Intra cervical Foley catheter as a method for induction of labour: King Hussein Medical Centre Experience

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ABSTRACT

Aim of study: To assess the efficacy of using intra cervical Foley catheter induction of labour among pregnant women with and without previous caesarean section and their neonatal out come at King Hussein Medical Centre, Amman, Jordan.

Material and methods: The study was conducted in the labor department of King Hussein Medical Center (KHMC) Amman, Jordan during the period from August 2013 to January 2014 using a data sheet including patient questionnaire to review demographic characteristics of patients, indication for induction of labor and results of inductions regarding outcome, success rate and neonatal outcome.

During the study period (August 2013 to January 2014) a total of 200 patients were admitted for induction of labor and their data were reviewed.

Results: The most prevalent age group of induced patients was (25 - 34 years) which accounts for (54.5%) followed by (16-24) which accounts for (30.5%); 15% only were between the age of 35 and 45.

Booking status : A little more than half of the patients were booked (only 58.5%); more than half of our patients were either para one (39.5% of the cases) or primigravida (24.5%).

Only 35 of the cases had previous one caesarian rate (17.5) and (82.5%) had previous normal deliveries. Most of the studied cases were below 41 weeks of gestational age where (53.0%) of the cases were between gestational age 40-41 week while post term were (10%) of cases and only (1.5%) were less than 34 weeks.

Intra cervical Foley's catheter was the most common used method for induction of labour, where more than half of our patients used this method (54.5%) followed by prostaglandin(23.0%).

Artificial rupture of membranes followed by oxytocin or seeping of membranes was the least used method with each method accounting for around 10 %.

The most common indication for induction of labour was post date (47.5%) followed by others (40.5%) which include (non reactive NST, isolated decreased fetal movement, oligohydromimious, unstable lie, Intra uterine fetal death IUFD, congenital abnormality of the fetus and bad obstetric history; maternal diseases represent (8.5%) of the cases.

Pre eclampsia (PET) cases represented the majority of cases (70.5%) followed by Diabetes Mellitus (17.5%); only 2 cases were essential hypertension (12.0%).

More than half of the cases of induction ended with vaginal deliveries (58%); instrumental deliveries were used in 5.5% of cases and in 72 cases the induction ended by caesarean section which represents (36%) of cases. Mode of delivery in patients with previous CS: 65.5% of those cases ended up with a second CS. Vaginal delivery was achieved in more than 34% of the cases : instrumental deliveries in (6%) and normal vaginal deliveries in (28.5%).

Failure to progress represented the most common indication for C/S in pregnant women with previous C/S who underwent induction of labour (60%) followed by fetal distress (37%), while obstructed labour was reported in only one case. (3%) normal body weight was seen in (63%) of babies, good Apger score (8-9) was reported for 90% of the cases, with 3% had Apgar score less than 7.

Conclusion: Induction of labor in still one of the major indications for admissions to the labor ward causing a lot of worries to both the patients, their family and the health care providers.

Although the practice recommendation for the best method of induction especially for patients with previous uterine scar is still unclear, with a favor for use of prostaglandin preparation, our results suggested cervical Foley's catheter as a reasonable alternative. More studies are needed to validate this option.

Key words: Foley catheter, induction of labour, Jordan

Introduction

Induction of labour is one of the most common interventions practiced in modern obstetrics. It is indicated where the benefits to mother and/or fetus of discontinuing the pregnancy outweigh the risks of awaiting spontaneous onset of labour (1,2). However, induction of labour is not without risk. The World Health Organization (WHO) recommends induction be performed with a clear medical indication and when expected benefits outweigh potential harms (3). Induction of labor describes the process of artificially ripening the cervix and stimulating uterine contractions with the intention of precipitating the active phase of labour, thus leading to progressive dilation and effacement of the cervix with the intention of achieving a vaginal delivery. In the developed world, the ability to induce labour has contributed to the reduction in maternal and perinatal mortality and morbidity.(4)

Rates of labour induction vary between maternity units because of case-mix but the UK average is around 20% (NHS 2006). Induction accounts for approximately 20% of deliveries in the UK and USA (1) and rates have been rising steadily. This has been attributed to patient and physician factors, however elective induction rates are increasing disproportionately [8,9], accounting for 10 to 30% of inductions in some countries.

