

Response to Reviewers

Lian-Sheng Ma,

All of the authors of this paper, entitled “Predictors of clinical outcomes after non-operative management of symptomatic full-thickness rotator cuff tears” would like to thank you and all of the reviewers for considering our manuscript for publication. Below is the point to point response to each reviewers comments/suggestions.

Thank you,

Christopher Bush, MD

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Title: Predictors of clinical outcomes after non-operative management of symptomatic full-thickness rotator cuff tears

Authors: Christopher Bush, Joel Gagnier, James Carpenter, Asheesh Bedi, Bruce Miller

Reviewer #1:

I would like to thank this reviewer for their thorough review of the manuscript and thoughtful comments and suggestions. Below is a point by point response to their comments.

In the keywords, I suggest to include "rotator cuff tear" (instead of "rotator cuff injuries" and "rotator cuff")

Response: This change has been made and is reflected in revised manuscript

(Page 1, L 19) Add “that” after “found” (Boorman et al. found that only the Rotator cuff...)

Response: This change has been made and is reflected in revised manuscript

(Page 1, L 19) Change “are” with “might be” (.. at initial presentation that might be predictive...)

Response: This change has been made and is reflected in revised manuscript

(Page 1, L 38-40) Patients’ selection is a relevant bias of this study. Patients were identified from a shoulder registry and the exclusive inclusion criteria were a minimum 1-year follow up and a pre-treatment MRI. The choice to treat conservatively RCT is strictly influenced by the anatomical and clinical findings, as well as by patient’s characteristic and expectations. The

authors should at least specify some criteria used for the allocation in this treatment group (eg. preservation of active elevation, absence of superior migration of the humeral head, refusal of undergoing surgery, etc.), otherwise the reader might wrongly understand that all RCT can be indiscriminately treated either conservatively or surgically

Response: We have added additional information regarding the treatment allocation for patients in this institutional registry, and this is reflected in the “patient enrollment” section of the Materials and Methods.

They should also indicate the percentage (not only 151 as absolute number) of patients affected by RCT who were treated with rehab between 2009 and 2015. (Page 3, L 57-58) The authors should specify how many patients were followed up for 1 year and how many for 2 years. These data are not reported in the text or in the tables.

Response: This information has been added and included in the “patient enrollment” section of the Material and Methods

(Page 3, L 59-63) Some points regarding MRI evaluation should be clarified. The authors should specify who analyzed MRIs for achieving the desired information (orthopaedic surgeons? radiologists? professionals with specific expertise in shoulder pathology?)

Response: This information was clarified in the “MRI evaluation” section of the Materials and Methods

The morphological description of RCT is limited to the cuff tear index (CTI) and muscle fatty infiltration, but there are no data concerning the actual location of tendon tears and their extension (superior, postero-superior, antero-superior, combined). In fact, site and extension do not appear among the variables considered for linear regression analyses. It's not possible to equalize all RCT considering only the CTI and not the tear location, as well as it's not possible to speak generically of infraspinatus and subscapularis fatty infiltration without indicating the actual tendon damage.-CTI was described by J.C. Tauro in 2004 (Arthroscopy 20:13-21) as a gauge for RCT, that is calculated by multiplying the arthroscopically measured dimensions of the tear. The authors should specify if they have found other studies reporting the reliability of CTI calculated on MRI and not by arthroscopic measurements.

Response: It is true that fatty infiltration was used in part as a surrogate for tear location, and this was listed as a limitation of this study. As mentioned, CTI has been described previously using arthroscopic measurements, and given our nonsurgical cohort we used MRI based measurements to calculate the CTI. This was also mentioned as a limitation of the study.

(Page 4, L 81-84) The choice of the predictor variables included for linear regression analyses is purely discretionary and the authors should justify this choice or at least specify that several other factors might be potential predictor variables. These include both clinical (positive

impingement or lag signs, workers' compensation issues, etc.) and anatomical (acromial spur, LHB dislocation, etc.) variables.

Response: While the variables included in the regression analyses were chosen based on previous studies, I do acknowledge that additional variables undoubtedly exist that could have impacted patient reported outcomes in our study. This acknowledgement was detailed in our limitations section.

(Page 6, L 114) Add "in a selected population of patients" after "measures" (.. clinical outcome measures in a selected population of patients were significantly...)

Response: This change has been made and is reflected in revised manuscript

(Page 8, L 174-182) The predictive impact of traumatic RCT at 2 years is poorly explained. I would suggest the author to consider another hypothesis: the possibility of traumatic events occurring on preexisting RCT. There are not previous MRI to prove the contrary. The magnitude of improvement might be related to the resolution of symptoms arising after simple contusions or sprains, that can be very disabling but only temporarily. Another aspect to keep in mind is that patients with preexisting RCT are more motivated to follow a rehab protocol after a traumatic event and RCT diagnosis by MRI.

Response: I appreciate and agree with these alternative explanations for this finding. These were included in our revised manuscript.

(Page 9, L 190-194) There are other important limitations of the study and the authors should list the following: - the lack of any information about patients' compliance to rehab - the lack of any information about RCT at follow up (no MRI) - the low statistical power due to the small sample size and the broad interval between 95% CI endpoints

Response: I agree with these additional limitations, and they were included in our revised manuscript.

(Page 21 Figure and Table Legends) There are no figure captions; please add. Abbreviations can be inserted at the bottom of figures and tables.

Response: The figure and table legends were added to the revised manuscript.