ORİJİNAL ARAŞTIRMA / *ORIGINAL RESEARCH*

Evaluating the Second Stages of Deliveries in a Maternity Hospital

BİR DOĞUMEVİ'NDE DOĞUMLARIN İKİNCİ EVRELERİNİN DEĞERLENDİRİLMESİ

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Abstract

Objective: To determine properties the second stages of deliveries in a maternity hospital

Material and Methods: The population of this observational and descriptive study included all women between 37-42 weeks gestation, who was expected to give normal spontaneous vaginal labor with single vertex fetus and who had no complications developed in pregnancy and labor by convenience sampling method. The progress of labor and all observations for mother and fetus were recorded to the partograph beginning from the admission to the delivery unit. An information form was administered for descriptive characteristics of cases. The data of the study were analyzed with SPSS.

Results: 504 cases were included to the study. 51.6% of primiparous and 48.4% of multiparous women had spontaneous vaginal labor and mediolateral episiotomy. The length of first stage of labor was similar in primiparous and multiparous women. The length of second stage of labor in multiparous women was significantly shorter than primiparous women. ($z=-5.759$ $p< 0.000$). 92.50% of women received oxytocin induction. Fundal pressure was used in 42.5% of primiparous and 15.9% of multiparous women.

Conclusions: The length of phases in the first stage of labor (latent, active and transition) was quite short in both primiparous and multiparous women. The length of the second stage of labor was also found shorter in primiparous than multiparous and the literature. Shorter labor stage was observed with the fundal pressure and the common use of oxytocin induction and routine episiotomy in the second stage of labor. Labor induced outcomes must be followed with longitudinal researches.

Key Words: Maternal health services; episiotomy; delivery rooms; parturition; residence characteristics

Özet

Amaç: Bir doğumevinde doğumların ikinci evresinin özelliklerini belirlemek.

Gereç ve Yöntemler: Prospektif tanımlayıcı bu çalışmada 37-42. gebelik haftasında, verteks pozisyonda ve tek bir canlı fetüs ile normal spontan doğum yapması beklenilen, gebelikte ve doğumda riskli bir durumun gelişmediği gebeler evreni oluşturmuştur. Gebenin doğumhaneye kabulünden itibaren partograf üzerinde doğumun ilerleyişi, anne ve fetüsün tüm izlemleri kaydedilmiştir. Olguların tanımlayıcı özelliklerini içeren bir bilgi formu uygulanmıştır. Veriler SPSS analiz yöntemleri ile değerlendirilmiştir.

Bulgular: %51.6'sı primipar ve %48.4'ü multipar toplam 504 vaka ile çalışılmıştır. Doğum eyleminin birinci evresinin süresi primiparlarda ve multiparlarda benzerdir. Doğumun ikinci evresi multiparlarda primiparlardan anlamlı olarak daha kısadır ($z=-5.759$, $p< 0.000$). Kadınların %92.50'sine oksitosin indüksiyonu uygulanmıştır. Primiparların %42.5'ine ve multiparların %15.9'una fundal basınç uygulanmıştır.

Sonuçlar: Doğum eyleminin birinci evresinin fazlarının (latent, aktif ve geçiş) süresi hem primiparlarda, hem de multiparlarda oldukça kısadır. Doğum eyleminin ikinci evresinin süresi de primiparlarda ve multiparlarda literatürlerde belirtilenlerden oldukça kısadır. Doğum eyleminin ikinci evresinde fundal basıncın, yaygın oksitosin kullanımının ve rutin epizyotominin doğum eyleminin süresini daha da kısalttığı gözlenmiştir.

Anahtar Kelimeler: Ana sağlık servisi, epizyotomi, doğum odaları, doğum eylemi, ikamet özellikleri

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Developments in obstetric science have made delivery for mother and baby safer. Perinatal mortality and morbidity could be prevented by early diagnosis of labor deviations and well-timed intervention. Therefore, it is important to be able to evaluate the situations

