INTRAPARTUM ULTRASOUND ASSESSMENT OF FETAL SPINE POSITION.

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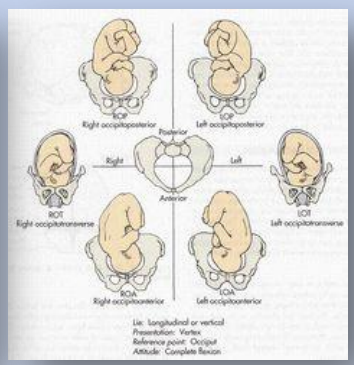
… background…

The foetal head typically engages in the transverse diameter late in the third trimester and usually rotates to an occipitoanterior (OAP) or occipitoposterior (OPP) position. OPP occurs in 15–20% of women before labour at term [1].

Approximately 90–95% of these foetuses rotate during labour once the head reaches the pelvic floor [1, 2]. Thus, most of the OPP deliveries seem to arise as a consequence of a malrotation from the initial OAP or transverse position (OTP), rather than a persistent OPP. OPP incidence at birth ranges between 1 and 5% [2, 3].



In obstetrical practice, pregnant women with OPP foetuses present prolonged second stages of labour, higher rates of episiotomy, and severe perineal lacerations, mainly owing to the higher rates of instrumental delivery and increased risks of Caesarean section (CS) by nearly 4-fold [7].

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Sonographic assessment of fetal spine and head position during the first and second stages of labor for the diagnosis of persistent occiput posterior position: a pilot study

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Table 4 Estimates of sensitivity, specificity, positive and negative predictive values (PPV and NPV), positive and negative likelihood ratios (LR+ and LR−) and their 95% CIs for occiput and spine position in the second stage of labor in predicting occiput posterior position at birth

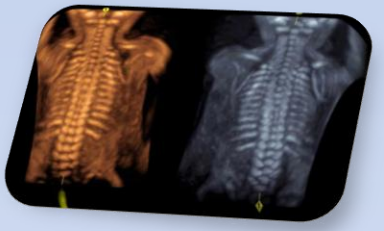
	Occiput position		*Spine position*	
Measure	*Value*	*95% CI*	*Value*	*95% CI*
Sensitivity (*n*)	1.00 (6/6)	0.541–1.000*	1.00 (6/6)	0.541–1.000*
Specificity (*n*)	0.78 (61/78)	0.678–0.859	0.99 (77/78)	0.931–0.998
PPV (*n*)	0.26 (6/23)	0.125–0.465	0.86 (6/7)	0.421–0.996*
NPV (*n*)	1.00 (61/61)	0.941–1.000	1.00 (77/77)	0.952–1.000
LR+	4.19	2.64–6.65†	48.90	9.89–241.82†
LR−	0.09	0.01–1.33†	0.07	0.01–1.05†

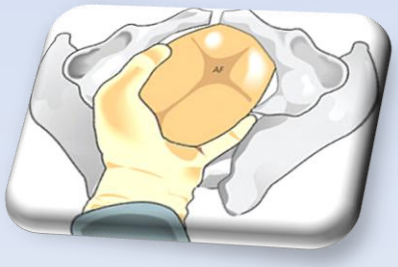
95% CI estimated by Wilson method, except where indicated. *95% CI estimated by binomial exact test. †Likelihood test calculated by adding 0.5 to each cell of the 2 × 2 table.

Peregrine et al. Obstetrics and Gynecology, vol. 109, no. 3, pp. 618– 625, 2007.
Akmal et al. BJOG, vol. 111, no. 6, pp. 532–536, 2004.
Gizzo et al Ultrasound in Medicine and Biology,vol. 39, no. 3, pp. 550–551, 2013.

… aims of the study…

to investigate the role of foetal spinal position in the first and second stages of labour in determining OPP at birth.





to investigate the implications of persistent OPP during labour in terms of the mode of delivery, length of labour, and analgesia request rate.

… methods…

type/setting

An observational study was conducted on pregnant women at term who delivered in the Gynaecological and Obstetric Clinic, Department of Woman and Child's Health of Padua University Hospital, between December 2011 and August 2013.

patients selection criteria

Inclusion criteria were as follows: age 18–40 years old, uncomplicated pregnancy, single foetus in cephalic presentation, normal foetal heart rate pattern status, and parity ≤3.

