Ultrasound in labor: is it time for a more simplified approach?

The use of transperineal intrapartum ultrasound assessment has been introduced in recent years to complement traditional digital evaluation, with the aim of providing an objective evaluation of fetal head descent. Despite an increasing number of studies on the subject, the application of this method in everyday clinical practice remains difficult, probably because of the technical difficulty in obtaining most of the sonographic parameters that have been suggested thus far. However, Eggebø et al. have proposed a measurement that is simply obtained, i.e. the distance between the fetal skull and the perineum on transperineal ultrasound (the head–perineum distance (HPD)) (Figure 1a). More recently we have proposed another simple index of fetal head station inspired by the obstetric literature, i.e. the distance between the lower edge of the maternal symphysis pubis and the fetal skull, along the infrapubic line (the fetal head–symphysis distance (HSD)) (Figure 1b). We studied HSD with three-dimensional ultrasound which gave us the opportunity to measure both HPD and HSD retrospectively using the volume datasets we had stored (Figure 2). As shown in Figure 3, we found good correlation between the two measurements (Pearson’s r coefficient, 0.826; P < 0.001).

Figure 1 Method for measuring head–perineum distance (HPD) described by Eggebø et al. and fetal head–symphysis distance (HSD) described by Youssef et al. (a) Evaluation of HPD, the ‘shortest distance from the outer bony limit of the fetal skull to the skin surface of the perineum’, is classically performed in the axial plane. (b) Evaluation of HSD, the ‘distance between the lower edge of the maternal symphysis pubis and the fetal skull, along the infrapubic line’, is classically performed with the transducer placed in the mid-sagittal plane.

Figure 2 Ultrasound image depicting measurement of fetal head–symphysis distance (HSD (- -)) and head–perineum distance (HPD (—)) in the present study. HSD was defined as the distance between the lower edge of the maternal symphysis pubis and the fetal skull, along the infrapubic line. HPD was defined as the shortest distance from the outer bony limit of the fetal skull to the skin surface of the perineum. Both measurements were evaluated in the mid-sagittal plane.
suggested that it may be possible to use the two parameters interchangeably in assessment of fetal head station. Whether HPD or HSD is more useful in difficult clinical situations (e.g. prior to instrumental delivery) remains to be elucidated.

We stress that we evaluated both parameters in sonographic volumes that had been acquired in the mid-sagittal plane, whereas HPD is classically evaluated in the axial plane. However, due to the clear definition given by Eggebø et al. of the HPD as ‘the shortest distance from the outer bony limit of the fetal skull to the skin surface of the perineum’3, we do not think that rotation of the ultrasound probe would result in any difference in the evaluation of this parameter.

To summarize, both HPD and HSD are objective, simple and reliable indices of fetal station evaluation in labor and correlate highly with each other. We strongly encourage prospective studies on the use of these measurements. However, we feel that there is already sufficient evidence to justify their use as complementary parameters in the labor ward, especially in clinically challenging situations when the highly subjective digital evaluation remains the only tool in the armamentarium of obstetric personnel.

A. Youssef*, F. Bellussi, E. Maroni, G. Piliu, N. Rizzo and T. Ghi Department of Obstetrics and Gynecology, Sant’Orsola-Malpighi University Hospital, University of Bologna, Via Massarenti, 40138 Bologna, Italy

* Correspondence (e-mail: aly.youssef78@gmail.com)

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