that can influence the course of labor and to follow alterations. The rate of maternal mortality is 400/ 100.000 in the world; 20 in developed country; 25 in European countries, 330 in Asian countries, 830 in African countries and 70 in Turkey.[1] The incidence of maternal and baby mortality at prenatal period is high in Turkey. According to data on National Demographic and Health Survey 2003 (NDHS-2003) the prenatal mortality rate is 29/1000 in rural areas, and 21/1000 in urban areas.[2] Throughout Turkey, the perinatal mortality rate is lower with pregnancy interval being longer, with mother education level being higher, in age interval between 20-39 years and in urban areas. The rate of delivery without prenatal care is 23% of all deliveries in last five years. The deprivation of prenatal care is higher with mother age being higher, with number of parturition being higher, with maternal education being lower, and in those who lives in rural. According to data on NDHS-2003, 78% of deliveries are performed at a health organization. At the other hand, the rate of deliveries at home is one fifth. Deliveries at home increase with mother age being higher, with number of parturition being higher, with maternal education being lower, and in those who lives in rural areas. According to data on NDHS 2003, the rate of cesarean sectio (C/S) is 21%. Abnormal labor and dystocia are causative factors for C/S in 43% of deliveries performed by C/S.[2]

Material and Methods

Our study was planned to determine evaluating the second stage of delivery in a maternity hospital.

This study was performed at Health Ministry Istanbul Bakırköy Maternity and Child Diseases Hospital. This institution admits both normal and high risky pregnant women. Total number of deliveries was 20.813, the number of normal spontaneous deliveries was 14.355, the number of cesarean section was 6.458, and the number of deliveries with vacuum extraction was 125 in the one year (2004). A consent was obtained from Instituonal ethic committee of hospital of which the study was performed and also, verbal consents were taken from pregnant women participated in the study.

This study included women who were admitted to İstanbul Bakırköy Maternity and Child Diseases Hospital for delivery. Pregnant women were recruited for the study that was at 37 and 42 weeks of gestation, not at high risky, having single baby with vertex position, and who was in the course of normal delivery, and volunteer to participate in the study. Exclusion criteria were the development of a risk situation regarding labor and pregnant women underwent to C/S.

In our study first stage of labor refers the period until the cervical dilatation reaches 10 cm. This stage is consisted of three phases. Latent phase is the period in which cervical opening is between 0 and 3 cm and lasts 8 to 9 hours. Active phase begins when the opening is 4 cm and continues to which the opening is 7 cm. Finally, transition phase begins when the cervical dilatation reaches up to 8 to 10 cm. Second stage of labor refers the period from full cervical dilatation to delivery of baby. As the clinic protocols, oxytocin induction and other practices used in the delivery unite were as follows: Oxytocin is usually used in the active phase. 5U oxytocin is put in the 5% dextrose and given 8-10 drops in one minute. Also fundal pressure is sometime used in the second stage of labor. Fundal pressure is used when women is pushing at lithotomic position. Beginning from admission of pregnant women to delivery room unit, the nursing student took partograph records by observing all stages of labor with trainer supervision and took care of the pregnant women. A doctor or midwife working in delivery room unit performed vaginal examinations in every 4 hours in latent phase, and 1-2 hours in active phase.

In addition, it was recorded the fetal heart rates, duration and frequency of uterine contractions, rupture time and characteristics of amnion sac, oxytocin induction, other drugs used, vital signs of mother, blood group, age of mother, obstetrical features, the date of last menstruation, possible birth date, shape of birth, and sex, weight and Apgar points (at 1 and 5 minutes) of baby. Besides, caring needs of which pregnant women

needs in labor were overcome and non-pharmacological methods were applied for the pregnant women to support in response to pain.

Results

The sample of the study was included 504 pregnant women comprising of 260 primiparous and 244 multiparous women. The study includes 51.6% primiparous women and 48.4% multiparous women. The average age of primiparous women (mean= 22.84, SD=3.20) was significantly higher than of multiparous women (mean= 27.75 SD= 4.67) (z= -11.967; p< 0.000). Ninety percent of primiparous women were primigravida for the first time. 62.8% of primiparous and 44.7% of multiparous women was taken regular antenatal care. 5.4% of primiparous and 8.9% of multiparous had not gone to antenatal control. Regularly antenatal care was significantly higher in primiparous women (χ^2= 17.93 SD= 2; p< 0.000). Total weight gain during pregnancy was significantly higher in multiparous women (z= -4.219 p< 0.00). Most of women (80%) were admitted the maternity hospital with their perineal shaved (Table 1).

As type of delivery, spontaneous vaginal delivery (SVD) + Mediolateral Episiotomy (MLE) was performed in primiparous women 92% and in multiparous women 72%. Episiotomy was performed significantly higher in primiparous women than in multiparous (χ^2= 42.272 SD =1; p< 0.000). Vacuum extraction was performed in 6 primiparous cases and in 2 multiparous cases. Deliveries yielded male baby in 54% of primiparous women and 53.3% of multiparous. No perinatal baby or maternal mortality had been observed (Table 1).