Exclusion criteria were as follows: history of uterine malformation, previous uterine surgery, pregnancies obtained by assisted reproductive techniques, suspicion of foetal malformation, intrauterine growth restriction, estimated foetal weight ≥4500 gr (calculated using ultrasound measurements by the Hadlock formula) [9], maternal fever of more than 38°C at admission, and incomplete obstetrical data about the trends of labour.

data collection

For all of the patients, data were collected on the following: maternal age, gestational age, parity, type of labour (spontaneous or induced), length of the first and second stages of labour (in minutes), maternal request of epidural analgesia, type of delivery (spontaneous, operative, or Caesarean section), indications for caesarean section, neonatal weight (in grams), and length (in centimetres).

intervention

(TA) scan was performed in the maternal supine position with a 3.5 MHz convex probe AB2-7-RS *(Voluson e6 compact-GE Healthcare, GE Medical Systems Ltd, Diagnostic Imaging/Ultrasound/Life Care Solutions, 71 Great North Road, Hatfield, Hertfordshire)*. As previously described [11–14], the landmarks depicting fetal occipital position (anterior, transverse, or posterior) were the fetal orbits for occiput posterior position, the midline cerebral echo for occiput transverse position, and cerebellum or occiput for occiput anterior position. The position of the foetal spine was determined by obtaining a transverse section of the foetal chest at the four-chamber view of the heart.

The positions of the spinal column and occiput were defined, as previously reported by Blasi et al. [6] and Akmal et al. [12], with the ultrasound findings for each foetus being reported on a clock-like chart divided into 12 sections, each representing 30°. The anterior position was determined if the occiput or spine was anterior (9.30–2.29), with other positions described as transverse right (8.30–9.29), transverse left (2.30–3.29), or posterior (3.30–8.29) [6]. At delivery, all foetal occiput positions were also recorded.

Occiput position and spinal column position were detected by TA ultrasound evaluation at the beginning of the labour (3 cm of cervical dilation) and at the second stage of labour (after the patient was diagnosed to be fully dilated); at birth, the occiput position was detected by clinical evaluation. When CS was performed before the complete cervical dilation, we documented occiput and spinal positions before the CS.

elimination of bias

Midwifery and clinicians were blinded to ultrasound reports and to the aim of the study. They assisted the parturient according to our delivery room protocols and we collected information about labour from the final delivery report.

researcher who performed intrapartum ultrasound examination was blinded to clinical examinations performed by midwifery or clinician during labour. The transabdominal

… results – 1st aim…

Table 2: Data about the occiput and spinal positions during the first and second stages of labour (for all patients) and at delivery (only in vaginal deliveries).

		Number	Anterior number (%)	Posterior number (%)	Transverse (right or left) number (%)
		Data about all patients			
First stage of labour	Occiput	256	66 (25.8)	133 (52.0)[$]	57 (22.3)
	Spine	256	49 (19.1)	47 (18.4)[#]	160 (62.5)
Second stage of labour	Occiput	256	171 (66.8)	67 (26.2)[*]	18 (7.0)
	Spine	256	176 (68.8)	41 (16.0)[**]	39 (15.2)
		Data about only patients who delivered through the vaginal route			
First stage of labour	Occiput	210	60 (28.6)	102 (48.6)	48 (22.8)
	Spine	210	45 (21.5)	20 (9.5)	145 (69.0)
Second stage of labour	Occiput	210	159 (75.8)	40 (19.0)	11 (5.2)
	Spine	210	162 (77.1)	15 (7.1)	33 (15.8)
Occiput at birth	—	210	194 (92.4)	16 (7.6)	—

[$]Of these, 71 cases changed position, 68 cases shifted to the occiput anterior position, and three cases shifted to the transverse position.
[#]Among the 47 cases of posterior spinal position, 42 (89%) showed a concordant occiput posterior position, whereas the remaining five cases showed a nonconcordant occiput position. The results in all cases were in the transverse position.
[*]Of these, 62 already belonged to the occiput posterior position at the first stage of labour, and five changed into the occiput posterior position from the transverse position at first stage.
[**]All of the 41 posterior spinal positions detected at the second stage of labour were in the same position at the first stage of labour. Only six posterior spinal positions at the first stage of labour changed into the other position, four cases changed to the anterior spinal position, and two cases changed to the transverse position.

