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EFFECT OF INTERVENTION IN LATE AND POST TERM PREGNANCIES ON NEONATAL AND EMPLOYED WOMEN OUTCOMES

By

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ABSTRACT

Background: A prolonged pregnancy is a pregnancy between 41+ 0 weeks through 41+6 weeks of gestation. It is also known as late–term pregnancy measured from the first day of the last menstrual period. It is approximately 5 to 10 percent of all pregnancies. The pregnancy which continued beyond 42 weeks' gestation is called post term or post maturity pregnancy. It is about 1%. Postterm pregnancy is associated with higher risk of maternal and fetal complications such as emergency cesarean delivery, postpartum hemorrhage, birth canal injuries, macrosomia, meconium aspiration syndrome, and admission to neonatal intensive care unit (NICU).

Objective: To determine the effects of induction of labor in late and post term pregnancies on mode of deliveries, to determine the risk of obstetrical and fetal complications in prolonged pregnancy in employed women, to compare the maternal and neonatal outcomes between induction of labor group and expectant management group, and to detect prenatal risk indicators of prolonged pregnancy in employed women.

Subjects and Methods: Across sectional descriptive study of selected data included deliveries of late and post term pregnancies at Misurata Medical Center from the 1st of January to 30th of June 2018 where 188 patients were included in the study. Women with gestational age between 41+0 to 42+6 completed weeks and beyond were included in the study. A comparison between expectant management and induction of labor management was conducted to evaluate maternal, fetal and neonatal complications.

Results: The rate of cesarean deliveries was a significantly higher for induction of labor (IOL) group (26%) compared with expectant management group (9.6%). Besides, the more frequent occurrence of all types of perineal lacerations and episiotomies (51% in IOL group vs 16% in expectant management group) in women with vaginal deliveries.

The total number of deliveries was 2248, the full term deliveries were 1890 (84%), preterm deliveries were 170 (7.6%), late and post term deliveries were 174 and 14 (7.7% and 0.8%) respectively.

Cesarean deliveries in women with prolonged pregnancies 33 patients (17.6%); 4.8% were elective LSCS due to previous uterine scar and prolonged pregnancies and 12.8% were emergency LSCS because of pathological cardio-tocography (CTG), failed IOL and maternal exhaustion.

Postterm case, about 24% of cases had previous history of prolonged pregnancy, 20% with family history of prolonged pregnancy. 15% of cases were primigravida, 51.6% were between P1-P3, and 33% were more than P3 .

In present study, neonatal outcome 98.9% were normal Apgar and 1.06% were with low Apgar less than 7 at five minutes.

Thirty six neonates (19%) were admitted to neonatal ICU, for observation and supportive management because of transient tachypnea 1-2 days after operative deliveries and discharge with good state.Regarding

birth weights of neonates among women in IOL group and who had spontaneous onset labor (84%)ranging from2500 grams (g) - 4000 g, only(2.7%) were large infants more than 4000 g.

Conclusion: Induction of labor in late and postterm pregnancies was associated with increasing the rate of cesarean delivery. However, other maternal and fetal parameters were not affected by IOL.

Key words: effect of intervention, neonatal and employed women outcomes

INTRODUCTION

A prolonged pregnancy is a pregnancy between 41+ 0 weeks through 41+6 weeks of gestation, also known as late–term pregnancy from the first day of the last menstrual period approximately 5 to 10 percent of all pregnancies *(Arora, 2017)*.whereas the pregnancy which continuing beyond 42 weeks' gestation called post term or post maturity pregnancy about 1% *(Vayssiere et al., 2013)*.

Post term pregnancy is associated with a higher risk of maternal and fetal complications such as emergency cesarean delivery, postpartum hemorrhage, birth canal injuries, macrosomia, and meconium aspiration syndrome and admission to neonatal intensive care unit (NICU) *(Daskalakis and Zacharakis, 2014)*.

