Reviewer’s report

Title: Acromioclavicular joint dislocation treated with Bosworth Screw and additional K-wire fixation: Results after in mean 7.8 years - Still an adequate procedure?

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Reviewer: Antti Joukainen

Reviewer's report:

Acromioclavicular joint dislocation treated with Bosworth Screw and additional K-wiring: Results after 7.6 years -

Still an adequate procedure?

Reviewer: Antti Joukainen

Date: 03122016

This is a retrospective study of the results of 22 (of 29) patients with AC joint dislocation treated with a Bosworth screw and additional K-wiring. The method used in this study is not common nowadays in the treatment of AC dislocation, and the study has potential to describe the results of this rare and initially rigid technique of transfixation of clavicle and coracoid process.

The main concerns of the study are the low number of the patients (underpowered), lack of control group, rather low (76%) follow-up percentage, various AC dislocation types (types 2-5) and a large range of follow-up time (1-19 years). There is no possibility to compare the result of this series to the natural course of healing in AC dislocation patients. Unfortunately, I believe these drawbacks diminish the value of the present study.

There are myriads of different methods of AC joint reconstruction techniques, and if I understood correctly the data presented, these also have been used in the Institute where the Authors practice. The present study could have a stronger validity, if the results of Bosworth technique and pin fixation could be compared to some other surgical techniques, or even more important, to the results of conservative treatment. At least, the rationale how the patients were elected for this reconstruction technique and not for some other procedure should be presented. I would recommend presenting a flowchart describing the treatment methods of all ACJ dislocation patients of the Institute of this study during the study period (e.g. http://www.consort-
A reader could then have an understanding of the AC joint dislocations treatment practice in the institute in general.

I am reluctant to agree on the conclusion of acceptable result with the method. There is a possibility that the same excellent result as in this study could be attainable with conservative treatment methods, but with rare complications and less costs.

Specific comments:

Abstract:

"Long-term results": the mean of follow-up time is 7.6 years, but at shortest the time is just one year, so it is not acceptable to describe the results being of "long-term". I recommend using the time span of follow-up time of the series, or "at least 1 year".

Material and methods and Results: There is discrepancy in the number of study patients: "All patients treated operatively…" but only 22 were analysed. I suggest revising.

Conclusion: Revising recommended, please see above.

Background:

Grade 1-3 AC dislocations are recommended to treat conservatively. I recommend adding something about the results of conservative methods in this chapter, because there is a patient in this series of grade 2 dislocation treated surgically, too.

Please revise "golden standard" to "gold standard".

In the different techniques chapter, I recommend to add the techniques of CC ligament reconstruction with tendinous grafts.

Materials and Methods:

P5L74: "70 months (□ 54.02)": is it the standard deviation in brackets?

P5L77: "range of motion": motion of what? Were there any other clinical tests?

P5L83: "one of these two." did this patient had only AC joint instability, but no other lesions, like osteoarthritis in the joint? Was ACJ unstable in the clinical examination?

P5L86: "company": which company?
"image converter": please explain in detail; or is it image intensifier?

Please describe the technique more specifically: was the surgery percutaneous or open? How were the CC-ligaments addressed? What drilling and screw diameters, and cannulated or not? How many K-wires? What aftertreatment?

P6L96-100: ROM: ROM of what joint? Were the ACJ studied (stability, palpation), and the skin? What x-ray projection (Zanca, or AP, or both? Stress radiographs preop - postop?); this needs to be presented in Methods section. What was measured in the radiographs? Were any radiographic abnormalities (arthrosis, calcifications) recorded?

SF-36, DASH and VAS are not just shoulder scores. There exist also ACJ specific scores, so why not these used for this study?

How were the patients classified in Rockwood AC dislocation grades? The authors should also give a breakdown of results according to Rockwood type, because the different types act differently.

P8 L43-: The clinical results of different Rockwood classification types should be presented. A description of the clinical examination of AC joint stability and cosmetic results would also be valuable.

P9L161-2: The differences in measurements between the healthy and injured AC joints were less in the latest radiographs than postoperatively, which is interesting, and could be analyzed more closely.

P9, Complications: were there any screw or pin breakages?

P10L202: should be "statistically significant difference"

P11L219: The number of complication patients is low (underpowered), and thus this conclusion is not valid.

L221: The diminishing difference of radiographic variables during the follow-up should be discussed. The last sentence of this chapter should also be revised, because very different kinds of ACJ dislocations have been treated in this series.

Limitations: Variable ACJ dislocations types, lack of clinical evaluation and cosmetic result of ACJs, underpowered setup of the study should be mentioned in this chapter.

Of the long follow-up time concerning Bosworth-technique reports: the study by Lowe and Fogarty (1977) had a mean follow-up time of 10 years.

Conclusion: I suggest adding something about the still existing uncertainty of the decision-making between conservative and surgical treatment.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

No

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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