

MATERNAL AND NEONATAL OUTCOME OF POST TERM PREGNANCY

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Abstract:

Background :Post term pregnancy has been associated with an increased perinatal morbidity and mortality. Risks to both mother and infant have been increased as pregnancy progresses beyond 40 weeks of gestation. **Aim of the study:** This study aimed to assess maternal and neonatal outcome of post term pregnancy: **Subjects & methods: Research Design:** A case-control prospective study design was selected in carrying out this study. **Setting:** The present study was conducted in the labor unit in the Maternity and Childhood Hospital at Zagazig University Hospitals **Subjects:** A convenience sampling technique was used. It included 300 parturient women (150 with post term pregnancy (>41weeks) and 150 with term pregnancy (37-41wks) were recruited for this study. **Tools of data collection:** Structured interview tool, clinical assessment form, summary of labor tool and neonatal assessment tool. **Results:** The present study revealed that women with post term pregnancy were significantly more likely to have obstructed labor, perineal tear, primary postpartum hemorrhage, increased duration of labor, post term pregnancy also resulted in more cesarean section and more induction of labor. In addition the newborns had lower Apgar score at the first and fifth minutes, increased birth weight, meconium aspiration syndrome, fetal distress, and more admission to the Neonatal Intensive Care Unit. **Conclusion:** Post term pregnancy was associated with considerable maternal and neonatal morbidity. **Recommendations:** Early detection and proper diagnosis is very important to reduce the post term pregnancy maternal and fetal complications.

Keywords: Post term pregnancy, prolonged pregnancy, postdate pregnancy and outcome.

Introduction

Post-term(PTP) or prolonged pregnancy was defined as a pregnancy extends to or beyond 42 weeks or ≥ 294 days after the first day of last menstrual period(LMP) . The term is more often used to refer to any pregnancy that goes beyond 41 weeks⁽¹⁾

Post term pregnancy is a common obstetric problem, and its incidence has been estimated to be between 4-14% with an average of 10.5%⁽²⁾.In most cases, the cause of post term pregnancy is unknown, However,There are some factors that place the woman at increased risk such as obesity, nulliparity and maternal age over 30 years. The incidence is higher in first pregnancies

and previous post term pregnancy and genetic factors may also play a role. One study showed an increased risk of post term pregnancy in women who were born post term⁽³⁾

Post term pregnancy remains constantly a difficult and controversial problem in modern obstetrics and has many complications for both fetus and mother. It has been reported that in a pregnancy which has crossed the expected date of delivery, there is an increased risk of oligohydramnios, meconium stained amniotic fluid, macrosomia, fetal post maturity syndrome and caesarean delivery. All of which jeopardise the baby as well as the mother added to prolonged pregnancy has always been regarded as a high risk condition because

perinatal morbidity and mortality is known to rise⁽⁴⁾.

post term pregnancy is associated with increased maternal problems such as protracted labor, third and fourth degree of perineal lacerations and cesarean section rates increase with advancing gestation as well as postpartum hemorrhage⁽⁵⁾. A number of neonatal complications have been also associated with post-term pregnancy e.g. meconium aspiration, neonatal intensive care unit (NICU) admission, fetal distress and convulsions⁽⁶⁾.

Two options for the management of prolonged pregnancy are elective induction of labor after 41 weeks and expectant management with intermittent fetal monitoring⁽⁷⁾. Effective communication between health care professionals especially nurses and women is essential. Information should be offered regarding the risks associated with prolonged pregnancies and the options available. This will help women to make an informed choice based on individual preferences and circumstances for either a scheduled induction for a pregnancy beyond 41+0 weeks or expectant management.

Women should be informed that most women will go into labor spontaneously by 42+0 weeks gestation. The use of early gestational scans to calculate the estimated date of birth can lower rate of pregnancy beyond 41+0 weeks. If pregnancy is prolonged, additional fetal surveillance and management plans should be discussed with the woman and clearly documented in the antenatal record⁽⁸⁾.