The management of pregnancy beyond 40 weeks' gestation relies on an accurate assessment of the gestational age. A Cochrane review found that, compared with selective ultrasonography, routine prenatal ultrasonography before 24 weeks' gestation provides better gestational age assessment and earlier detection of multiple pregnancies and fetal malformations. Early ultrasound dating also resulted in a 70 percent reduction in the number of pregnancies that were considered post-term Therefore, elective labor induction before 42 weeks' gestation has been proposed to reduce rates of adverse fetal and maternal complications *(Vayssiere et al., 2013)*.

The expectant management group had a significantly higher rate of cesarean deliveries than the induction group resulting from fetal distress, but there was no difference between groups in the rate of cesarean deliveries resulting from dystocia or obstructed labour. No difference was found in perinatal mortality rates, although the study was too underpowered to detect this outcome. When no differences were found in neonatal morbidity outcomes. *(Thangarajah and Scheufen, 2016)*.

The present work aimed to determine the effects of induction of labor in late and post term pregnancies on mode of deliveries, to determine the risk of obstetrical and fetal complications in prolonged pregnancy in employed women to compare the maternal and neonatal outcomes between induction of labor group and expectant management group, and to detect prenatal risk indicators of prolonged pregnancy in employed women.

SUBJECTS AND METHODS

A cross section descriptive study was performed on deliveries of late and post-term gestation (41+0 to 42+6 weeks) in the first 6 months of 2018 (1st / January until 30th / June). Data were collected from deliveries of selected period in Misurata Medical Center. Outcomes of pregnancies from 41 weeks, the risk

factors, mode of delivery, maternal, and fetal outcomes were determined.

The primary maternal outcomes in each group were assessed such as parity, number of cesarean deliveries and vaginal spontaneous delivery. The maternal complications were assessed by occurrence of lacerations or episiotomies, postpartum hemorrhage, and blood transfusion.

The neonatal outcomes were assessed by Apgar score at five minutes, birth weight, and admission to neonatal intensive care unit (NICU).

The inclusion criteria for this study subjects were regular cycles with known last menstrual date, singleton live pregnancy, vertex presentation, and gestational age 41 + 0 to 42 week's gestation and beyond. As a routine, women with pregnancy beyond dates were managed expectantly if the amount of liquor was adequate clinically as well as sonographically, and were induced if there was oligohydramnios clinically and/or sonographically, or if fetal compromise was detected clinically and/or by non-stress test (NST) or decreasing fetal movements. The agent for elective induction of labor (IOL) was decided after assessing the Bishop score (if less than 6) and the amount of liquor decreased: either by misoprostol tablet 25 microgram every 6 hours in the posterior fornix of the vagina, or by mechanical way by application of balloon catheter for cervical ripening which defined as extra-amniotic normal saline (EANS). The later was applied for patients who have previous one uterine scar or multiparous women, EANS should be applied for women who have intact membranes.

We compared the maternal, neonatal outcome and mode of delivery between IOL group and expectant management group. In the spontaneous labor group, firstly, expectant management of the women with late-term pregnancies and beyond twice a week to assess fetal wellbeing by non-stress test and the amount of amniotic fluid by ultrasound. Women presented in spontaneous onset of labor with bishop score > 6 had artificial rupture of membrane and oxytocin augmentation.

Some women had elective cesarean delivery because of previous scar and postdated pregnancies were included in this study.

Ethical approval:

Informed consents were obtained from all participants during their follow up at clinic, and data confidentiality was maintained throughout the study and any resulting publication anonymously.

Statistical analysis:

Data were computerized using the Statistical pakage for Social Sciences (SPSS version 21) that used for data entry and analysis. Descriptive statistics were used, and all results were presented as frequencies, means ± standard deviation and percentages.

RESULTS

Normal vaginal Deliveries of late and post-term pregnancies were 155 (82 %) compared with 1890 cases (84%) of full-term pregnancies were ended by normal vaginal deliveries.

Most of prolonged pregnancies cases presented with spontaneous onset of labour 124 cases (80%) and only 31 cases(20%) undergone IOL. 26 of the cases(83.8%) were induced electively by misopristol tab 25 microgram every 6 hours vaginally, and 5 cases(16.2%)were induced by mechanical method by application of transcervical balloon catheter by extra amniotic normal saline (EANS).

