

PEER REVIEW HISTORY

BMJ Paediatrics Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Can paediatric emergency clinicians identify and manage clavicle fractures without radiographs in the Emergency Department? A prospective study.
AUTHORS	Lirette, Marie-Pier; Bailey, Benoit; Grant, Samuel; Jackson, Michael; Leonard, Paul

VERSION 1 – REVIEW

REVIEWER	Reviewer name: Simon Craig Institution and Country: Monash University, Australia. Monash Medical Centre, Australia Competing interests: None
REVIEW RETURNED	26-May-2018

GENERAL COMMENTS	<p>Thank you for the opportunity to review this interesting paper regarding ED doctors' identification and management of suspected clavicle fractures prior to x-ray.</p> <p>The paper is well-written.</p> <p>I have a few minor suggestions / queries.</p> <p>The discussion could include some comments on the potential acceptability of not imaging a suspected clavicle fracture. Is there any information on what parents (or doctors) think about this? I realize that this is not a focus of your project, however, there may be information relating to this from the implementation of the Ottawa ankle rules, etc, that would add to the discussion.</p> <p>Figure 1 – should read "clavicle" rather than "clavicule"</p> <p>Figure 2 – remove decimal places from Y axis. If providing median values, consider also including interquartile ranges - ?Box plot may be more useful than simple column graph.</p> <p>I note the study form also collected information about the suspected site of the fracture (medial, middle, lateral part of clavicle). Was this information compared to the radiology report? If so, what were the findings?</p>
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REVIEWER	Reviewer name: Daniel Magnus Institution and Country: Children's Emergency Department, Bristol Royal Hospital for Children Competing interests: None
REVIEW RETURNED	30-May-2018

GENERAL COMMENTS	I think this is a nice study and has some important results that are clinically important and worth disseminating. A few things might make the paper even better:
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	<p>1. I think the Table 1 could be modified to take out age and sex (this can be described) and to better show the comparable data on fracture predicted vs identified in cross reference (possibly with a chi squared stat) - essentially a 2 x 2 comparison - and potentially the same for clinical management (predicted vs actual with respect to BAS for example). I think the paper is robust to stand enough without these modifications but this would be my advice.</p> <p>2. I think there may be something missing from the discussion around the value that xrays confirming fracture might provide for families. Xrays may not change management but there may be a quality element that still matters to family - unpicking this may be harder. Again, not an essential modification but may provide a more complete overview.</p>
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REVIEWER	<p>Reviewer name: Giulia Mandelli Institution and Country: Istituto Di Ricerche Farmacologiche Mario Negri, Department of Clinical Epidemiology, ITALY Competing interests: Nothing to declare</p>
REVIEW RETURNED	19-Jun-2018

GENERAL COMMENTS	<p>The manuscript entitled "Can paediatric emergency clinicians identify and manage clavicle fractures without radiographs in the Emergency Department?" presents a prospective study aimed to determine whether clinicians can manage clavicle fractures without radiographs in the paediatric emergency department. The study enrolled patients arrived to the emergency department of the Royal Hospital for Sick Children with a suspected clavicle fracture. Results suggest that clinicians can identify the presence of a fracture from clinical examination alone and the radiographs do not appear to influence ultimate management.</p> <p>The study is interesting and the manuscript is well written and easy to understand. My comments focus mainly on results and discussion sections:</p> <p>RESULTS</p> <p>1. The authors state that 82 cases of trauma to the clavicle were seen in which a radiograph was obtained: 51 were enrolled and 32 not. Since probably 32 is correct (see the 'Missed cases' paragraph), 82 must be rectified in 83 on page 6, line 44 and in the figure 1.</p> <p>2. There is an error in the NPV of the identification of fractures (page 7, line 54); I think that it should be 63% instead of 67%.</p> <p>3. On page 6 the authors state that the confidence interval (CI) was calculated using a template based on the Wilson method. However, I do not think they are calculated that way. Indeed the confidence intervals of sensitivity and sensibility are calculated with the exact method (based upon the binomial distribution) and the CI of PPV and NPV seem to be calculated with the Mercaldo method. I suggest the authors to check the methods used.</p> <p>4. In the second paragraph of page 8 there were 44 patients that were treated with BAS: 41 patients who were predicted to have a fracture by clinicians and 3 patients for which the clinicians were unsure or they predicted there would be no fracture.</p>
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	<p>However, in the first and third paragraphs of the same page the patients treated with BAS were 45. I think that the numbers of the second paragraph are incorrect and consequently the specificity, sensitivity, PPV and NPV.</p> <p>5. I calculated the kappa coefficient value on page 9 and the results I obtained are different.</p> <p>Clinicians' predictions on presence of fracture: 0.67 (0.37, 0.97) Final radiographic report: 0.62 (0.32, 0.91) Clinicians' predictions of ultimate management: 0.88 (0.64, 1) Can the authors check the formula?</p> <p>DISCUSSION</p> <p>1. The authors state that radiographs can be omitted in the routine assessment of suspected clavicle fracture in children. This statement is justified by the sensitivity of clinicians to predict the presence of fracture (93%) but not by the specificity which is only 50%. However, the fact that placing a child's arm in a BAS for a short period poses little harm to the child makes the statement reasonable from a practical point of view.</p> <p>2. Why there are no comments or results on the site of the fracture despite the fact that information has been collected?</p>
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VERSION 1 – AUTHOR RESPONSE

