

The value of transperineal ultrasound in persistent occiput-posterior position

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ABSTRACT Objectives: The main objective of this study was to observe the values of transperineal ultrasound parameters in labour both in occiput anterior and occiput posterior (OP) position, and also to verify their importance in labour management. **Methods:** 91 patients in labour were included in this study, with gestational age over 37 weeks and estimated fetal weight over 2500 g, singleton pregnancy, cephalic presentation, empty urinary bladder. For these patients several ultrasound parameters were assessed: angle of progression, distance of progression, head direction, fetal head rotation, and fetal head-perineum distance. **Results:** 36 of 91 patients included in the study had an occiput posterior (OP) position (39.56%) at the first ultrasound exam. 5 patients (5.49%) presented persistent OP position, all of them primiparous. 85 patients (93.4%) had vaginal delivery, 6 patients requiring cesarean section, 5 of which were patients that presented persistent OP position and lack of progress in labour. Ultrasound parameters were measured at the beginning of labour and they showed favorable values in all 5 cases with persistent occiput posterior position. However, in the second stage of labour, values maintained favorable in only one case. **Conclusions:** The vast majority of OP position had vaginal delivery in occiput anterior position. Similarly, the large majority of cesarean cases presented persistent OP position, with favorable ultrasound parameters values in the first stage of labour, and one case maintaining favorable values in the second stage of labour. Patients with occiput anterior position presented favorable parameters values throughout the labour.

KEY WORDS *transperineal ultrasound, occiput posterior, cesarean section, neonatal adverse outcome*

Introduction

Occiput posterior position raises clinical issues regarding all aspects of labour care: prevention, diagnosis, labour management and delivery itself. Occiput posterior position is the most common malposition during labour, reaching at the beginning of labour 15-32 percent, dropping though during delivery to 5-8 percent. Both fetal and maternal outcomes are often serious and physical and psychological trauma are more frequently encountered than in occiput anterior position. Thus, persistent occiput posterior position during delivery associates with prolonged labour, assisted vaginal delivery (vacuum of forceps), high degree perineal lacerations, blood loss greater than 500 ml, chorioamnionitis and postpartum wound infection (1-7). The mechanism that leads to persistent occiput posterior position remains unknown, although several studies (Akmal *et al.*, Souka *et al.*, Gardberg *et al.*) tried to explain it, some authors arguing that it could be generated by the fetal head malposition either before or at the beginning of the labour (9), others supporting the idea that it is the result of malrotation during labour, from anterior or transverse position(8).

During labour, clinical examination differ between examiners, being subjective and varying with experience and training, with possible consequences regarding management and

delivery outcome (10,11). The advantages of ultrasound (fetal biometry, weight assessment, fetal head presentation, multiple gestation, placental location, Manning score, Doppler velocimetry) were demonstrated in multiple studies, recently with accent on labour progress assessment using transperineal ultrasound (TPU), the most accurate method in fetal head position evaluation(12-18).

However, finding an occiput posterior position can not certainly predict it persistency during delivery, approximately 85-90% fetuses rotating in an occiput anterior position before delivery(19). Nevertheless, an early and accurate diagnosis of occiput posterior position demands a more carefully observation of the labour.

Methods

In this study were included 91 patients admitted for delivery in the Obstetrics Clinic of SCJU Craiova. Transperineal ultrasound exam of those patients observed certain parameters: angle of progression, distance of progression, head direction, fetal head rotation, fetal head-perineum distance.

The inclusion criteria were: systematized uterine contractions, cervix effacement over 2 cm, gestational age over 37 weeks, estimated fetal weight over 2500 g, singleton cephalic pregnancy, empty urinary bladder.

The exclusion criteria were represented by the antepartum cesarean recommendations (maternal or fetal pathology).

For the ultrasound measurements we used an ultrasound machine with 3,5-5 MHz probes which were introduced in an ultrasonographic gel covered glove and then placed between the labia, under the pubic symphysis.

The following aspects were considered: gestational age, parity, epidural analgesia, spontaneous or induced labour, fetal head position at delivery, Apgar score, fetal weight.

Results

36 of 91 patients included in the study had an occiput posterior position (39,56%) at the first ultrasound exam, 5 patients (5,49%) presenting persistent occiput posterior position, the rest of them rotating in an occiput anterior position during labour.

