

POSTER PRESENTATION

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Reliability of pelvic parameters measurement

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From 10th International Conference on Conservative Management of Spinal Deformities - SOSORT 2013 Annual Meeting
Chicago, IL, USA. 8-11 May 2013

Background

Pelvic parameters are an essential measurement in sagittal radiographic analysis. However, it is difficult to control the patient position during radiograph and it is possible that a strict profile cannot be obtained.

Method

Fourteen standing biplanar radiographic files of asymptomatic and scoliotic patients have been recorded and treated in the frame of pelvis/spine studies. Radiographic examinations involved frontal and sagittal exposures grasped successively. A standard radiographic set up is used, involving a rotating platform, interposed between radiographic source and plate. Patients must stand motionless on the platform, with bearing poles helping patients to keep a stable posture. Two numerical radiographs (size 30 cm x 90 cm) are shot. A self-calibration procedure is then applied to the two radiographs, which takes into account small patient movements occurring between successive grasps. The self-calibration technique is based upon epipolar plane geometric properties. Pelvic parameters—pelvic tilting and pelvic incidence—are measured clinically on sagittal x-ray. Direct measurements on sagittal x-ray of pelvic tilting and incidence are not accurate when the standing patient's pelvis is tilted while radiographed. Angular components calculated from a 3-dimensional analysis of pelvis shape and orientations are compared with corresponding values measured on sagittal x-ray.

Results

Fourteen examples of standing pelvis are presented. Pelvic tilting and incidence angles are obtained from 2-dimensional measurements and 3-dimensional analysis. In some cases, corresponding angular values are close together. In other examples, results differ significantly.

Conclusion and discussion

The single sagittal radiograph of the pelvis cannot explain such differences, contrary to results extracted from 3-dimensional analysis. Therefore, we must be careful in the reading of our pelvic parameters measurements.

Published: 18 September 2013

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doi:10.1186/1748-7161-8-S2-P3

Cite this article as: Deceuninck et al.: Reliability of pelvic parameters measurement. *Scoliosis* 2013 **8**(Suppl 2):P3.

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