Significance of the study

Recent evidence suggested that prolonged pregnancies beyond 41 weeks are associated with an

increased risk of perinatal mortality and morbidity together with a higher risk of maternal obstetrical complications which makes the management of post term pregnancy an important issue in modern obstetrics. Post-term pregnancies including meconium-stained amniotic fluid and meconium aspiration syndrome, oligohydramnios, macrosomia, fetal birth injury, rates of fetal distress in labor and rates of cesarean delivery, So the maternity nurse should be alert for early detection and identification of risk factors of post term pregnancy to increase the proportion of successful management to reduce fetal and maternal complications. Few studies have focused on the problems in Egypt, therefore this study conducted to assess the maternal and neonatal outcome of post term pregnancy in Zagazig University hospitals.

Aim of the study:

The present study aimed to assess maternal and neonatal outcome among women with post term pregnancy.

Research Questions:

- 1-What is the maternal outcome of post term pregnancy?
- 2-What is the neonatal outcome of post term pregnancy?

Subjects and methods:

Research design:

A case-control prospective design was conducted on this study.

Study setting:

The present study was conducted in the labor unit in the Maternity and Childhood Hospital at Zagazig University Hospitals.

Study subjects:

A convenience sampling technique was used; women were eligible for recruitment in the study

sample if they met the following criteria:

- **Case group:** women with post term pregnancy >41 weeks
- **Control group:** women with term pregnancy 37 to 41 weeks
- Parturient women with regular cycle diagnosed with a singleton pregnancy in stable cephalic presentation
- No medical or obstetric history of complications
- No history of cesarean section

Tools of data collection:

Data collection was done through the use of the following tools:

Tool (I): A structured interview

Schedule: The questionnaire was designed to collect data from parturient women in both groups as regards the following:

- **Demographic characteristics of women:** It Included data about Age, educational level and residence.
- **Reproductive history** It Included data about gravidity, parity, number of previous abortion, inter-pregnancy interval, history of previous post term pregnancy.
- **Family history:** This included data about the presence or absence of the post term pregnancy.
- **Current pregnancy data** which included data about gestational age on admission and antenatal care visits (Adequate >4 visits, Inadequate <4 visits) .
- **Tool (II): Clinical examinations form "on admission to labor room:** These include data about
 - The general examination e.g pulse, systolic blood pressure and diastolic blood pressure.
 - Local abdominal examination e.g uterine contraction: (absent or present, frequency and duration of UC ,lie, position, presentation,

auscultation of FHR (110-160 Pbm ,>160 Pbm or <110 Pbm).

- Per-vaginal examination: condition (dilatation, effacement, position, station and consistency) condition of membranes, and amniotic fluid.
- Investigations e.g CTG was done for evaluation of the fetal heart rate and uterine contractions. Meanwhile, ultrasonography evaluated fetal gestational age, number of fetuses, presentation, amniotic fluid index, placenta localization, fetal presentation and presence of any congenital anomalies.
- **Tool (III): Summary of labor sheet:** It included data about, phase on admission, stimulation of labor ,drugs used in induction and augmentation, fate of induction and causes of failed induction, mode of delivery, indication of cesarean section and condition of perineum It also included data about the presence or absence of maternal complications such as: obstructed labor, ruptured uterus, perineal tear and primary post-partum hemorrhage.
- **Tool (IV): Neonatal assessment sheet:** For evaluation of the immediate neonatal condition, the following data was obtained:
 - Neonatal Apgar score that developed by **Apgar (1953)** at first minute and fifth minutes (Normal (7-10) ,mild to moderate (4-6),sever asphyxia (0-3) .
 - Birth weight.
 - Neonatal complications such as; Meconium aspiration syndrome, neonatal distress, admission to Neonatal Intensive Care Unit (NICU) and neonatal death.

Content Validity & Reliability

The tools were tested for content validity by five experts in the field of obstetrics and gynecological nursing.

The recommended modifications were done and the final form was ready for use.