The cases were distributed according to their gestational ages as following 1890 full term cases (40 + 6days) and 174 cases (41-42 weeks) and 14 of cases (above 42 weeks gestation).cesarean deliveries in women with prolonged pregnancies 33 patients (17.5%); 4.8% were elective LSCS most of them due to previous uterine scar and prolonged pregnancies and 12.8% were emergency LSCS because of pathological cardio-togography (CTG), failed IOL and maternal exhaustion (Table 1).

Table (1): Maternal Demographic Characteristics

Maternal Character	Number	%
Patients age (years):		
<19	8	4.25%
20-30	114	60.6%
31-40	59	31.4%
>40	7	3.7%
Gestational age at delivery (weeks)		
41-42weeks	174	92.6%
>42 weeks	14	7.4%
Parity		
Primi parous	29	15.4%
P1-P3	97	51.6%
>P3	62	33%
Previous cesarean section (CS)	34	18.1%
Women undergone to second cesarean section (CS)	16	8.5%
Primi parous ended by CS	12	6.4%
Maternal outcomes:		
-All types of lacerations&episiotomy.	38	20.2%
post partum hemorrhage(PPH)	5	2.7%
Blood Transfusion	4	2.1%
Mode of delivery:		
*Spontaneous labor	124	66%
*Induction of labor;	31	16.5%
-Misoprostol	26	-
-EANS	5	-
*Operative delivery;	33	17.6%
-elective (CS)	9	4.8%
-urgent (CS);	24	12.8%
Pathological CTG	8	-
Maternal cause	14	-
Failed IOL	2	-
Neonatal outcomes:		
*****Birth weight;		
< 2500 g	5	2.7%
2500-4000 g	159	84.6%
> 4000 g	24	12.8%
* Apgar score.		
* Normal apgar	186	98.9%
<7	2	1.1%
*MSAF	39	20.7%
*Admission to NICU	36	19.1%
*congenital anomalies	2	-

Only 2% of patients had got postpartum hemorrhage. However no significant difference between IOL and spontaneous labor group (Figure 1).

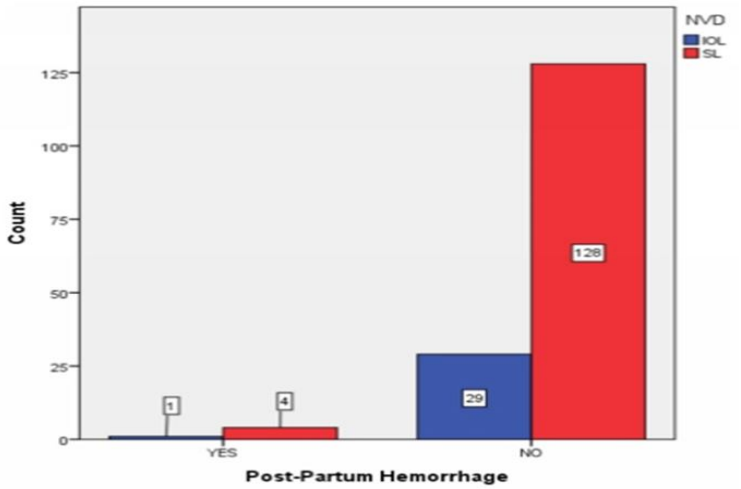

Figure (1): Comparison between IOL group and spontaneous labor group regarding to maternal complications (postpartum hemorrhage)

Normal vaginal Deliveries of late and post-term pregnancies were 155 (82.4 %) in relation to only 33(17.6%) ended Caesarean section. According to gestational ages in the studied group 174 cases (92.6%) were between 41-42 weeks and 14 (7.4%)of cases were above 42 weeks gestation. According to parity there are 29 cases (15.4%) were primigravida, 97 cases (51.6%) were between P1-P3, and 62 (33%) were more than P3 (table 2).

Tables (2): Distribution according to of mode of deliveries, gestational age, and parity.

