retrospective Study), we made the recommended revisions, and our point-by-point responses to each comment follow.

We thank all Reviewers for their helpful and useful comments. We appreciate the Reviewers' work in evaluating our manuscript and hope that our revisions will meet with approval.

Once again, we thank the Editor of *World Journal of Clinical Cases* and the Reviewers for their comments and suggestions.

Yours sincerely,

All Authors

Reviewers Comments:

Reviewer#1

a. A) The abstract is sufficiently developed, but a few concerns are present:

Comment 1 Clear reference should be made to the purpose and characteristics of the study.

Response: We thank Reviewer #1 for this valuable advice. To investigate the clinical efficacy and outcomes of minimally invasive open reduction by a modified suture bridge for avulsion-type greater tuberosity fracture is the purpose of our study. This technique has fewer implants, simpler operation and easier promotion in comparison to other techniques. It is an efficient method for the treatment of avulsion-type greater tuberosity fractures. In the revised manuscript, we rewrote the relevant sentence to eliminate confusion (Page 3 Lines 44–45, Pages 4, Lines 69-71).

b. B) In the introduction, the characteristics of proximal humerus fractures have been accurately described, even if a little too synthetic.

Comment 2: Some references should be added regarding the traumatic mechanism, diagnosis, treatment, and prognosis that can occur after this type of fracture, for example: (White EA, et al (2018) "Isolated greater tuberosity fractures of the proximal humerus: anatomy, injury patterns, multimodality imaging, and approach to management").

Response: We thank Reviewer #1 for this comment. Some references was added in the introduction, such as: (*Reference 3. Rouleau DM, Mutch J, Laflamme GY. Surgical Treatment of Displaced Greater Tuberosity Fractures of the Humerus.*

J Am Acad Orthop Surg. 2016;24:46-56 [PMID: 26700632 DOI: 10.5435/JAAOS-D-14-00289] *Reference 4.* Chen YF, Zhang W, Chen Q, Wei HF, Wang L, Zhang CQ. AO X-shaped midfoot locking plate to treat displaced isolated greater tuberosity fractures. *Orthopedics.* 2013;36:e995-9 [PMID: 23937765 DOI: 10.3928/01477447-20130724-13] *Reference 5.* White EA, Skalski MR, Patel DB, Gross JS, Tomasian A, Heckmann N, Matcuk GR Jr. Isolated greater tuberosity fractures of the proximal humerus: anatomy, injury patterns, multimodality imaging, and approach to management. *Emerg Radiol.* 2018;25:235-246 [PMID: 29453500 DOI: 10.1007/s10140-018-1589-8]. *Reference 6.* Sofu H, Gürsu S, Koçkara N, Oner A, Issin A, Camurcu Y. Recurrent anterior shoulder instability: Review of the literature and current concepts. *World J Clin Cases.* 2014;2:676-82. [PMID: 25405191 DOI: 10.12998/wjcc.v2.i11.676] And we explained it in the revised manuscript (Pages 18, Line 398---407).

- c. **Comment 3:** " The technique of double-row anchor suture under arthroscopy is expensive and complicated to perform." Please, adding some bibliographic references.

Response:

We thank Reviewer #1 for this comment and suggested correction. Some references was added after that sentence, such as: *Reference 14.* Huang AL, Thavorn K, van Katwyk S, MacDonald P, Lapner P. Double-Row Arthroscopic Rotator Cuff Repair Is More Cost-Effective Than Single-Row

Repair. *J Bone Joint Surg Am.* 2017;99:1730-1736. [PMID: 29040127 DOI: 10.2106/JBJS.16.01044] *Reference 15.* Bisson L, Zivaljevic N, Sanders S, Pula D. A cost analysis of single-row versus double-row and suture bridge rotator cuff repair methods. *Knee Surg Sports Traumatol Arthrosc.* 2015;23:487-93. [PMID: 23229385 DOI: 10.1007/s00167-012-2338-2] *Reference 16.* Song HS, Williams GR Jr. Arthroscopic reduction and fixation with suture-bridge technique for displaced or comminuted greater tuberosity fractures. *Arthroscopy.* 2008;24:956-60. [PMID: 18657746 DOI: 10.1016/j.arthro.2008.01.009] We corrected this mistake in the revised manuscript (Page 19, Line443--454).

- d, **Comment 4:** “Fig. 1 shows a failure case of steel plate treatment for a greater tuberosity fracture. As the attachment point of the rotator cuff, the greater tuberosity of the humerus is closer to the shoulder joint. Due to its special anatomical position, it is difficult for traditional steel plates to choose the appropriate position. The greater tuberosity is displaced because rotator cuff traction is neglected. After the second operation, the fracture was fixed with screws and steel wire against rotator cuff pull, and satisfactory results were obtained. To reduce surgical complications and provide better treatment for patients, we have been inspired by the repair of rotator cuff injuries using the suture bridge technique to fix fractures of the greater tuberosity of the humerus

through a modified minimally invasive small incision under direct vision.” It would be more appropriate to include this part in the discussion.