Field work:

Collection of data covered a period of six months "from the first of Jun 2015 to the end of November 2015". After getting the official permission, the pilot testing of the study tools was done and analyzed. The researcher interviewed the parturient women and explained the purpose of the study , obtained their verbal agreement and started to collect data through three phases:

1) Interviewing phase:

The researcher attended the labor ward at the study setting on the hot three days (Saturday, Monday and Wednesday) per week during morning and afternoon shifts for six months. All parturient women in both groups were interviewed to collect data related to demographic characteristics, obstetric profile and family history of post term labor. Patient's medical record was also reviewed to obtain other pertinent information.

2) Assessment phase:

In this phase, the researcher together with the on- duty physician started regular assessment of the maternal and fetal condition. General, local abdominal and per-vaginal examination and investigations were all done and pertinent data was recorded. The diagnosis of post term labor was determined by physician. Gestational age was confirmed by ultrasound.

Fetal monitoring byCTG was done for every studied woman throughout labor. The obstetrician was present at all times in order to manage any problem that can happen such as; none reassuring fetal heart rate patterns. Mode of delivery, type and indication of cesarean section, and maternal complications were also recorded. Neonatal assessment was done through measuring the Apgar

score at first and five minute, birth weight, as well as complications encountered..

Pilot study:

A pilot study was carried out on 30 parturient women (who were excluded from the sample) to assess the clarity and applicability of data collection tools, arrangements of items, estimate the time needed for each sheet and study feasibility and acceptance . Necessary modifications were undertaken.

Administrative and ethical considerations:

An official permission was granted by submission of an official letter from the Faculty of Nursing to the responsible authorities of the study setting to obtain their permission for data collection ,all ethical issues were taken into consideration during all phases of the study: The research maintained an anonymity and confidentiality of the subjects. The study inclusion was totally voluntary, the study aim was explained to every woman before participation and a verbal agreement was obtained after the assurance that the study maneuver will cause no actual or potential harm to women or baby, added to the professional help which will be provided whenever needed. Women were notified that they can withdraw at any stage of the research, the information obtained during the study will be confidential and used for the research purpose only.

Statistical analysis:

Data collected were analyzed by computer using the statistical package for social sciences (SPSS) software version 20. Mean and standard deviation, median and percentages were used for data summarization. Student's t test and Chi square test were used for testing significant differences and relations between

variables. Pearson's correlation test was used for testing linear relationship between numeric variables. Significant difference was considered if $p \leq 0.05$.

Results:

Table (1) revealed that the mean of women's age in the two studied groups was very close with a mean of age partially similar (24.64 ± 5.679 and 24.80 ± 4.589 respectively). Regarding the level of education, there is no significant difference between the two studied groups, where the most women in both groups had secondary education (61.3% vs. 66.7% respectively). Meanwhile, they were more likely to be resident of the rural areas (87.3% vs. 83.3% respectively).

Table (2): Indicates that (10.7%) of women who had post term pregnancy had family history of post term pregnancy compared to only 0.0% of women who had term pregnancy.

Table (3): Demonstrates that about two fifths (44.7%) of women with post term pregnancy were not in labor compared to 4.0% in the control group with a statistical significant difference ($X^2 = 82.8$, $P = 0.00$). On the other hand there is difference of statistical significance among the two groups in their labor stimulation where the highest percentage (36.7%) of the case group was given induction while (82%) of the control group was given augmentation. The same table indicated that there is difference of statistical significance among the two groups in their CTG, thus nearly (10.7%) of women who had post term pregnancy had CTG abnormalities in contrast to only 3.3% among the group of term pregnancy. In addition, it reveals that the mean of women's cervical dilatation and effacement on admission was statistically significant difference among the two studied groups (3.37 ± 2.166 vs. 6.39 ± 2.264 & 38.96 ± 24.978 vs. 72.04 ± 21.548

respectively). There is a statistical significance difference among the two groups as regard the amniotic fluid (AF), thus nearly (12.5%) of women who had post term pregnancy had meconium stained AF in contrast to 2.1% among the group of term pregnancy. Meanwhile, most of women in the two studied groups have intact membranes.