Oxytocin induction had been applied during labor significantly higher in primiparous women than in multiparous (χ^2= 43.47 SD= 2; p< 0.002). Fundal pressure was applied in second stage of birth to 67.8% of primiparous women and 26.2% of multiparous women. Fundal pressure was significantly higher in primiparous women than in multiparous. Weight of newborns were significantly lower in primiparous women than in multiparous (z= -3.96; p< 0.000). The Apgar scores of newborns at 1st minute were lower in primiparous women than in multiparous (z= -2.51; p<0.01) (Table 1).

In Table 2 and Graphic 1, it's showed the stage of first and second in pregnant women during birth. The length of latent, active and transition phases of first stage was similar in both primiparous and multiparous women (Table 2 and Figure 1). However, the second stage was significantly shorter in multiparous women than in primiparous (z= -5.75; p< 0.000).

Table 1. Characteristics and other features of participant pregnant

	Primiparous		**Multiparous**			
Characteristics	$\bar{X}$	**SD**	$\bar{X}$	**SD**	**z**	**p**
Age (yıl)	22.84	3.20	27.75	4.67	-11.967	< 0.000
Gestational Weeks	39.51	1.15	39.45	1.04	NS*	
Newborn Weight (g)	3223	414	3393	455	-3.966	< 0.000
Weight Gain ed Throughout the Pregnancy (kg)	13.68	4.33	11.98	3.61	-4.219	< 0.00
The Apgar Score of Baby at Minute 1	7.54	0.94	7.76	0.95	-2.514	< 0.01
The Apgar Score of Baby at Minute 5	9.32	0.72	9.47	0.35	NS*	
Other Features	**n**	**%**	**n**	**%**	**χ^2**	**p**
Smoking During Pregnancy (5 cigarette ≥ per day)	34	6.8	45	9.0	NS*	
Taking Regular Antenatal Care	164	62.2	110	44.7	17.938	< 0.000
SVD + MLE	240	92.0	177	72.0	42.272	< 0.000
Application of Fundal Pressure	111	42.5	33	15.9	43,476	< 0.000
Oxytocin Induction	246	94.3	223	90.7	7.531	< 0.02

*No Significant (NS)

Table 2. The length of first and second stage in pregnant women during delivery.

		Primiparous				Multiparous					
Time (minute)		**$\bar{X}$**	**± SD**	**Min**	**Max**	**$\bar{X}$**	**± SD**	**Min**	**Max**	**z**	**p**
First Stage	Latent Phase	131.25	67.92	30	240	150	42.43	120	180	-0.41	> 0.68
	Active Phase	133.45	80.68	30	390	132.51	67.03	20	300	-0.38	> 0.71
	Transition Phase	46.15	30.89	10	180	47.16	34.75	10	300	-0.29	> 0.78
Second Stage		17.13	8.57	4	50	13.42	7.76	4	50	-5.75	< 0.000

There were significant relations between the length of second stages of pregnant women and average ages (t= 21.806; p= 0.000), type of delivery (U= 12092.5; p= 0.000), and fundal pressure (U= 9796.0; p= 0.000), whereas there were no relation between the length of second stages and weight gain throughout the pregnancy (r= -0.033; p= 0.521), gestational weeks (r= -0.014; p= 0.760), weight of baby (r=0.063; p= 0.170), and the Apgar scores of newborns at 1 and 5 minutes (r= 0.039; p= 0.470 and r= 0.028 and p= 0.604). The length of second stages were significantly longer in younger women, primiparous women and those performed SVD+MLE, but shorter in those performed fundal pressure. Since nearly all pregnant women had taken oxytocin induction, we couldn't find a significant difference between oxytocin induction and the length of second stages.

Friedman and Sachtleben, evaluated the cervical dilatation in 421 primiparous and 389 multiparous women in their study titled "Station of the Fetal Presenting Part". By using graphicostatistical methods of analysis, they examined the over-all picture and simultaneously focus more intently on each portion of the labor.[3] The length of labor stages was significantly shorter in our study than in Friedman's reference study.