Response:

We thank Reviewer #1 for this comment and apologize for the confusion. We put this part into the discussion section, and rewrote the relevant sentence to eliminate confusion. “When selecting the optimal surgical fixation strategy for fractures of the greater tuberosity of the humerus, the deforming force caused by rotator cuff muscle elongation should be taken into account. The supraspinatus, infraspinatus and teres minor are inserted into the greater tuberosity of the humerus, and their coupling force plays a crucial role in the function of the shoulder joint. Ogawa et al.[22] reported that most fractures of the greater tubercle of the humerus (57%) involve the supraspinatus and supraspinatus joints, resulting in upward and backward displacement of the greater tubercle of the humerus in the same direction as the rotator cuff pull for a complete supraspinatus tendon, and note that posterior displacement is particularly important because it is often underestimated and delays treatment. On the other hand, Mutch et al.[19, 23] found that 20% of the fracture blocks of the greater tuberculum shifted downward, and in the study of Bahrs et al.[24], the displacement was up to 25.2%, which suggested that it might be caused by the direct downward force or the impact of the greater tuberculum with the acromion during extreme abduction of the upper limb. In addition, in the case of anterior

dislocation of the shoulder, the shear force at the glenoid margin can also lead to greater tuberosity fractures. Fig. 5 shows a failure case of steel plate treatment for a greater tuberosity fracture. As the attachment point of the rotator cuff, the greater tuberosity of the humerus is closer to the shoulder joint. Due to its special anatomical position, it is difficult for traditional steel plates to choose the appropriate position. The greater tuberosity is displaced because rotator cuff traction is neglected. After the second operation, the fracture was fixed with screws and steel wire against rotator cuff pull, and satisfactory results were obtained.”(Pages 12 Lines251--273)

- e. In materials and methods, the evaluation methods have been adequately developed.

Comment 5: By which operator was the surgical treatment performed? was a shoulder specialist orthopaedist??

Response:

We thank Reviewer #1 for this recommendation. The surgical treatment performed by Dr. Yang YL who is a orthopaedic trauma surgeon in our institute. We rewrote the relevant sentence to eliminate confusion. (Pages 7, Lines135--136).

- e. **Comment 6:** Have they undergone postoperative physiotherapy treatment? What kind of rehabilitation protocol was performed?

Response:

We thank Reviewer #1 for this helpful comment. None of them was undergone postoperative physiotherapy treatment. In the revised manuscript, we rewrote the relevant sentence. “The arm was immobilized with a brace for 4 weeks in a neutral position to prevent internal rotation. The patients began pendulum exercises and continuous passive motion exercises within 48 hours, similar to rehabilitation after rotator cuff repair. Passive forward flexion and abduction by use of a bar were allowed after 1 week. After 4 weeks, passive ROM exercises including table sliding and stretching exercises, in addition to forward flexion in the supine position, were encouraged (preferably performed during or after a hot bath or shower). Three months after surgery, complete active ROM and strengthening exercises were allowed.” (Pages8, Lines168--175)

- f. **Comment 7:** How long after the fracture event were they treated?

Response:

We thank Reviewer #1 for this helpful comment. In the revised manuscript, the time between injury and operation were listed in Table 1 and we rewrote the relevant sentence. “The time between injury and operation ranged from 1 to 2 days, with an average of 1.75 days.” (Pages10, Line 206-207).

- g. **Comment 8:** A more detailed statistical analysis should be carried out.

Response:

We thank Reviewer #1 for this helpful comment. In the revised manuscript, we rewrote the relevant sentence. “IBM 20.0 statistical software (International Business Machines Corporation, Ar. monk, New York, USA) was used for statistical analysis. Postoperative clinical results, including ASES, UCLA, and VAS scores, as well as the degrees of ROM, are described as the mean \pm SEM and were compared using Student’s t-tests. Proportional values were compared using χ^2 analysis exact test where applicable. For each test, a P-value < 0.05 was defined as significant.” (Pages 9, Line193--198)

- g.** English language editing is needed.

Response:

We thank Reviewer #1 for this recommendation. The authors also thank AJE company (Durham, North Carolina, USA) for editing the English text of a draft of this manuscript. (Pages 16, Line 376-377).

Reviewer#2

- a.** Throughout the paper the term "conservative" is used. It is a poor descriptor. It should be changed to "nonoperative". This occurs in the Abstract, the Intro and the Discussion. Please change those words.

Response:

We thank Reviewer #2 for the helpful comments. We used the term instead "nonoperative" instead of "conservative" to eliminate confusion.

- b.** Introduction - first sentence of the Intro - this is incorrect. Proximal humeral fractures are not the most common fracture. They are common but not the most common. Please rewrite.

Response:

We thank Reviewer #2 for this comment and apologize for the confusion.

We deleted the word of “most”, and rewrote the relevant sentence to eliminate confusion.(Pages 85, Lines 87).

- c.** This is a case series. That should be mentioned in the Patients and Methods section. It just follows a group of patients.

Response:

We thank Reviewer #2 for this comment and apologize for the confusion, and rewrote the relevant sentence in 2.1 Study Population to eliminate confusion. “From January 2016 and January 2019, 16 patients with avulsed fractures of the greater tuberosity were treated by a single orthopaedic trauma surgeon in our Orthopaedics Department using minimally invasive open reduction by a modified suture bridge with anchors.” (Pages 9, Lines193--198).