Table (4): Shows Comparison between women current mode of delivery in case and control groups, whereas about (44.0%) of cases group had CS compared to 5.3% in control group, with statistical significant difference ($P = 0.00$).

Table (5): Reveals that, women with post-term pregnancy were significantly more likely to have long duration of the first and second stage of labor (13.20 ± 3.592 , 46.37 ± 14.631 vs. 9.64 ± 1.901 , 31.87 ± 11.121 respectively).

Table (6): Described that women with post-term pregnancy were significantly more likely to have obstructed labor and perineal tear (18.0% , 26.0% vs. 6.0% and 0.0% respectively). In addition (3.3%) of primary postpartum hemorrhage were encountered in the post-term pregnancy group compared to none among the term pregnancy group.

Table (7): Reveals that women in post-term pregnancy group had higher percentage of meconium aspiration syndrome (16.7%) and fetal distress (6.0%) compared to (0.0%) of term pregnancy women with statistical significant difference (0.001 & 0.002). Moreover, they were significantly more likely to admission to NICU (9.3% vs. 0.0%). In addition, (0.7%) of neonatal deaths were encountered among women in the post term pregnancy group compared to none in the term pregnancy group.

Discussion:

The perinatal mortality (i.e. stillbirths plus neonatal deaths) of two to three deaths per 1,000 deliveries at 40 weeks gestation approximately doubles by 42 weeks and is four to six times greater at 44 weeks shing et al.⁽⁹⁾. Concerning demographic characteristics of the studied women, the present study results indicated that there was no statistical significant difference between the two groups regarding their age ($P=0.789$). This results were corresponds with the result of Shahgheibi et al.⁽¹⁰⁾ (who found that, there was no significant difference between the two groups in regard with their age ($P>0.05$)). It also corresponds well with El-Sokkary et al.⁽²⁾ in Egypt who have reported that there were no significant differences between women with post-term and their controls in age ($P>0.05$). Vadakaluru et al.⁽¹¹⁾ in India have similarly reported in their previous prospective randomized controlled study that, there was no significant difference between the two groups in regard with their age.

However, the mean age of mothers with post-term pregnancy was 24.64 ± 5.679 . Mahapatro et al.⁽¹²⁾ found that, the mean age was 24.19 ± 3.30 . Shahgheibi et al.⁽¹⁰⁾ reported that, the mean age of mothers was 23.57 ± 4.33 . These findings conclude that the incidence of prolonged pregnancy is common in young age and this could be because the majority of conceptions take place in this age group in the country.

Concerning women's obstetrical history, the present study revealed that there was no significant association between the gravidity, parity and PTP and more multigravida delivering post term. This finding is consistent with Alexander et al.⁽¹³⁾ and Hiasat⁽¹⁴⁾ who found in studies of prolonged pregnancies that there were no significant differences between the two

groups in terms of parity. Marahatta et al.⁽¹⁵⁾ and Katri et al.⁽¹⁶⁾ found that, more multigravida were delivering post term. Unlikely, Vadakaluru et al.⁽¹¹⁾. Shinge et al.⁽⁹⁾ and Mahapatro et al.⁽¹²⁾ found that, prolonged pregnancy occurred more frequently in primigravida than in multigravida. Such difference among the results of the above-mentioned studies and the present one could be attributed to the difference in the sample size and criteria of selection.

The present study finding also showed that family history of PTP is a significant risk factor for post-term pregnancy ($P=0.00$). Similarly, Morken et al.⁽¹⁷⁾ reported that there is a familial factor related to recurrence of prolonged pregnancy across generations and both mother and father seem to contribute to recurrence of prolonged pregnancy and this may attributed to genetic factors.

In the present study, the previous history of post-term pregnancy was considered the significant risk of recurrent post-term pregnancy. This agrees with Marahatta et al.⁽¹⁵⁾ who found that mothers with an initial post-term birth are at increased risk for post-term birth in subsequent pregnancies and this may attributed to the Individual risk factors.