According to mode of deliveries	188	100%
Normal vaginal delivery	155	82.4%
Caesarean section	33	17.6%
According to Gestational age	Number = 188	100%
41-42 weeks	174	92.6%
above 42 weeks	14	7.4%
According to gravida	N(188)	100%
P0	29	15.4%
P1-P3	97	51.6%
More than P3	62	33%

Risk factors were present in more than half of the cases, including Previous history of prolonged pregnancy and Family history of prolonged pregnancy (table 3).

Table (3): Risk factors in postterm cases:

Risk factors	Total No.=188	%
Previous history of prolonged pregnancy	45	23.9%
Family history of prolonged pregnancy	38	20.2%

According to Apgar score186 of cases (98.94%) were normal Apgar and only 2 cases (1.06%) were with low Apgar less than 7 at five minutes, however there is no significant difference in neonatal outcomes between induction of labor groups and expectant management group. According meconium staining 149 cases (79.3%) were with clear liquor and 39 cases (20.7%) were meconium staining fluid ranging to (I, II, III) grades grade 1 = 25 cases (13.3%) and gredes 2 to 3 =14 cases (7.4%). According to birth weight only 5 (2.6%) were with birth weight less than 2500 g but 159 cases (84.6%) of birth weight were from 2500 grams (g) to 4000 g, few percentage are large infants 24 cases (1 2.8%) were more than 4000 g (there are no difference in birth weights of neonates of late and post-term pregnancies, relatively increasing birth weights gradually with increasing the patients' parity states (table 4).

Table (4): Neonatal outcome according to Apgar score, meconium staining,and birth weight.

According to Apgar score	Total =188	Spontaneous delivery	Induction of labor	Cesareans section
Normal Apgar	186 (98.94%)	123	30	33
Law Apgar (less than 7)	2 (1.06)	1	-	1
According to meconium staining	Total =188	Spontaneous delivery	Induction of labor	Cesarean section
Clear liquor	149(79.3%)	103	23	23
Meconium grade 1	25 (13.3%)	13	7	5
Meconium grade 2-3	14 (7.4%)	8	1	5
According to birth weight.	Total =188	Spontaneous delivery	Induction of labor	Cesarean section
<2500g	5 (2.6%)	3	1	1
2500-4000 g	159 (84.6%)	103	25	31
>4000 g	24 (12.8%)	17	2	5

Thirty six neonates (19%) were admitted to neonatal ICU, for observation and supportive management because of transient tachypnea 1-2 days after operative deliveries and discharge with good state, Aside from no significant difference in neonatal outcomes (Table 5).

Table (5): Number of neonatal admission to NICU.

Admission to neonatal ICU	Number = 188	100%
No admission	152	81%
Admission	36	19%

Only two neonates delivered with congenital anomalies, one of them small for gestational age (SGA), cleft lip and palate, the second had congenital heart disease (table 6).

Table (6): Neonatal congenital anomalies.

Congenital anomalies	Number = 188	100%
No congenital anomalies	186	98.9%
Congenital anomalies	2	1.1%

DISCUSSION

In the present study 5% women with prolonged pregnancies had elective CS. Of the remaining 124 women 66% had spontaneous labor and 31 women 16.5% were induced either because of evidence of oligohydramnios or non-assuring, the primary objective of treatment should be to identify the fetus at risk and thereby to plan an appropriate management. The decision regarding the expectant versus active management of post-term /prolonged pregnancy should depend on balancing the effectiveness of induction against the effectiveness of increased fetal surveillance for preventing fetal and neonatal loss *(Stock and Ferguson, 2012)*.

We have observed that there was lower rate in the presence of meconium staining in the study cases where labour was induced, compared to that women whose had spontaneous labour. It was also observed that elective induction was associated with the increasing in the rate of operative deliveries. Overall there was no significantly increased in perinatal mortality in study cases as compared that with full-term deliveries. If a woman with prolonged pregnancy has adequate amount of liquor and there is no fetal compromise, she could be managed expectantly. However if there is compliance problem or evidence of decreasing liquor or nonassuring fetal condition detected by ultrasonography and, or NST, intervention is imperative *(Sepand and Kennrdy, 2018)*.

