Letter to the editor

Letter to the editor

Dear Editor

With great interest I have been reading the article 'Are standard antero-posterior and 20° caudal radiographs a true assessment of mid-shaft clavicular fracture displacement' by Wright et al.¹

Clavicular displacement seems to be an important variable in treatment decision of clavicular fracture and several different techniques have been described to evaluate displacement as good as possible.

As stated by the authors, a 2D X-ray image will underestimate the true displacement of the fracture and this is the most important message of the article.

However, in our opinion, there seems to be several limitations to the methodology.

Currently it is not clear if the xray and CT scan are taken in the same position. As stated by other authors, protraction (due to gravity more common when a patient is in a prone position) or retraction (due to gravity more common when a patient is in a supine position) of the scapula can have an important influence on the displacement of the fracture.^{2,3} If in this study the standard radiographic images were taken in a different position than the CT, in our opinion, this needs to be mentioned in the limitations.

In this study, shortening was measured as absolute figures of millimeters. However studies evaluating the length of the clavicle showed an important difference between the length measured on a Xray and the length on a CT.⁴ In my opinion shortening should be measured relative to the complete length of the clavicle on the Xray and the CT separately and afterwards the measurement can be correlated to obtain a more correct evaluation.

When evaluating the displacement, this relative number has been used however technique of measurement seems not to be uniform. Fig. 4 shows a 3D measurement and Fig. 5 shows a 2D measurement. Also axial CT images are described as method to

assess displacement and not 3D CT images. The author stated that axial CT images provide an opportunity to identify the true antero-posterior displacement but an axial CT image is still a 2D image and can only show the true displacement if the scan is reconstructed in the plane of the clavicle. However because of the form of the clavicle this is almost impossible. To evaluate the true displacement a 3D reconstruction can probably provide more correct measurements.

To conclude, we agree with the authors that an Xray probably underestimate the real displacement but in our opinion there are several limitations to the methodology that not have been described.

References

1. Wright J, Aresti N, Heuveling C, Di Mascio L. Are standard antero-posterior and 20 degrees caudal radiographs a true assessment of mid-shaft clavicular fracture displacement? *J Clin Orthop Trauma*. 2016;7:221–224.
2. Van Tongel A, De Wilde L. To the editor. *J Orthop Trauma*. 2015;29:e347–348.
3. Backus JD, Merriman DJ, McAndrew CM, Gardner MJ, Ricci WM. Upright versus supine radiographs of clavicle fractures: does positioning matter? *J Orthop Trauma*. 2014;28:636–641.
4. Bernat A, Huysmans T, Glabbeek FV, Sijbers J, Gielen J, Van Tongel A. The anatomy of the clavicle: a three-dimensional cadaveric study. *Clin Anat*. 2013;.

Alexander Van Tongel*

Lieven De Wilde

Ghent University Hospital, Ghent, Belgium

* Corresponding author at: Department of Orthopaedic Surgery and Traumatology, Ghent University Hospital, De Pintelaan 185, 9000 Gent, Belgium.

E-mail address: alexander.vantongel@uzgent.be (A. Van Tongel).

Received 16 December 2016

Available online 20 March 2017