The present study showed that women with post-term pregnancy were significantly more likely to have long duration of the first and second stage of labor these finding were comparable with the studies conducted by Heimstad et al.⁽¹⁸⁾ and Shinge et al.⁽⁹⁾ who noticed that duration of labor was prolonged in pregnancies completed 40 weeks of gestational age and beyond in both of primigravida and multigravida. Alexander et al.⁽¹³⁾ stated that prolonged second stages of labor increased from 40 to 42 weeks. The explanation may be that these

conditions lack the high concentrations of estrogen seen in normal pregnancies and induction of labor.

Concerning delivery mode, the present results revealed that the proportion of women who had CS was significantly higher among post-term case compared to term control. This result was correspond with Shinge et al. Shahgheibi et al. and Katri^(9,10,16), who found that, the LSCS delivery rate was very high in post-term groups. The increased cesarean rates could be attributed to oversized babies, dystocia and non-reassuring FHR. The oversized baby was an obvious indicator for CS followed by both failure of labor progress and fetal distress. Conversely, Vadakaluru et al⁽¹¹⁾, mentioned that the major indication was fetal distress (44%) and cephalo-pelvic disproportion followed by non-progress of labor and oligohydramnios.

Other results of the study indicated that, there was a significant difference between the two groups in regard with mothers' induction (P=0.00). This finding was in complete agreement with most studies conducted all over the world such as studies conducted on causes and complications of prolonged pregnancy in Swede, Denmark, and Norway by a group of researchers supervised by Song⁽¹⁹⁾. This result was also supported by Alexander et al. and Mahapatro et al^(13,12), who reported that, labor induction increased significantly between 40 and 42 weeks. The increased induction rate is commonly explained by an improved ability and wish to plan the timing of delivery by physicians and their patients.

Moreover results of this study showed that labor was induced in nearly 36.6% of patients at 41 and 42 weeks, added to vaginal delivery rate among induced women was 60.0%.

Dinoprostone 3mg, misotac and oxytocin were the different modes of induction. Dinoprostone 3mg (58.1%) was used in the majority of inductions followed by misotac (36.6%) and Oxytocin (5.45%). Meanwhile Nimbargi et al.(2015)⁽⁴⁾ showed that, labor was induced in nearly 35 % of patients at 41 and 42 weeks and vaginal delivery rate among induced women was 75.0%.

The current study results observed that there was a significant association between the presence of PTP and the occurrence of primary postpartum hemorrhage (PPH), (P=0.001). These results were in agreement with Hiasat⁽¹⁴⁾, Heimstad⁽¹⁸⁾ et al. Chantry et al⁽²⁰⁾, and Katri et al⁽¹⁶⁾, who found that incidence of postpartum hemorrhage was significantly higher in the prolonged gestation group compared to the control. This may be explained by prolonged labor and increased risk of uterine atony.

The present study showed that, incidence of the perineal tear was highly significantly among post-term group compared to control group (P = 0.000). This may be due to prolonged second stage of labor and delivery of oversized babies, Chantry et al⁽²⁰⁾, reported that, prolonged pregnancy was accompanied by a moderate increase of the risk of third and fourth-degree perineal lesions. Caughey et al⁽²¹⁾, found that, the rates of 3rd or 4th degree perineal lacerations and prolonged labor were all increased among women delivering at 41 weeks and beyond compared to 39 weeks of gestation. Mutihir et al.⁽²²⁾ reported that perineal trauma (episiotomies and first-degree perineal tears) in the mothers of post-term infants was higher than that for mothers of term infants.

The present study showed that, the incidence of abnormal CTG

monitoring was highly significant among post-term group compared to control group ($P = 0.013^*$). This higher incidence of abnormal CTG monitoring in PTP(10.7% vs.3.3%) which found in this study may be due to a more frequent monitoring in this group compared to the control and more induction of labor. This finding was supported by Matijević⁽²³⁾ in Liverpool who studied the outcome of post-term pregnancy.

