Author's response to reviews

Title: Primary open anterior shoulder stabilization: a long-term, retrospective cohort study on the impact of subscapularis muscle alterations on recurrence

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Author's response to reviews: see over
Dear Mr. Editor,

Re: "Primary Open Anterior Shoulder Stabilization: A Long-Term, Retrospective Cohort Study on the Impact of Subscapularis Muscle Alterations on Recurrence" by Gamulin A, Dayer R, Lübbeke A, Miozzari H, and Hoffmeyer P.

We would like to thank you for your invitation to submit a revised version of our above-mentioned manuscript.

We thank also the editorial board and the reviewers for their constructive criticism and the positive comments on the importance of our study. As requested, we provide a point-by-point response to each comment raised. Changes are highlighted with red color in the revised manuscript.

Thanking you in advance for your further consideration of our work and we look forward to the final decision of the editorial committee in due course.

Yours sincerely,

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Major Compulsory Revisions:

1. Under “Operative Technique”, paragraph 1: Can the authors elaborate on their postoperative guidelines/timeline for return to sport, overhead/contact sport and work/heavy labor?

   We have clarified this at the end of the paragraph by adding “Return to work was allowed depending on the type of activity and hand dominance. Heavy labor was not allowed before three months following surgery. Sport activities were allowed from the third month, with overhead and contact sports delayed until six months after surgery. Of note, all patients were practicing sport at a recreational level.”

2. Discussion section, paragraph 3: The final statement in this paragraph “the presence of histopathologic changes in the subscapularis muscle was not associated with an increased number of dislocations before surgical stabilization” seems to say that the data presented does not support the possible explanations posed by the authors. A further discussion of why the increased number of dislocations doesn’t correlate may be warranted here.

   We have further discussed this topic by adding the sentence: “This suggests that the initial traumatic dislocation and difficulty in reduction may be more important than the number of dislocation episodes before stabilization in the development of these histopathologic changes.”

3. Discussion section, paragraph 6: It should be discussed whether or not severity of
degenerative changes noted on radiographs correlated with number of instability episodes/dislocations pre-operatively.

We did not find a correlation between severity of degenerative changes and number of dislocation before surgical stabilization. Therefore, we added a sentence in the last paragraph of Results ("There was no correlation between severity of degenerative changes and number of dislocations before surgical stabilization") as well as at the beginning of the sixth paragraph of Discussion ("The severity of these changes was not correlated to the number of preoperative dislocation episodes").

4. Discussion section, paragraph 7: The authors point out the one major limitation in this study. The study findings are interesting and may possibly play a role in shoulder instability recurrence after surgical stabilization, however the relative importance of subscapularis muscle alterations on recurrence are difficult to make without being able to account for glenohumeral bone loss, as this may be the most important factor with respect to recurrence.

Glenohumeral bone loss is an important factor with respect to recurrence after shoulder stabilization. For this reason, we modified our initial manuscript in order to rank this limitation as the most important of our study. We also replaced the words "relevant factor" by "important factor" (Discussion, last paragraph).

However, due to the long follow-up period, we were unable to obtain complete initial radiographic evaluation for each patient. Actually, some images were lost by the patients in the meantime, not kept by the archive department of our institution (this was usually done when radiographic views had been performed outside of our hospital) or simply of a too bad quality to allow for a correct evaluation of the bone stock. Furthermore, operative notes were not consistently accurate enough to rely on them to determine if bone loss was present or not at the time of initial surgery. We thus modified this paragraph by adding “available” in front
of “preoperative radiographs”, as well as the sentences “Of note, we were able to review anteroposterior plain radiograph in neutral rotation for each patient, which was the routine in-hospital preoperative workout in our institution at the time surgeries were performed; however, additional views (anteroposterior with internal and external rotation, axial, or CT-scan in some instances), which were performed before hospitalization as part of a complete work-out, were no more available for a large number of patients, because they had been lost by the patients, not kept by the archive department of our institution, or of a too bad quality to allow for an accurate evaluation of the bone stock.”

