

# The Advantage of Maternal Mobility during Labor: A Prospective Study about 120 Cases in Mahdia

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## Abstract

**Aim:** Our study is aimed to evaluate obstetrical and neonatal outcomes of maternal ambulation during labor.

**Patients and Methods:** Prospective study carried out in the obstetrics and gynecology department, CHU Tahar Sfar of Mahdia over a period of four months (1st January 2019 to 30th April 2019). The 120 selected women were allocated in two groups: a first group of 60 parturients for which the lying position was applied during labor, a second group of 60 parturients who were invited to ambulate until full dilatation.

**Results:** The ambulation allowed a significant reduction in the duration of the first part of labor ( $7.9 \pm 1.3$  hours compared to  $11.88 \pm 1.9$  hours with  $p < 0.01$ ), caesarean section rates (6.7% versus 23.3%) and instrumental extractions (7.1% versus 30.4%). It also allowed an important improvement in the maternal prognosis by reduction of complications ( $p = 0.007$ ) and the fetal outcomes (mainly the Apgar score in the first minute). Patients who ambulated are significantly more satisfied ( $p < 0.001$ ) with less painful contractions ( $p < 0.001$ ).

**Conclusion:** Based on the findings mentioned above, we deduce that maternal ambulation is beneficial on labor progress, on maternal comfort and maternofetal outcome.

**Keywords:** Ambulation; Maternal Position; Mobility; Maternal Satisfaction; Duration of Labor

## Introduction

Promoting maternal and fetal health and having safe motherhood remain the major priorities of any obstetrician seeking the satisfaction of the parturient to have a positive experience of childbirth. However, since the medicalization of childbirth, its practice has lost its physiological character. François MAURICEAU [1] proposed in 1668 lying position to women to facilitate obstetric maneuvers and perineal monitoring. It is from the 80s that the lying position was put in doubt because of its consequences. Indeed, she was accused of prolonging the duration of labor, of exhausting the woman, of being responsible for dystocic presentations [2,3]. In this regard, several studies have focused on the ideal maternal position for labor and delivery, and the impact of different positions on labor duration, oxytocin consumption, pain, the mode of delivery, obstetric and neonatal outcomes [4]. The aim of our study is to study the ideal position during labor and describe the impact of this mobile maternal position "ambulation" on labor progress, maternal and fetal morbidity.

## Material and Methods

This prospective cohort study was performed at the department of obstetrics and gynecology of Mahdia Hospital over a period of four months (from the 1st January 2019 to the 30th April 2009). 120 women were selected and allocated in two groups: a first group of 60 parturient for which the lying position was applied during labor, a second group of 60 parturient who were invited to ambulate until full cervical dilatation; ambulation means to walk about or to move from place to place, we included for that squatting position. Women with the following problems were to be excluded: calculated gestation age 36 weeks or less or 42 weeks or more, small-for-dates fetuses, breech position, twins, concomitant disease (such as diabetes, toxemia, hypertension), induced labor or spontaneously ruptured membranes, and immediately occurring delivery (cervical dilation greater than 3 cm at admission).

Statistical analysis was performed using the SPSS 22.0 statistical program. The Chi-square test was used to examine the effect of maternal ambulation on obstetrical and perinatal outcomes.

## Results

The mean age of women in the case group (women for which we applied ambulation) was 26.5 years and that in the control group (group of lying position) was 26.36 years. This result was statistically not different. The difference of Maternal BMI was not statistically different in both groups (26.57+/-3.53 in ambulant group vs 27.8+/-3.92 in control group) ( $P = 0.183$ ). In our study, latent and active phase even the duration of expulsion phase in the case group was significantly shorter than those in the control group ( $P = 0.01$ ). Also, the rate of instrumental extraction was lower with maternal ambulation. In addition, the rate of cesarean section was lower with this group but, the difference was not statistically significant ( $P = 0.14$ ). Women who were invited to ambulate were more satisfied with their experiences.

Comparisons of maternal and neonatal outcomes are presented in Tables 1, 2, 3 & 4.

	Ambulant	Control	P
Mean length of first stage of labor (h)	7.9+/-1.3	11.88 +/-1.9	0.01
Mean length of second stage of labor (min)	10.1+/- 7.09	20.22+/- 17.8	0.016
Duration of third stage (min)	7.2+/- 3.1	8.1+/- 3.4	0.09

**Table 1:** The length of labor

	Ambulant	Control	P
Oxytocin for acceleration of labor (UI)	4.61+/- 1.38	5 +/- 1.04	0.684
Cesarean section N (%)	4 (6.7%)	14 (23.3 %)	0.14
Instrumental delivery N (%)	5 (7.1%)	18 (30.4%)	0.01
Postpartum complications N (%)	6 (10%)	16 (26%)	0.007

**Table 2:** Treatment during labor, delivery, and post-partum complications

Cesarean indications	Ambulant	Control
Fetal compromise	4 (100%)	7 (50%)
Failure of fetal head engagement	0	2 (14.25%)
Failure to progress	0	3 (21.5%)
Chorioamnionitis	0	2 (14.25%)