Figure 1: Fetal head inițial position proportion

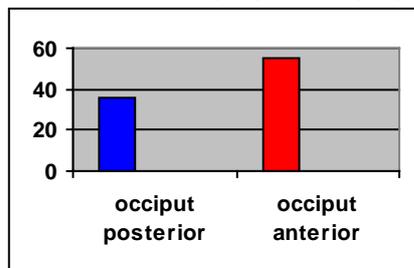
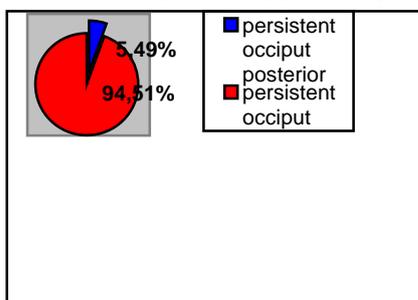
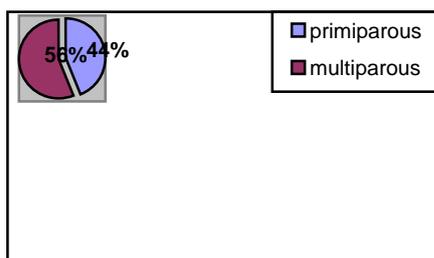


Figure 2: Fetal head , in labor, position proportion



Regarding parity, from the 36 patients which presented initially occiput posterior position, 16 were primiparous (44%) and 20 were multiparous (56%). All 5 patients which had persistent occiput posterior were primiparous.

Figure 3: Case distribution by parity



Another assessed parameter, weight at birth, had large variations (table no 1)

Table no. 1: Patients with occiput posterior position distributed by fetal birth weight

Birth Weight	< 2500g	2500-3000g	3000-3500g	> 3500g
No of patients	2	11	15	8

85 patients (93,4%) had vaginal delivery and presented normal ultrasound progression parameters. 6 patients required cesarean section, 5 of which were patients that presented persistent occiput posterior position and lack of progress in labour, and the sixth was indicated for acute fetal distress.

Ultrasound parameters were measured in the first stage of labour and showed favorable values in all 5 cases with persistent occiput posterior position. However, in the second stage of labour, values maintained favorable in only one case, which required cesarean section for lack of progress in labour and acute fetal distress.

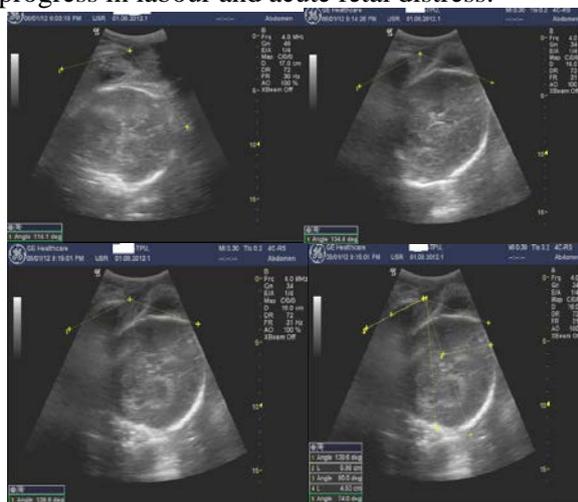


Figure 3. Consecutive ultrasound images with apparently favorable parameters value for labor progression in occipito-posterior position

Discussions

Occiput posterior is the most common abnormal fetal position and persistent occiput posterior position contributed disproportionately to cesarean and instrumental delivery, with fewer than half of the occiput posterior labors ending in spontaneous delivery and the position accounting for 12% of all cesarean deliveries for dystocia (6).

Comparing deliveries in anterior position with those in posterior position, it was found that the frequency of prolonged labour (more than 12 hours) is greater in occiput posterior position, the rate of maternal serious outcomes and cesarean sections requirement being more often in those cases. Also, neonatal adverse outcome is higher in deliveries with persistent occiput posterior position (Apgar score under 7 in many cases,

birth trauma, admission to the neonatal intensive care unit), most likely because of prolonged labour through relatively cephalo-pelvic disproportion(5).

In our pilot study, from 6 emergency cesarean sections, 5 were indicated because of lack of progress in labour caused by persistent occiput posterior position (83%), which was diagnosed using ultrasound exam (abdominal and transperineal) since the beginning of labour. Favorable ultrasound parameters in the first stage of labour were noted in 4 out of 5 OP cases, but not in the second stage. However, in one case, in the first and second stage of labour we measured favorable progression parameters, but the delivery required cesarean section and had an adverse neonatal outcome.

We consider that larger studies are required to establish an optimal management for delivery in patients diagnosed with persistent occiput posterior position, because the elongation of the fetal cranium, commonly associated with this position of the fetus, may lead to the false impression of normal ultrasound measurements, and normal progression of labour, as stated in occipito-anterior position.

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