Discussion

According to NDHS-2003, median age of mother at first delivery is 21.3.[2] Median age of primiparous pregnant women was similar in our study. Primiparous pregnant women were younger than multiparous and 51.5% of cases were primiparous, 48.5% of cases were multiparous. In a study to determine the partograph of Turkish women,

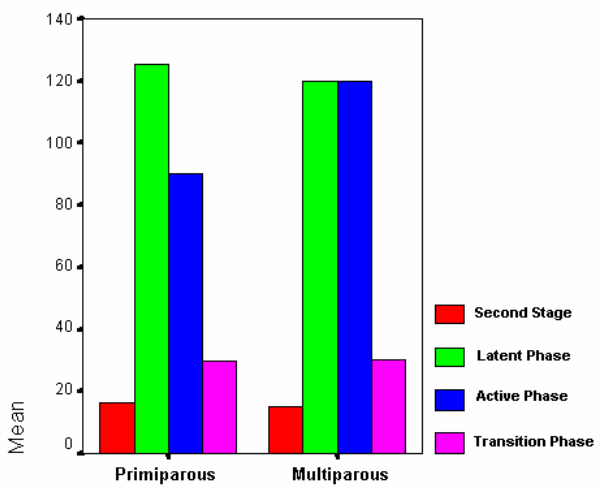

Figure 1. The length of dilation and expulsion phases of labor by parity.

Coskun and Unal found in a similar institution that median age of primiparous women was 21.42, and of multiparous was 27.9 which was consisted to our study findings.[4] It was concordant with literature for primiparous to be younger, to take prenatal care, babies to be lower weight. Pregnant women had come to hospital with their perineal areas shaved according to Turkish and Muslim traditions. In evidence based studies, there was no literature suggesting to the shaving perineal area.[5]

It was reported that smoking in pregnancy had negative effects on perinatal and postnatal health, fetal circulation and fetal moving and increased chromosomal instability, and the risk of behavioral and developmental defects, and the risk of babies with low weight. According to literature, smoking prevalence in pregnancy is 13.1% in USA, and 30.3% in Spain.[6-11] In our study, the rate of smok-

ing in pregnancy was lower. But still, it should be emphasized to quit smoking as a part of antenatal care.

Friedman et al found that in nulliparous, the average length of latent phase was 8.6 ± 0.27 hours, acceleration phase was 2.2 ± 0.08 hours, deceleration phase was 0.90 ± 0.05 hours, whereas in multiparous, these figures were 5.3 ± 0.19 hours, 0.73 ± 0.02 hours and 0.23 ± .0.01 hours, respectively.[3]

In their study regarding labor including white Americans, Asians and Blacks, Duignan et al. found that the length of first stage was 5.6 hours in primiparous and 3.7 in multiparous.[12] In a prospective study including 602 Nigerian pregnant women, Agboola and Agobe reported that the length of first stage was approximately 13.89 hours (median 12.25, mode 8.98).[13] In a study evaluating delivery of Chinese primiparous, Chen et al, found that the length of first stage was 5.3 hours. In this study, there was no difference among Asians, Blacks, and Whites regarding the length of first stage.[14]

In a study including 6991 American women, Kilpatrick and Laros found that the length of first stage was 8.1 ± 4.3 hours in nulliparous not taking anesthesia, 10.2 ± 4.4 hours in nulliparous taking anesthesia and was 5.7 ± 3.4 hours in multiparous not taking anesthesia, 7.4 ± 3.8 hours in multiparous taking anesthesia.[15] In a study including 250 Turkish pregnant, Coskun and Unal found that latent phase was 4.4 hours, active phase was 3.39 hours and transition phase was 0.22 hours.[4]

In our study, latent phase of first stage of delivery, active phase, and transition phase were rather short in either primiparous or multiparous (2.18, 2.22, and 0.76 hours, respectively). In our study, we found that oxytocin induction was used more than in those of literature. We think that there are 2 reasons; there was extremely high number of pregnant women admitted to the hospital in which the study performed, oxytocin induction is used much more common, and the administration of early anesthesia and sedatives is more limited than those in literature. Since pregnant women interned to maternity hospital with their cervical dilation progressed; we tried to determine the beginning of latent phase via histories taken from pregnant women. Our results were shorter than results in literature of which no intervention to shorten the delivery had applied. Oxytocin, in different dose and regimes, is one of the most commonly used drugs in delivery.[16] Studd explained that the rate of oxytocin infusion usage were 21.5% in England.[17] Kilpatrick and Laros, in a study including 6991 pregnant, reported that approximately 14% of primiparous, 11% of multiparous are given oxytocin.[15] Sizer et al. in a study including 2993 pregnant in England, reported that 11.6% of primiparous and 8.4% of multiparous took oxytocin induction.[18] In Yolsal's study, the rate of oxytocin application was 33.9%[19] Kaul et al reported that the rate of oxytocin induction were 40.39% in nulliparous with healthy single fetus.[16]