Induction of labour should only be considered in situations when the balance of risks are such that the if the pregnancy is allowed to continue, and when vaginal birth is thought to be the appropriate route of delivery. In general, this limits induction to pregnancies of gestation greater than the legal limits of viability (usually 24 weeks' gestation).(4)

Materials and methods

Study design

This was a prospective descriptive study to identify the most indications and, different methods of induction of labour and success rate of induction of labor between pregnant women with and without previous caesarean section and their neonatal outcome.

Study setting

The study was conducted in the labor department of King Hussein Medical Center (KHMC), Amman, Jordan during the period from August 2013 to January 2014.

Study population:

All pregnant women attending the labor department for induction of labor during the study period

Study tool:

A preformed data collection sheet including a questionnaire for the patients was used to collect the data from the pregnant women and follow them up to identify the end result of induction.

All patients consented to allow us to use their data in the study.

The approval of the ethical committee at KHMC was obtained.

The data sheet includes pregnant women's name, age, occupation, booking status, gestational age, parity, indications and mode of previous deliveries, mode of delivery in the studied cases and the indication for caesarean deliveries and neonatal outcome.

Results

Table 1: Age of women

	Categories	Numbers	Percentage
Age of women	16 years – 24 years	61	30.5%
	25 years – 34 years	109	54.5%
	35 years – 45 years	30	15.0%
Total		200	100%

1. Age distribution: the most prevalent age group of induced patients was (25 -34 years) which accounts for (54.5%) followed by (16-24) which accounts for (30.5%); 15% only were between the age of 35 and 45.

Table 2: Occupation

	Categories	Numbers	Percentage
Occupation	Works	169	84.5%
	Does not work	31	15.5%
Total		200	100%

2. Occupation status : More than (84.5%) of the cases under study were working pregnant women with only15% not working

Table 3: Booking status

Categories	Numbers	Percentage
Booked	117	58.5%
Not Booked	83	41.5%
Total	200	100.0%

3. Booking status: a little more than half of the patients were booked (only58.5%),

Table 4: Parity

P	NO	percent
0	49	24.5%
1	79	39.5%
2	17	8.5%
3	23	11.5%
4	12	6.0%
5 and more	20	10.0%
Total	200	100.0%

4. Parity status: more than half of our patients were either para one (39.5% of the cases) or primigravida (24.5%).

The rest of the cases were distributed in different parity groups, although it is worth noticing that around 10% were grand multipara with parity of 5 and more.

Table 5: Mode of previous deliveries

Categories	Numbers	Percentage
Normal	165	82.5%
previous 1C/S	35	17.5%
Total	200	100%

5. Mode of previous delivery: Only35 of the cases had previous one caesarian rate (17.5) and (82.5%) had previous normal deliveries

Table 6: Gestational Age at induction of labour

	Categories	Numbers	Percentage
Gestational Age	24 weeks – 34 weeks	3	1.5%
	35 weeks – 39 weeks	70	35.0%
	40 weeks – 41 weeks	106	53.0%
	More than 41 weeks	21	10.5%
Total		200	100.0%

6. Gestational age: Most of the studied cases were below 41 weeks of gestational age where (53.0%) of the cases were between gestational age 40-41 week while post term were (10%) of cases and only (1.5%) were less than 34 weeks.

Table 7: Method of Induction

Categories	Numbers	Percentage
Sweeping	21	10.5%
Foley's Catheter	109	54.5%
Prostaglandin	46	23.0%
ARM + Syntocinon	24	12.0%
Total	200	100.0%

7. Method of induction : intra cervical Foley's catheter was the most common used method for induction of labour , where more than half of our Patients used this method (54.5) followed by prostaglandin (23.0%).