We have also moderated our conclusion by

1) replacing “The presence of subscapularis muscle histopathologic changes predating surgery is a strong predictor of recurrence of shoulder instability...” by “The presence of subscapularis muscle histopathologic changes predating surgery is a useful predictor of recurrence of shoulder instability.”

2) adding the sentence “However, our study is unable to determine the importance of these changes compared with glenohumeral bone loss, which also influences recurrence.”

**Minor Essential Revisions:**

1. Under “Outcomes”, paragraph 2: “instable” should be corrected.

   “Instable” has been replaced by “unstable” in the above-mentioned paragraph, as well as in the legends to Figure 2 and Figure 3.

2. Conclusions section, paragraph 1: a note is made to recognition of these lesions on preoperative MRI – are these histopathologic changes associated with specific MRI features which have previously been described?

   *No specific MRI features have been described to date. Therefore, the sentence “The*
recognition of these lesions on preoperative magnetic resonance imaging should be investigated also in a correlation study” was replaced by “The association of these lesions with possible specific preoperative magnetic resonance imaging features (to date not described) should be investigated also in a correlation study”.

**Discretionary Revisions:**

1. Under “Outcomes”, paragraph 2: remove “to obtain a healthy shoulder group for comparison” from the last sentence.

   These words were removed from the sentence.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:** I declare that I have no competing interests.
General

The message that histopathologic changes within the subscapularis muscle at the time of primary open labral repair can predict the final outcome can be important for the reader of this journal.

*We would like to thank the reviewer for this positive criticism and encouraging comment on our work.*

Nevertheless this study has some weaknesses. The initial X-rays are not evaluated for concomitant lesions (Hill-Sachs, glenoid fracture, glenohumeral displacement). As is demonstrated yet the latter is indicative for tendino/muscular lesions. And according to the explanation of the authors it is the possible explanation ((26-263). I think if the authors can correlate clinical and/or radiological signs their manuscript would have a great impact for the orthopaedic surgeon.

*We acknowledge that our study has some weaknesses, the most important being its lack of complete initial radiographic evaluation for each patient making it impossible to accurately evaluate preoperative glenohumeral bone loss. Furthermore, operative notes were not consistently accurate enough to rely on in order to determine if bone loss was present or not at the time of initial surgery. For this reason, we modified our initial manuscript in order to rank this limitation as the most important of our study. We also replaced the words "relevant factor" by "important factor" (Discussion, last paragraph). Furthermore, we modified this same paragraph by adding “available” in front of “preoperative radiographs”, as well as the sentences “Of note, we were able to review anteroposterior plain radiograph in*
neutral rotation for each patient, which was the routine in-hospital preoperative workout in our institution at the time surgeries were performed; however, additional views (anteroposterior with internal and external rotation, axial, or CT-scan in some instances), which were performed before hospitalization as part of a complete work-out, were no more available for a large number of patients, because they had been lost by the patients, not kept by the archive department of our institution, or of a too bad quality to allow for an accurate evaluation of the bone stock.”

I suggest that they try to do so because the actual knowledge has too less clinical implications to be published in an orthopedic clinical journal. If they cannot do so I suggest they send this manuscript to a ‘basic science journal’.

Unfortunately, we cannot follow this recommendation, because of lacking data that we are unable to extrapolate or reclaim from patients’ charts or radiographs. Nevertheless, despite the above-mentioned important weakness, we think that our study shows that subscapularis muscle alterations play a role in the recurrence of shoulder instability. We therefore think that our revised manuscript deserves publication in BMC Musculoskeletal Disorders. With this in mind, we moderated our conclusion by

1) replacing “The presence of subscapularis muscle histopathologic changes predating surgery is a strong predictor of recurrence of shoulder instability...” by “The presence of subscapularis muscle histopathologic changes predating surgery is a useful predictor of recurrence of shoulder instability.”

2) adding the sentence “However, our study is unable to determine the importance of these changes compared with glenohumeral bone loss, which also influences recurrence.”