**Table 3:** Cesarean indications in both groups

	Ambulant	Control	P
1 min Apgar scores (mean)	8.33 +/- 0.54	7.2+/-2.07	0.005
5 min Apgar scores ( mean)	9.8+/-0.4	8.63+/-2.41	0.01
Resuscitation of the new born N (%)	2 (3.3%)	12 (20%)	0.04
Neonatal admission N (%)	0(0 %)	6(10%)	0.07

**Table 4:** Condition of the new born

The mean lengths of the first stage (The time of the onset of true labor until the cervix is completely dilated to 10 cm), the mean lengths of the second stage (The period after the cervix is dilated to 10 cm until the baby is delivered) and the third stage (delivery of the placenta) were significantly shorter in ambulant than in control group. There was no difference in the use of oxytocin in the two groups (4.61+/- 1.38 in ambulant group vs 5 +/- 1.04 in control group) ( $P = 0.684$ ). In our study, there was no difference in the rate of cesarean section between the two groups ( $p = 0.14$ ), but the frequency of instrumental delivery was significantly higher in the case group ( $p = 0.01$ ). By using a pain assessment tool we found that Patients who were invited to ambulate were significantly more satisfied ( $p < 0.001$ ) with less painful contractions.

Table 3 presents different indications for cesarean section in both of groups.

Table 4 which present fetal outcomes shows that the 1-minute Apgar scores and 5-minute Apgar scores were significantly higher in the ambulant group. We needed the resuscitation of the new born in the control group more than in the ambulate group ( $P = 0.04$ ). There were 6 babies from the control group who were transferred to the special care unit and the most common reason was respiratory difficulties.

## Discussion

In 2018, the World Health Organization developed a guide with recommendations for essential intrapartum care for a positive experience of childbirth, which takes into account that childbirth is a physiological process and therefore preferably should be performed without complications. That's why many studies were interested to find the more effective and less painful position that helps to give birth to a healthy baby [5]. The principal purpose of our study was to see if ambulation can be introduced into the

routine care of labor. Our study found that ambulation had a beneficial effect on the duration of labor by shortening the first, the second and the third stage of labor. This result was found in the study of Liu, *et al.* [6] carried on in 1989 which showed that vertical position helps to minimize even the first and the second stage of labor.

The same result was shown in the study of Allahbadia and Vaidya [7] in which ambulation has shortened the duration of the first stage of labor by 3 hours. Berta, *et al.* [8] has shown that a reduction in duration of second stage of labor was observed among women in a flexible sacrum birthing position. Ben Rgaya, in his study, used a pain assessment tool and found that ambulation during labor can minimize pain felt by women mainly in the first stage of labor [9]. These results show that the vertical position is an analgesic posture, especially since none of the parturient has benefited from epidural analgesia in our study.

Women who ambulated during labor were more likely to have a normal delivery. The same outcomes was retrieved in the study of Ben Rgaya [9] which prove that ambulation has an effect in reducing the rate of cesarean section three times even the rate of cesarean done for fetal suffering. The reduction of the rate of fetal suffering is explained by the lifting of uterine compression on large vessels and the improvement of maternal respiration in an upright position [10]. However, in a review of the Cochrane [11] there are many studies which found that adopting a recumbent position with epidural anesthesia can reduce the need for operative birth and caesarean section.

In addition, the study of Gizzo [12] found that the practice of episiotomy was needed in all parturient of control group (100%) vs. 32,7% of parturient in the ambulate group (  $P = 0.001$ ) and that ambulation reduced the rate of maternal complications as perineal rips, Postpartum Hemorrhage and maternal fever. This is explained, according to the author, by the reduction of instrumental extractions by forceps, the relaxation of the perineum thanks to the continuous tension applied by the presentation during the mobilization [9]. The Women-Based Cochrane Review [13] reported that vertical positions without epidural anesthesia were associated with reduced rate of episiotomies (mean RR 0.75, 95% CI: 0.61e0.92), and of second degree perineal tears (RR 1.20, 95% CI 1.00e1.44) compared to supine position during the second phase of labor.

In our population sample, the 1-minute Apgar scores and 5-minute Apgar scores were significantly higher in the ambulant group ( $P < 0.01$ ), this results were confirmed by the study of Rgaya [9]. Other authors found the same fetal outcomes in both groups [14]. The experience of childbirth has long-term consequences, especially on the woman's psychology and her emotional and physical well-being, but also on her relationship with her child [15]. Most studies showed that ambulation increase the satisfaction of women and reduce the pain felt during contraction [9].

## Conclusion

When we looked at the results, we conclude that ambulation can be beneficial during labor. It allows the reduction of length of first part of labor even the second part, instrumental delivery, maternal complications and the improvement of fetal outcomes. Furthermore, more studies are needed to establish the merits of ambulation with a big sample and to make it as standard concept.

## Recommendation

More original and multicentric study is needed to research in this topic to can recommande this new method on our patients during labor in a safe way. Midwives play a pivotal role in caring and supporting women during the childbirth, especially with upright position.

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