Artificial rupture of membranes followed by oxytocin or seeping of membranes was the least used method with each method accounting for around 10 %.

Table 8: Indication of Induction

Categories	Numbers	Percentage
Post Date	95	47.5%
IUGR	1	0.5%
Maternal Disease	17	8.5%
PROM	6	3.0%
Others	81	40.5%
Total	200	100.0%

8. Indication of labour : The most common indication for induction of labour was post date (47.5%) followed by others (40.5%) which included (non reactive NST, isolated decreased fetal movement, Oligohydramnios , unstable lie, Intra uterine fetal death IUFD, congenital abnormality of the fetus and bad obstetric history,); maternal diseases represented (8.5%) of the cases.

Table 9: Maternal Disease

Categories	Numbers	Percentage
DM	3	17.5%
PET	12	70.5%
HTN	2	12.0%
Total	**17**	**100%**

9. Maternal diseases necessitate induction of labour : pre eclampsia (PET) cases represent the majority of cases (70.5%) followed by Diabetes Mellitus (17.5%) with only 2 cases of essential hypertension (12.0%).

Table 10: Mode of Delivery

Categories	Numbers	Percentage
NVD	117	58.5%
C/S	72	36.0%
Instrumental Delivery	11	5.5%
Total	**200**	**100.0%**

10. Mode of delivery in the induction episode : More than half of cases of induction ended by vaginal deliveries (58%); instrumental deliveries were used in 5.5% of cases and in 72 cases the induction ended by caesarean section which represented (36%) of cases.

Table 11: Instrumental Delivery

Categories	Numbers	Percentage
Vacuum	8	73.0%
Forceps	3	27.0%
Total	**11**	**100%**

11. Type of instrumental delivery : Vacuum deliveries were the most common followed by forceps (73%.-27%) respectively.

Table 12: Mode of Delivery for patients with previous C/S

Categories	Numbers	Percentage
Normal	10	28.5%
C/S	23	65.5%
Vacuum	1	3.0%
Forceps	1	3.0%
Total	**35**	**100%**

12. Mode of delivery in patients with previous CS: 65.5% of those cases ended up with a second CS. Vaginal delivery was achieved in more than 34% of the cases : instrumental deliveries in (6%) and normal vaginal deliveries in (28.5%).

Table 13: Indication of C/S for patients with Previous C/S

Categories	Numbers	Percentage
Fetal distress	13	37.0%
Failure to Progress	21	60.0%
Obstructed labour	1	3.0%
Total	**35**	**100%**

13. Indication for CS in the present episode: failure to progress represents the most common indication of C/S in pregnant women with previous C/S who underwent induction of labour (60%) followed by fetal distress (37%) while obstructed labour was reported in only one case (3%).

Table 14: Neonatal outcome

Categories		Numbers	Percentage
Baby Sex	Male	97	48.5%
	Female	103	51.5%
Body Weight	Less than 3.kg	67	33.5%
	3.kg – 4.kg	126	63.0%
	More than 4.kg	7	3.5%
Apgar Score	Less than 7	6	3.0%
	7	15	7.5%
	8	69	34.5%
	9	110	55.0%
	Total	**200**	**100.0%**

14. Neonatal outcome : normal body weight was seen in (63%) of babies , good Apgar score (8-9) was reported for in 90% of the cases, with 3% having Apgar score less than 7.

Discussion

In Western countries, labour is induced in 20-30% of all pregnant women for various reasons. Until now different methods for labour induction have been used.

Mean maternal age at birth has increased in most developed countries due to postponement of childbearing due to social, economic and educational factors.(19) In the USA, the birth rate for women aged 35-39 years has risen nearly 50% since 1990 (20). This is not the case in our study population where the mean maternal age was less than 34 years (85%) , most of them were either para one or nullipara (39.5%, 24.5%) respectively. Similar to many other studies, post-term pregnancy was the most common indication for induction (47.5%) (Shetty et al. 2004; Chilaka et al.2004).