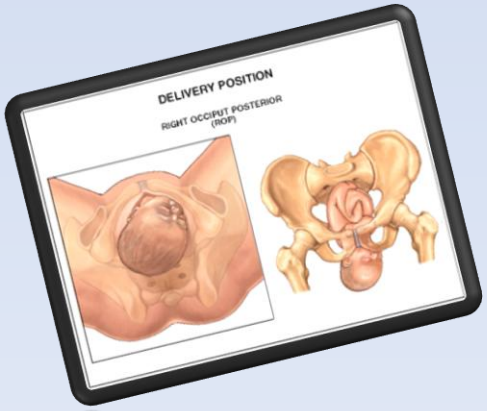
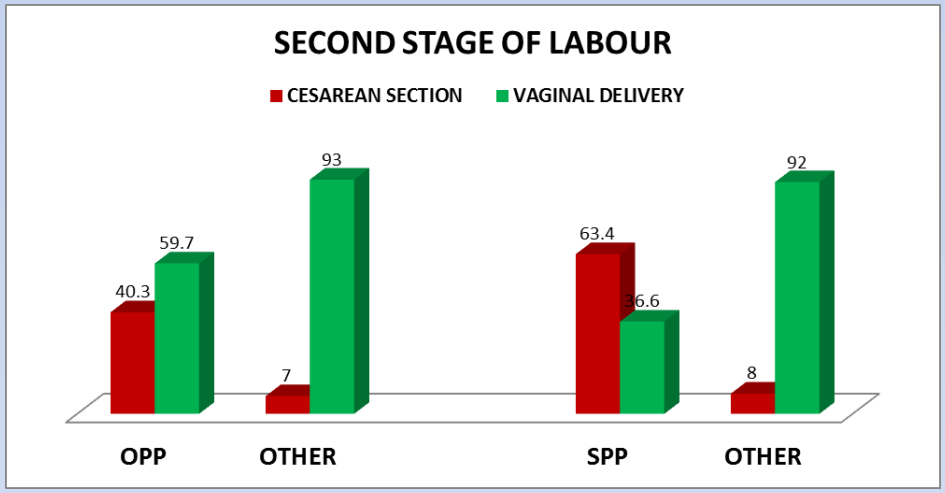


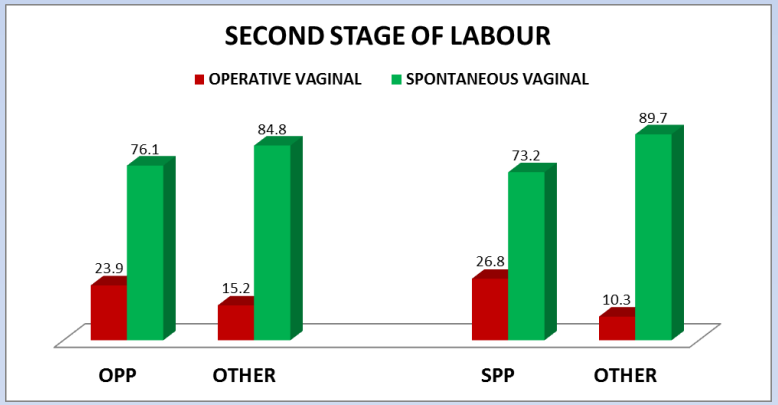
Table 4: Estimation of the sensitivity, specificity, positive and negative predictive values (PPV and NPV), positive and negative likelihood ratios (LR+ and LR–), and their 95% CIs for the occiput and spinal position in the first and second stages of labour in predicting occiput posterior position at birth.

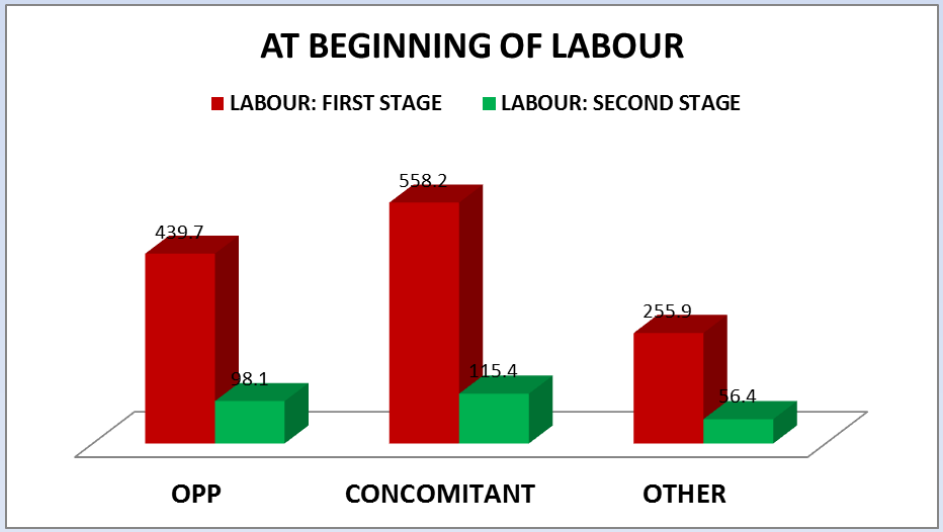
	Occiput posterior position (first stage of labour)		Spine posterior position (first stage of labour)	
	Value	95% CI	Value	95% CI
Sensitivity	0.937	0.904–0.970	1	0.923–1
Specificity	0.552	0.484–0.620	0.979	0.959–0.998
PPV	0.147	0.099–0.195	0.8	0.746–0.854
NPV	0.99	0.976–1	1	0.967–1
LR+	2.09		41.7	
LR–	0.11		0	
	Occiput posterior position (second stage of labour)		Spine posterior position (second stage of labour)	
	Value	95% CI	Value	95% CI
Sensitivity	0.875	0.830–0.920	0.937	0.904–0.970
Specificity	0.865	0.818–0.911	1	0.954–1
PPV	0.53	0.285–0.414	1	0.971–1
NPV	0.988	0.973–1	0.994	0.983–1
LR+	6.48		Infinity	
LR–	0.14		0.06	