The mean Apgar scores at the first and fifth minutes were significantly lower among the newborns of the PTP women than those in term pregnancy group. These results were agreed with Ajori et al.⁽²³⁾ who indicated that, there was a significant difference between the two groups regarding their Apgar of under 6. In addition, results of the study conducted by Song et al.⁽¹⁹⁾ indicated that Apgar under 7 in pregnancy of fewer than 40 weeks was 1% and in over 40 weeks was 2.3%. Hiasat⁽¹⁴⁾ found a significant increase in the rates of low Apgar scores (< 5) at 1 and 5 minutes ($p < 0.05$). The previous finding was not in agreement with Shahgheibi et al.⁽¹⁰⁾ who indicated that there was no significant difference between the group aged under 40 weeks ($P = 0.78$) and one over 40 weeks ($P = 0.41$). The reason for such difference in the results of different studies can be related to differences in health care during pregnancy, services provided to the patients and racial characteristics.

The present study revealed that post-term group was more likely to have babies with high birth weights than those in the control group. A similar finding was reported by Shahgheibi et al.⁽¹⁰⁾ who found that, fetal macrosomia was significantly more than natural term pregnancies. Hiasat⁽¹⁴⁾ reported that the neonates of the prolonged gestation were

significantly larger than those in the control group ($p < 0.001$). Moreover, Malahat⁽²⁴⁾ observed that more babies with birth weight above 4.0 kg were post-term (5.5%) as compared to 1.6% in the term group and the study of Shinge et al (2013)⁽⁹⁾ who stated that the mean birth weight of babies in 40 completed weeks of GA is around 2.8 kgs, and mean birth weight of babies completed 41 weeks of gestation is around 3.3 kgs and in 42 completed weeks of gestation is around 3.5 kgs. This may be explained by continuing fetal growth as with adequate placental function and favourable intrauterine conditions, the fetus continues to receive nutrients and grows.

In addition, the present study revealed that meconium aspiration syndrome, fetal distress, NICU admission, were higher among neonates in the PTP group than those in the control group ($P = 0.001$). In this respect, Nimbargi et al.⁽⁴⁾ illustrated that maximum number of neonates was suffering with fetal distress followed by meconium aspiration syndrome. Also, significant increase in the rates of meconium aspiration ($p < 0.001$) and the admission to the NICU ($p < 0.05$) were observed by Hiasat⁽¹⁴⁾. This result was also supported by the finding of a population-based study in Washington State by Yoshino⁽²⁵⁾ who illustrated that, there is significant association observed between post term birth and MAS and increased risks of other adverse infant outcomes among post term infants (NICU admission, perinatal asphyxia, meconium staining). The fetal distress and fetal death may be due to placental insufficiency.

Conclusion:

According to findings of the present study, it can be concluded that:

- Post term pregnancy had harmful effects on maternal outcome than term pregnancy. Thus women were significant more likely to have CS, perineal tear and primary postpartum hemorrhage.
- Post term pregnancy had adverse effects on fetal outcome. It resulted in macrosomia, meconium aspiration syndrome, lower Apgar score, fetal distress and more admission to the NICU.
- Induction should not be performed solely for suspected fetal macrosomia or because of care provider preference
- Careful monitoring of the patient during induction is absolutely essential to detect fetal distress and oligohydromnios at the earliest.
- Further studies are needed for management of post-term pregnancies.

Recommendations:

On the basis of the most important findings of the study, the following recommendations are suggested:

- Early detection and proper diagnosis will help to reduce maternal and fetal complications of post term pregnancy.

Table (1): Distribution of the studied women according to their socio-demographic characteristics (n=300):

Socio demographic data	Groups				X ²	(P)
	Case (n=150)		Control (n=150)			
	No.	%	No.	%		
Age (years)					t =-0.268 p = 0.789	
Mean ± SD	±	5.679	24.64	±		
Educational status						
Illiterate	15	10.0	9	6.0	5.0	0.28
Primary school	5	3.3	3	2.0		
Preparatory school	19	12.7	12	8.0		
Secondary school	92	61.3	100	66.7		
University	19	12.7	26	17.3		
Residence place						
Rural	131	87.3	125	83.3	0.95	0.32
Urban	19	12.7	25	16.7		