Nulliparity was an independent risk factor for prolonged pregnancy in our study which is consistent with previous findings(21,22). Nulliparity was associated with a fivefold increased risk for CS following labor induction among post term pregnancies constituting almost one-third of all failures. This is in line with prior studies on term pregnancies (23,24,25).

Maternal diseases represented (8.5%) of the cases. PET cases represent (70.5%) followed by DM (17.5%). This is due to the fact that the only definitive treatment for PET is delivery. It is one of the most common maternal diseases to end up with induction of labour in many studies (4); other causes were responsible for (40.5%) of the cases which includes NST, decreased fetal movement, Oligohydramnios , unstable lie, IUFD, abnormal baby and bad obstetric history.

The most common method of induction of labour used in KHMC is Foley's catheter (54.5%) followed by prostaglandin (23.0%). The PROBAAT trial showed that induction of labour with a Foley catheter is as effective as induction with intravaginal Prostaglandin E2 gel, with fewer maternal and neonatal side-effects [5], where caesarean section rate was comparable. In the meta-analysis of three trials on the subject, the Foley catheter revealed a lower rate of hyper stimulation, resulting in fewer cases of asphyxia and less post partum Hemorrhage. Consequently, the transcervical Foley catheter was recommended for induction of labour in women with an unfavorable cervix at term [4]. The Foley catheter shows similar success rates as induction of labour with misoprostol (vaginal and oral), and is associated with less uterine hyper stimulation with and without fetal heart rate (FHR) changes and a comparable caesarean section rate [6-7].

Although the National Institute for Health and Clinical Excellence (NICE) guidance recommends vaginal prostaglandin E 2 (PGE 2) as the preferred method of induction of labour ,NICE prostaglandin E 2 was the second most used method of induction of labour(23.0%).

In our population (58.5%) of pregnant women who underwent induction of labour succeeded in achieving vaginal delivery while 36.0% were by caesarean section and only 5.5% delivered by instrumental deliveries. Our rate of caesarean section is higher than in other studies (Mansour Ghanaie et al). This is probably because most of our studied group were with low parity : para one (39.5%) and nulliparous patients (24.5%).

Nulliparity is one of the most important factors known to increase cesarean rate due to failure to progress (Mansour Ghanaie et al.) and this is similar to our result where the most common cause of caesarean section after induction of labour is failure to progress (60.0%).

(17.5%) of the pregnant women who underwent induction of labour in our group had previous caesarean section. The low percentage of those patients is consistent with the observed decreasing trends in women undertaking vaginal birth after caesarean delivery in other studies (26). 65% of them end by caesarean section. This is a higher rate than other studies like the NICHD study, in which the rates of caesarean section in women undergoing planned VBAC were 33%, 26% and 19% for induced, augmented and spontaneous labour groups, respectively.(27)

Failure to progress (60.0%) was the most common cause of caesarean section in pregnant women with previous caesarian who underwent induction of labor, followed by Fetal distress in (37.0%) of the cases. This may result from the practice in KHMC protocol where Foley's catheter is the method of induction in pregnant women with previous c/s, and not using prostaglandin or oxytocin for induction or augmentation of labour in those pregnant women with previous caesarian which probably accounts for the increase rate of cs in those patients because of failure of progress.

Neonatal outcome in our study (neonatal weight, most of them normal body weight (63%) and APGAR scores between (8-9) were (34.5-55.5%) respectively), indicates that the three methods used were safe for neonates and that no major differences are seen in neonates born to women delivered with each method. This supports similar reports from other studies (28,29).

Conclusion

Induction of labor in still one of the major indications for admissions to the labor ward causing a lot of worries to both the patients, their family and the health care providers. Admissions for induction of labour could be reduced by proper evaluation of indications for induction although the practice recommendation for the best method of induction, especially for patients with previous uterine scar, is still unclear with a favor for use of prostaglandin preparation. Our results suggested cervical Foley's catheter as a reasonable alternative.

More studies are needed to validate this option.

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