FIRST REVIEWER

The first reviewer felt the paper was well written and suggested a few minor changes:

- He advised to include a comment in the discussion on the potential acceptability of not imaging a suspected clavicle fracture from the patients and clinicians' perspective. The authors agree and have included a section in the discussion addressing this point, as per paragraph 1 on page 12 in the discussion section. It seems that despite common beliefs that parents (and clinicians) may prefer to x-ray; there is no reduction in patient/clinician satisfaction to omit radiographs. Please see references 5, 19, 20 and 21, which support this statement.
- The reviewer also highlighted a spelling mistake in Figure 1 ('Clavicule' was written rather than 'clavicle') which has been rectified.
- He also suggested changing Figure 2 to a box plot to represent the medians and their interquartile ranges; which we have created (as per Figure 2).
- The reviewer noted that we had collected information about the suspected site of fracture and queried if we had compared it to the radiological report. We initially planned to compare this, however the radiologists inconsistently reported the location of the fracture. We also noted, from speaking to various radiologist that there was inter-user variability. We therefore did not analyze this information and we did not compare it with the ultimate radiological report.

SECOND REVIEWER

The second reviewer felt this was a nice study with results worth disseminating but suggested a few modifications to improve our manuscript further. The authors agree with these recommendations and have improved our manuscript accordingly.

- He suggested modifying Table 1 to take out age and sex and to describe this in the body of the text.
- Furthermore, he suggested to create a 2x2 comparison table to better compare our data; for both predicted vs identified fracture and for predicted vs actual clinical management. The authors agree with this and this has been changed as per the suggestions. Please see table 1 and 2 on page 7 of the results section.
- He also suggested, similarly to the first reviewer, adding a section in the discussion regarding patient/clinicians satisfaction. The authors agree that this is an important aspect to highlight and this was therefore added as per first paragraph on page 12, in the discussion section.

THIRD REVIEWER

The third reviewer felt the study was well written and easy to understand but commented mainly on our result section.

- He highlighted a few errors that were typing/transcribing errors. We have rectified those. For example, we have clarified that there were 83 cases of trauma to the clavicle (51 enrolled and 32 missed) in the result section on page 6 as well as in Figure 1. Furthermore, the NPV of the identification of fractures (page 8) was wrongly written as 67%. This was recalculated and now been rectified as 62%.
- The reviewer commented on the confidence intervals. They were calculated with the Wilson method using the software Confidence Interval Analysis. However, some values were wrongly copied from earlier versions of the manuscript. We have recalculated all data and all confidence intervals and have made changes to some of the 95% Confidence Interval, as seen in the result section. These were re-calculated using the Wilson method through the software Confidence Interval Analysis. For example, the reviewer had commented on the values in the second paragraph of page 8 which has now been rectified.
- The reviewer calculated the kappa coefficient values and obtained different results. The authors checked the formula and recalculated the kappa values. We obtained the same results as the reviewer and have therefore rectified the values in Table 3. We have also re-calculated the confidence intervals and have made the changes where needed. See Table 3 for the changes.
- The reviewer said that our statement that “radiographs can be omitted in the routine assessment of suspected clavicle fractures in children can be justified by the sensitivity of the clinicians to predict the presence of fracture (93%) but not by the specificity which is only 50% is reasonable from a practical point of view as placing a child’s arm in BAS for a short period of time poses little harm to the child”. The authors strongly agree with this point and have added a sentence to highlight this further.
- The reviewer also commented on how there were no comments on the location of the fracture. As mentioned above, we initially planned to compare this, however the radiologists inconsistently reported the location of the fracture. We also noted, from speaking to various radiologist that there was inter-user variability. We therefore did not compare this information with the ultimate radiological report.

We have also added “A prospective study” to our title as per your recommendations.

Thank you for your consideration of this study for publication in your journal.

Please let us know if there are any further changes or information you require.