The second stage of delivery starts when cervical dilation is 10 cm and effacement is complete (100%) and ends when the baby is born.[3,15,17,20] Friedman reported the second stage with an average of 57 ± 0.04 minutes in primiparous, 17.4 ± 0.01 minutes in multiparous.[21-26] * Duignan, reported that the second stage lasted 41.5 minutes in primiparous and 17.4 minutes in multiparous.[12] Agboola and Agoba reported the length of this stage as 25.48 minutes (min 1 hour, max 2.5 hours), Kilpatrick and Laros as 79 ± 5.3 minutes in nulliparous taking anesthesia, 54 ± 3.9 minute in nulliparous no taking anesthesia, 45 ± 4.3 minute in multiparous taking anesthesia, and 19 ± 2.1 in multiparous not taking anesthesia and it was reported that there was no significant difference between these figures.[13,15] Diegmann found this time as 31.6 ± 22.5 minutes in African women, and 44.32 ± 33.03 minutes in women from Porto Rico, whereas Sizer et al reported that this period lasted 67.5 minutes in nulliparous and 14 minutes in multiparous.[18,27]

In our study, median length of second stage were significantly shorter than in literature in both primiparous (17.13 ± 8.57 minutes), and multiparous (13.42 ± 7.76 minutes). The length of second stage in primiparous was significantly shorter than

in multiparous (z= -5,759 p< 0.000). Although routine episiotomy is a commonly used surgical procedure, the evidence based studies are suggested that it is not useful in normal delivery. Selective approach is proposed instead of routine episiotomy.[28] In our study, SVD+MLE were performed in 92% of primiparous and 72% of multiparous. Fundal pressure, which is shorten second stage, was performed in 42.5% of primiparous, 15.9% of multiparous. Also, we found that the length of second stage of delivery could be shortened with extensive episiotomy and fundal pressure. Colomar et al in their study performed in Uruguay, reported the rate of episiotomy application as 50%, whereas Cohain this figure was 30% in Israel.[29,30] Coskun and Unal found that the rate of SVD+MLE was 83% in primiparous and 14% in multiparous in Turkey.[4] Diniz and Chacham reported that episiotomy was performed in 94.2% of vaginal deliveries in Brazil.[31] Sayiner found that the rate of episiotomy application were 96.7% in primiparous, 51.9% in multiparous in Eskisehir Maternity and Child Care Hospital.[32] Our data were similar with studies in Turkey[4] and Brazil.[31] Brown et al and Pearson et al reported that episiotomy decreased the frequency of urinary incontinence, but Foldspang et al. reported an increase, whereas Mc Lennon et al, and Samuellson et al reported that there is no effect on incontinence.[33-37] In a study including Turkish women, Oztac found that episiotomy application was a risk factor for stress incontinence.[38]

The role of fundal pressure in the second stage of delivery is controversial. In this stage of delivery, safe care approaches is recommended.[39] In a study performed in Florida by Kline-Kaye and Miller-Slade, 84% of nurses reported that fundal pressure was used in their institutions.[40] Song et al., in a study performed in China, it was reported that using abdominal pressure during delivery was a risk factor for stress incontinence (OR:1.684, 95% 1.140 - 2.489).[41] Our study showed that the second stage shortened significantly with wide episiotomy and fundal pressure.

When evaluating either the lengths of delivery stages or the total length of birth, our findings were rather shorter than in studies performed in developed countries. It was found that common use of oxytocin induction, episiotomy and fundal pressure application shortened the length of delivery. It was reported in studies that fast delivery course could cause perineal tearing, and post partum bleeding. In long term, it could cause pelvic relaxation and increase maternal mortality and morbidity.[12,15,34,36]

Conclusions

The average age of primaparous pregnant women was similar to that of NDHS 2003. Regular antenatal care was insufficient, and smoking was high in the group. The weights and Apgar scores of newborns, and weight gain in pregnancy were in normal limits.

Durations of first stage (latent, active and transition) and second stage of labor were rather short in both primiparous and multiparous.

Oxytocin induction rate, episiotomy and fundal pressure were significantly higher than that of literature.

Labor period could be shortened with oxytocin and amniotomy. Thereafter, second stage period could also be shortened by episiotomy and fundal pressure

Approaches to management of labor and delivery practices should be improved for the prevention and maintenance of perinatal health.

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