

Comment on Mittal et al: Defining the lateral edge of the femoroacetabular articulation: correlation analysis between radiographs and computed tomography

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Cite this article: Egund N. Comment on Mittal et al: Defining the lateral edge of the femoroacetabular articulation: correlation analysis between radiographs and computed tomography. *J Child Orthop* 2017;11:240-241. DOI: 10.1302/1863-2548.11.170006

Sirs,

I read with interest the recent article entitled "Defining the lateral edge of the femoroacetabular articulation: correlation analysis between radiographs and computed tomography" by Mittal et al.¹ The authors measured the center edge angle using the lateral edge of the sourcil (LCEA-S) and compared it with measurements using the lateral edge of the acetabulum (LCEA-E). The authors attribute the proposal of the LCEA-E angle to Wiberg² and the LCEA-S angle to Ogata et al.³

It appears that the current authors and several others of scientific reports, reviews and textbooks³⁻⁷ have misinterpreted the text and figures in the study by Wiberg.² Wiberg's definition of point E was clear: "it was decided to make E the point where the curving of the acetabular border laterosuperior begins, i.e., where the bony support may be considered to end. The dense shadow in the roentgen picture ends there".

Some studies and reviews⁸⁻¹⁰ have used and described the measurements of the center edge angle as originally suggested by Wiberg.² However, more commonly the landmark E, used for the measurements, has not been specified.¹¹ In this way, reports on the diagnosis of hip dysplasia, indications for and results of periacetabular osteotomy based on measurements of center edge angle may be difficult to compare.

Laborie et al⁴ measured the LCEA-E and LCEA-S on 2 038 radiographs of 19-year-old Norwegians and their results

showed a difference about 2.5°. In accordance with the current article, Ogata et al³ and others reported much larger differences between LCEA-E and LCEA-S, which may result in a substantially different treatment strategy.¹²

Wiberg measured the LCEA-S on radiographs of 200 normal hips in 50 males and 50 females and suggested a cut-off value of 20° between normal and dysplastic hips². Moreover, he suggested that further studies should assess the clinical significance of center edge angles between 20° and 25°. Although the measures on this small sample of 200 hips² do not allow statistical calculations, cut-off values of both 20° and 25° are repeatable considered gold standard for normal values of CEA independent of the measurement used, whether LCE-E, LCEA-S or not specified.^{7,10,11,13} Cut-off values of 25° using LCEA-S or LCEA-E may be an indication of periacetabular osteotomy to prevent development of hip osteoarthritis.^{14,15} To my knowledge, no publications have so far referred to the normal cut-off values of the original Wiberg center edge angle (LCEA-S) of 18° and 17° for males and females, respectively, based on measurements on 2 038 pelvic radiographs of young Norwegians.⁴ Using cut-off values of 25° about 25% of the Scandinavian populations have dysplastic hips.¹⁶

The strength of the current article¹ and also stressed by Chadayammuri et al¹² is to emphasise the significance of the bony landmark of the lateral edge of the sourcil used to define the point E. However, if the long lasting misinterpretation of the measurement of the center edge angle described by Wiberg had not occurred, then the present study would not have been necessary. Hopefully, future authors, editors and reviewers will be aware of the mistakes described above to prevent future confusion and to make studies comparable and in particular by considering the new reference intervals of common imaging measurements of the hip joint.⁴

Received 8 January 2017; accepted 16 February 2017.

COMPLIANCE WITH ETHICAL STANDARDS

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