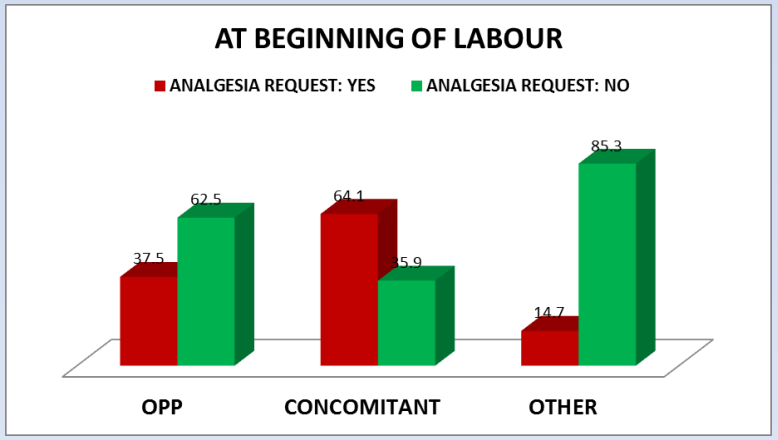
[*]95% CI estimated by the Wilson method and by the binomial exact test, when necessary.

… results – 2nd aim…



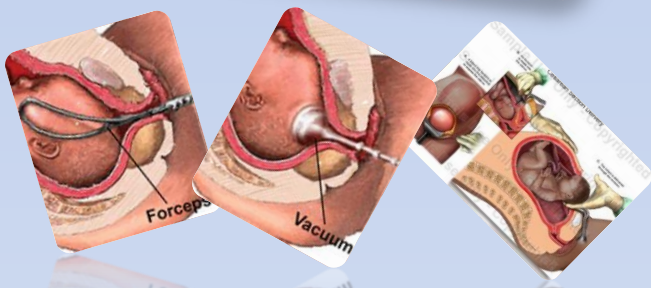






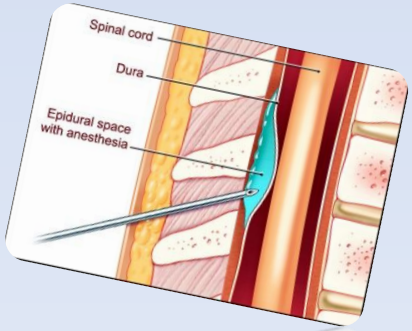
… main findings…

The persistent foetal OPP during labour is associated with some unfavourable events, such as prolonged labour, operative vaginal delivery, increased CS rate



The assessment of the spinal position already at beginning of the labour can be useful in discriminating persistent OPP to those that may spontaneusly rotate during labour

The concomitance of OPP and SPP is associate with increased intra-labour pain and maternal analgesia request



… new findings…

1. The assessment of the spinal position may help Obstetricians to improve the management of several "borderline intrapartum conditions", such as non-reassuring foetal heart rates, early signs of foetal distress, prolonged labour and maternal hyperpyrexia

2. Is it correct to consider concomitance of OPP and SPP as a relative contraindication for VBAC?

3. In women undergoing the induction of labour, sonographic determination of both occiput and spine position may improve the decision making and the estimation of chances respect to the strategy based only on Bishop score

4. The assessment of the spinal position may reduce the rate of operative deliveries due to concomitant posterior position anticipating the fetal head manual rotation to OAP

… further studies…

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Research Article

Women's Choice of Positions during Labour: Return to the Past or a Modern Way to Give Birth? A Cohort Study in Italy

Salvatore Gizzo,[1,2] Stefania Di Gangi,[1] Marco Noventa,[1]

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REVIEW

Update on best available options in obstetrics anaesthesia: perinatal outcomes, side effects and maternal satisfaction. Fifteen years systematic literature review

Salvatore Gizzo · Marco Noventa · Simone Fagherazzi · Laura Lamparelli · Emanuele Ancona · Stefania Di Gangi · Carlo Saccardi · Donato D'Antona ·

Title Page

Sonographic assessment of placental location: a mere notional description or an important key to improve both pregnancy and perinatal obstetrical care? A large cohort study.

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