Reviewer’s report

**Title:** Systematic Study of Coracoid Abnormalities and Their Relationship with Glenohumeral Deformities in Patients with Obstetric Brachial Plexus Injury

**Version:** 1  **Date:** 28 May 2010

**Reviewer:** Johannes Antonius van der Sluijs

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Review systematic study of coracoid abnormalities and their relation etc dd 28-5-10

Comments to the authors:

The authors of Systematic Study of Coracoid Abnormalities and Their Relationship with Glenohumeral Deformities in Patients with Obstetric Brachial Plexus Injury should be congratulated on their data. I think however that some changes are necessary to improve the message of this study.

This study is about changes of the coracoid process in children with sequelae of OBPL and secondary deformities of the shoulder. Their data are measurements on CT images in a cohort of 39 children, a subgroup of 294 operated children. The coracoid that is the scapulocoracoid changes, were measured using several methods. They were compared to the normal side and were related to 2 glenohumeral abnormalities: humeral head subluxation and glenoid version. The authors also explored the interrelation between various parameters: with the glenohumeral distance as dependent variable they assessed the influence of the independent parameters age, a coracoid parameter and subluxation. They found changes in the scapulocoracoid parameters and found that these were related to glenohumeral changes. Various parameters were interrelated.

Several problem need to be addressed however, as to the methods, results and discussion.

**Title:**

Major rev: Systematic is not correctly used, should be omitted in the title.
Discret rev: Patients could be better specified by children

In the **Abstract:**

Maj revision:

Comment : in the method section mean age is missing
Comment : in the results paragraph results must be specific and the line on multilinear regression is not necessary (see comment below)
Comment : in the discussion paragraph: “the coracoid proc protrudes more towards the hum head” is I think incorrect and should be ‘more caudally and
follows the subluxation head ‘ . ( see remark below on distance between )

Discretion. revision: methods: ‘sec deformities developed from’ is this correct or ‘caused by..’

Introduction:

Major revision:

Comment: The available literature is insufficiently presented. The results of the Soldado /Kozin study (their reference 6) need to be presented better as this study focuses on the scapulocoracoid changes and shows results paralleling and to some extent similar to the present study ( for the corcohumeral and coracoscapular distance and for the relation with glenoid version).

Comment: A hypothesis needs to be formulated

Comment: clinical relevance needs to be formulated

Methods

Major revision:

*On patient selection: Why were ct made of these and not the other 294 patients.

*Mean age is missing

*Please better specify which method is new.

* The glenohumeral distance is adapted from Gerber but this adaptation is less useful: Whereas Gerber deals with the space available ia for the ant cuff ( that is the distance coracoid to surface of humeral head) the new measurement ( distance coracoid to calculated centre of the humeral head)is a composite of the soft tissue space and the humeral head diameter and is thus less informative . This has consequences for some of the conclusions ( see below).

* the multilin. model is I think not informative ( see comment in results)

* To assess interrelations for instance use a table with the various R or R2

Comment : is the conversion from pixels to distance precise?

Result section

Clear fig 1, and beautiful fig 2!

Minor revision: in paragrapg summary of the results for…..: first sentence contain redundant text as in the methods section the format of the results is already described.

Major revision:

comment: the SE of the various parameters , for instance but not exclusively , PHHA and glenoid version are rather small. Since a spectrum of clin abnormalities is usually present I expect larger SE. Is this correct?

Comment: the analysis is interrelation between several parameters should not be done using multilin. regression.
The choice to use the coracohumeral distance as dependent parameter of a multilinear regression is I think inappropriate since it is not a useful parameter (see comment in method section). I think the paragraph: the prediction of coracohumeral distance should be removed. In this form it is not informative.

Discussion section

Major revision

Comment: The difference in coracohumeral distance between affected and unaffected side is if I am correct about 2 mm on 26 mm that is 10%. This can be explained by the smaller size of the affected scapula which is also 10% as was described by one of the authors (their ref 14, NAth and Piazi 2007).

This means glenohumeral distance as measured in this study is probably not different.

Could not the following scenario be present: normally coracoid and humeral head keep a certain distance. Movements of the humeral head (intern and external rotation and anteflexion abduction) all influence the growth direction of the coracoid. In OBPL these movement are reduced and besides the head migrates dorsally (that is subluxated), the coracoid follows the migrating head keeping more or less the “same “distance.

Using aa a measurement the original coracohumeral distance as defined by Gerber would have addressed this item. As is it the size differences in the humeral head now probably influence the adapted coracohumer measurement (which is a composite of both the soft tissue distance and the humeral head).

This makes an adaptation of the discussion necessary.

Comment : Why is the overlap larger?

Comment : In the discussion the section on multilinear regression is too large, too abstract and I feel not relevant. I think it should be omitted.

Comment I think more theorizing on the aetiology of the changes is useful: why is it deviated in this direction.

In the section starting with “the coracohumeral distance measured as the distance etc” states that the distance this study measured is termed subcoracoid space by others. This is incorrect. Your adaptation of the method is too large. The subcoracoid space is not measured in this study

The relevance of the deviation is adequately stated in the last sentence of the discussion which is I think the important clinical aspect of this study

Figures and tables

Minor revision: fig 3 I think signif < 0.05 and 0.01 are not present is this fig so they can be removed from the text
Major revision: I am afraid I feel fig 4 should be removed as not relevant and Table 2 and 3 are not useful.

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Level of interest: An article of importance in its field

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'