Table(2): Distribution of the studied women according to their family history of post term pregnancy (n=300):

Family history	Groups				X ²	(P)
	Case (n=150)		Control (n=150)			
	No.	%	No.	%		
No	134	89.3	150	100.0	16.9	0.00**
Yes	16	10.7	0	0.0		
X2:chi-square		* P < 0.05 (significant)				

Table (3): Distribution of the studied women according to labor data (n=300):

Labour data	Groups				X ²	P
	Case (n=150)		Control (n=150)			
	No	%	No	%		
Phase on admission						
Not in labor	67	44.7	6	4.0	82.8	0.00**
Latent	22	14.7	10	6.7		
Active	61	40.7	134	89.3		
Labor stimulation						
No	44	29.3	22	14.7	79.01	0.00**
Induction	55	36.7	5	3.3		
Augmentation	51	34.0	123	82.0		
CTG on admission						
Normal	134	89.3	145	96.7	6.19	0.013*
Abnormal	16	10.7	5	3.3		
Cervical dilatation on admission						
Mean ± SD	3.37±2.166		6.39±2.264		-11.789	0.00**
cervical effacement on admission						
Mean ± SD	38.96±24.978		72.04±21.548		-12.011	0.00**
Membranes condition						
Intact	110	73.33	102	68.0	0.57	0.44
Ruptured	40	26.66	48	32.0		
Amniotic fluid						
Clear	7	17.5	47	97.9	60.06	0.00**
Meconium stained	5	12.5	1	2.1		
Turbid	28	70.0	0	0.0		
X ² :chi-square			* P < 0.05 (significant)			

Table (4): .Distribution of the studied women according to their delivery mode (n=300):

Delivery Mode	Groups				X ²	P
	Case (n=150)		Control (n=150)			
	No	%	No	%		
NVD	84	56.0%	142	94.7%	60.34	0.00**
C.S	66	44.0%	8	5.3%		
Total	150		150			

X2:chi-square * P < 0.05 (significant)

Table(5): .Distribution of the studied women according to their labor duration :

Laborduration	Group		T	P
	Cases (n=150)	Control (n=150)		
	mean± SD	mean± SD		
First stage	13.20± 3.592	9.64± 1.901	10.724	0.00**
Second stage	46.37± 14.631	11.121 31.87±	9.663	0.00**
Third stage	10.17±1.071	1.127 10.27±	-.788	0.431

t: independent samples t test * P < 0.05 (significant)

Table (6): Distribution of the studied women according to maternal complications (n=300):

Maternal Complications		Groups				χ^2	P
		Case (n=150)		Control (n=150)			
		No.	%	No.	%		
Obstructed labor	No	123	82.0	150	100.0	29.67	0.00**
	Yes	27	18.0	0	0.0		
Primary postpartum hemorrhage	No	145	96.7	150	100	5.08	0.024*
	Yes	5	3.3	0	0.0		
Perineal tear	No	111	74.0	141	94.0	29.73	0.00**
	1st degree	1	0.7	3	2.0		
	2nd degree	15	10.0	5	3.3		
	3rd degree	23	15.3	1	0.7		
uterine inertia	No	148	98.7	150	100.0	2.01	0.15
	Yes	2	1.3	0	0.0		
X2:chi-square		* P < 0.05 (significant)					

Table(7): Distribution of the studied women according to neonatal complications:

Neonatal complications	Groups				X ²	(P)
	Case (n=150)		Control (n=150)			
	No	%	No	%		
Meconium aspiration syndrome						
No	140	93.3	150	100.0	10.34	0.001**
Yes	10	16.7	0	0.0		
Fetal distress						
No	141	94.0	150	100.0	9.27	0.002*
Yes	9	6.0	0	0.00		
Neonatal intensive care unit						
No	136	90.7	150	100.0	14.68	0.00**
Yes	14	9.3	0	0.0		
Neonatal death						
No	149	99.3	150	100.0	1.003	0.31
Yes	1	0.7	0	0.0		
X2:chi-square		* P < 0.05 (significant)				

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