Advances in obstetric and neonatal care have lowered the absolute mortality risk. However, retrospective studies of these so-called post-term pregnancies have found an increased risk to the mother and fetus *(Olesen et al., 2013)*.

Some studies that failed to show a reduction in fetal/neonatal morbidity were diluted by poorly dated pregnancies that were not necessarily post-term. In addition, the potential for increasing the risk for cesarean delivery with a failed induction is far less likely in the era of safe and effective cervical ripening agents. About one fifth of induction fails requiring emergency cesarean delivery, although there is strong evidence supporting IOL for management fetal indications *(Sepand and Kennrdy, 2018)*.

Several studies found that routine labor induction at 41 weeks' gestation resulted in lower perinatal mortality rates but similar cesarean delivery rates. Approximately, 500 women needed to be induced to prevent one perinatal death. The number may be higher over the last two decades and accounts for up to 20% in United States and United Kingdom, with increased risk of cesarean deliveries particularly in nulliparous *(Wood et al., 2014)*.

The choice of which method used for IOL is controversial. In our study, the comparison between labor induced by misoprostol which applied in posterior fornix of the vagina. The second way is a balloon catheter application into cervical canal. It is cheap, safe method, and it considered effective way which carry risk of a lower uterine hyper stimulation, but its safety are yet to be proven in women with previous cesarean delivery *(Church and Katakam, 2010)*.

The preponderance of the evidence from these studies, including meta-analyses, find that not only is rate of cesarean delivery not increased in women who were randomized to routine induction of labor, but also more cesarean deliveries were performed in the non-induction groups, and the most frequent indication was fetal distress *(Arora, 2017)*.

Routine induction at 41 weeks of gestation does not increase the cesarean delivery rate, and may decrease it without negatively affecting perinatal morbidity or mortality. In fact, both the woman and the neonate get benefit from a policy of routine induction of labor in well-dated, low-risk pregnancies at 41 weeks' gestation *(Chai et al., 2018)*. A policy of routine induction at 40 weeks' has few benefits, and there are multiple reasons not to allow a pregnancy to progress beyond 42 weeks *(Arora, 2017)*.

Elective induction of labor is increasingly being used as a management strategy (Sepand and Kennrdy, 2018). While this management may be reasonable in a practice that allows 48 hours or more for the management of the latent phase and the first stage of labor overall, in a setting where induction of labor is called a failure after 18-24 hours, it will likely further increase the cesarean delivery rate *(Caughey and Bishop, 2009)*.

IOL should be offered for low-risk pregnant women between 41+0 and 42+0 weeks to avoid the prolonged pregnancy risks. For women who don't like IOL, increase antenatal monitoring consists of estimation of AFI and CTG according to RCOG *(Pundir and Coomarasamy, 2016)*.

However, elective induction of labor is increasingly being used as a management strategy *(Sepand and Kennrdy, 2018)*. This management may be reasonable in a practice that allows 48 hours or more for the management of the latent phase and the first stage of labor overall, in a setting where induction of labor is called a failure after 18-24 hours. It will likely further increase the cesarean delivery rate *(Sepand and Kennrdy, 2018)*.

CONCLUSION

Our study suggested that an induction of labor in late and postterm pregnancies is associated with increasing the rate of cesarean delivery. However, other maternal and fetal parameters were not affected by IOL.

Management of women with late and postterm pregnancies should be individualized, taking into a consideration the amount of liquor and the findings of sonography and NST. Nevertheless, it has to be kept in mind that with increasing gestational age beyond 41+0 weeks, the rate of maternal and neonatal complications rise, which indicated that prolonged pregnancy should be delivered promptly.

Overall the decision of whether or not prolonged pregnancies should be induced cannot be conclusively clarified. The opinion should be taking individually by obstetric consultant together with the patients after a full knowledge about advantage and disadvantages.

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تأثير التحفيز الصناعي للولادة في النساء ذوات الحمل المديد ونتائجه على الأم العاملة والوليد
(دراسة مسحية)

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خلفيــة البحــث: الحمــل المديــد هــو الحمــل الــذى تتــرواح مدتــه بــين 41 اســبوع الــى 41 اســبوع وســتة اســابيع إضــافية ،والحمــل الــذى يتخطــى 42 اســبوع يســمى حمــل لمــا بعــد إكتمــال النمــو ، ويمثلــوا مــن 5- 10 % مــن عــدد الحوامــل ويوجــد حــوالى1% مــنهم عرضــة لمخــاطر صــحية لــلأم وللجنــين مثــل الــولادات القيصــرية ونزيــف مــا بعــد الــولادة وجــروح بمجــرى الــولادة وكبــر دمــاغ البيبــى وحجــز حــديثى الــولادة بالرعايــة المركزة لحديثى الولادة.

الهــدف مــن الدراســةِ : تحديــد خطرمــاحول الــولادة مــن الحمــل المتــأخر والمديــد وبعــد الــولادة وتحديــد تــأثيرتحريض المخــاض عــل نتــائج الأم العاملــة والجنــين وعلــى طريقة الولادة.

الاشــخاص وطــرق البحــث: تــم جميــع البيانــات مــن الــولادات ذات الحمــل المتأخرومــا بعــد الأجــل فــي مركزمصــراتة الطبــي مــن 1 ينــايرإلى 30 يونيــو 2018. وشــملت الدراســة النســاء العــاملات مــع الحمــل ، و تتــراوح أعمــارهن بــين 41 + 0 إلــى 42 + 6 أســابيع كاملــة ومــا بعــدها ، و تمــت مقارنــة أولئــك الــذين خضــعن لتحــريض المخــاض مــع النســاءاللاتى يــتم ولادتهــن بشــكل متوقــع .وقــد تــم تقيــيم المخــاطر علــى الأم والطفل .وتم تصنيف هؤلاء النساء إلى مجموعتين:

المجموعــة الأولــى: ولادات بواســطة تحفيــز صــناعي تتكــون مــن 31 حالــة.، **والمجموعــة الثانيــة:** ولادات طبيعيــة 124 حالــة. هــذا و يــتم تحــريض المخــاض بطــريقتين إمــا عــن طريــق وضــع بــالون القســطرة فــي عنــق الــرحم وهــذه الطريقــة

تستعمل لنساء اللواتي لديها أكثر من ثلاث ولادات او لديها ولادة قيصرية. ، أما الطريقة الثانية فهي بوضع دواء الميزوبروستول(25 ميكروجرام) في مهبل المريضة ، ويمكن تكرار الجرعة كل 6 ساعات.

تمت متابعة الحمل مرتين أسبوعيا من ناحية كمية السائل السلوى وحركة الجنين ومتابعتها بصورة السونار إ لي حين دخولها في مخاض طبيعي، ومن ثم بالإمكان فتح الكيس الأمنيوني وزيادة المخاض بدواء الأوكسيتوسين في المحلول السكري عن طريق الوريد.

النتائج: العدد الكلي لمجموع الولادات خلال 6 أشهر الأولى من 2018 كانت 2248ولادة، وعدد ولادات تمام الحمل 1890(84%)، والأطفال الخدج 170 وليد (7.6%)، بينما الولادات المتأخرة 174 (7.7%) ، ولادات الحمل المديد كانت 14 (0.8%).

وقد أدرجت 188 مريضة ذوات الحمل المتأخر والمديد من 41 أسبوع إ لى 42 أسبوع فما فوق في الدراسة.و كان معدل الولادات القيصرية أعلى بكثيرلمجموعة تحفيز الصناعي بنسبة 26 ٪ مقارنة بمجموعة الإدارة التوقعية (9.6 ٪). علاوةعلى ذلك ،فإن حدوث تمزق العجان وجروح الفرج كان أكثرحدوثا (51 ٪ في مجموعة التحريض المخاضى مقابل 16 ٪ في مجموعة التدبيرالتوقعي) في النساء اللواتي لديهن ولادة مهبلية،وخصوصا نساء الحمل الأول.

الإستنتاج : معدل الولادات القيصرية أعلى بكثيرلمجموعة تحفيز الصناعي بنسبة 26 ٪ مقارنة بمجموعة الإدارة التوقعية (9.6 ٪).