Original Article

Induction of Labour with Prostaglandin E_2 Vaginal Tablet in Women with Previous One Caesarean Section

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Objective: To evaluate the frequency of vaginal birth after induction of labour with vaginal tablet prostaglandin E2 in women with previous one caesarean section.

Methods: Total 100 pregnant women was selected for the study with singleton, cephalic pregnancy and history of previous one caesarean section at gestational age between 37 to 41 weeks. EFW was less than 3.7kg and Bishop Score was > 5. Cervical ripening was done with PGE2 vaginal tablet Prostin E2(3mg) after initial CTG. These women were evaluated after 6 hours by Bishop Score. CTG was repeated, if reactive, 2nd dose of PGE2 vaginal tablet was given. If patients went into labour after first or 2nd dose of prostin E2, labour was carefully monitored by close one to one monitoring by vital signs, uterine contractions, FHR monitoring, scar tenderness and Bishop score. Outcomes measured were frequency of VBAC(vaginal birth after caesarean section), uterine rupture, neonatal outcome and frequency of emergency repeat caesarean section.

Results: Mean age of pregnant women was 28.06 + 3.45 years. 64 patients delivered vaginally and 36 delivered by emergency repeat caesarean section. Fetal distress was the main reason for emergency repeat caesarean section (ERCS). There was one case of uterine rupture. Neonatal outcome were measured by Apgar score, admission to nursery and survival rate. One baby died in utero because of uterine rupture and another baby died in nursery on 2nd day of life due to meconium aspiration syndrome. 98 babies were delivered with good Apgar score and survival rate of 98% was found.

Conclusion: Our study concluded that prostaglandin E2 vaginal tablets are safe for inducing labour in women with previous one caesarean section but it should be administered with caution. Risk of uterine rupture is 1% in our study.

Keywords: Induction of labour (IOL), prostaglandin E2 (PGE2), vaginal birth after caesarean section (VBAC), trial of labour after caesarean (TOLAC).

Introduction

Induction of labor refers to the process whereby uterine contractions are initiated by medical or surgical means before the onset of spontaneous labor, accompanied with cervical dilatation, effacement and decent of fetal presenting part.[1] Between 1990 and 2009, the overall frequency of labor induction had been doubles, rising from 9.5% to 23.2%[2] and early term (in the 37th and 38th week) inductions quadrupled, rising from 2% to 8%.[3] Induction of labor is one of the most common procedures in obstetrics and one of the fastest growing medical procedures in the United States. The rate of labor induction in the United States continues to rise significantly for all gestational ages. The reason for this increase is unclear, although it may partly reflect a growing use of labor induction for post term pregnancies and an increasing trend toward elective induction of labor.[4] Induction of labour can be achieved by a variety of physical and biochemical stimuli designed for the purpose. However, approximately 20% of women having induction of labor end up with cesarean delivery.[5] Hence, there is a keen interest in developing safer, most cost-effective and more efficient means for induction of labour.[6] There are many methods of inducing labor including medication and processes. Medication includes intravaginal, endocervical or extra-amniotic administration of prostaglandin, such as dinoprostone or misoprostol.[7] PGE2 is an agent that has been shown to have utility in promoting cervical ripening and labor initiation. The gel is available in 1- and 2-mg formulations. The tablets are available in a 3-mg formulation only.[8] The studies on outcome and safety of vaginal prostaglandin for labour induction in patients with previous caesarean section are limited

and most studies regarding prostaglandin E2 gel (PGE2) induction were on patients with an uncomplicated obstetric history.[9] An article was compiled from ACOG Practice Bulletin in ACOG Midwifery today and Obstet Gynaecol 2001 and it was last updated in Aug 2015 which was about VBAC. It sated that 60 80 % women with history of previous one caesarean section can deliver vaginally with a risk of uterine rupture 0.5 to 1.5% i.e. approximately 1:500. Some studies have documented that there is increase risk of uterine rupture if women with history of previous one caesarean section are induced or augmented but recently ACOG stated that VBAC is safer than repeat Caesarean section but FHR monitoring and maternal monitoring should be a routine part of VBAC procedures, in order to detect maternal and fetal distress at an early stage.[10] The present study was conducted to evaluate the frequency of vaginal birth after induction of labor with vaginal tablet prostin E2 in women with previous one cesarean section.

Methods

This descriptive study was conducted at Department of Obstetrics and Gynaecology of Services Hospital Lahore from January 2015 to June 2015. Total hundred pregnant women with previous one caesarean section were included in the study with singleton pregnancy, cephalic presentation, between 37-41 weeks of gestation, EFW of <3.7 kg and Bishop Score>5. While patients with multiple pregnancies, malpresenation, diabetic macrosmia, EFW > 3.7kg of poor Bishop < 5 were excluded from study. Informed written consent was taken from each patient after explaining pros and cons of induction of labour (IOL) in women with previous one caesarean section. Ethically if women refused for IOL, they were excluded from the study. After detailed history and examination, investigation were sent including baseline like, CBC, Blood group, BSC, HBsAg, Anti HCV, An ultrasound was performed and initial CTG was done before induction of labour. Close one to one monitoring was started for maternal vital signs and FHR monitoring. IOL was planned between 37 41 weeks of gestation with Prostin E2 vaginal tablet. A CTG was done before inserting first dose of prostin E2 vaginal tablet. Bishop's score was calculated before IOL and it was less than 5 . After 6 hours of start of IOL, if there was no response, vital signs, Bishop's score and CTG were repeated. If CTG and other parameters were reassuring, then 2nd dose of Prostin E2 vaginal tablet was inserted. These women were reevaluated in the same manner as mentioned above 6 hours after 2nd dose of prostin E2 vaginal tablet. If Bishop's score was still poor i.e < 4 or there was any abnormality in CTG or vital signs then repeat emergency caesarean section was performed. If pregnant women went into labour after first or second dose of prostin E2 vaginal tablet, labour was closely monitored with careful feto-maternal monitoring.

Results

Out of hundred women with previous one caesarean section, 64% delivered vaginally and 36% by emergency repeat caesarean section. There was one case of uterine rupture two babies were admitted to nursery for monitoring for 1 2 days and then discharged one baby expired i.e the case of uterine rupture and another baby died in nursery due to meconium aspiration syndrome. This data was analyzed using SPSS version 20.0. Mean standard deviation was calculated and frequency and percentage was calculated for quantitative variables.

Table-1: Outcome of induction of labour.

Bishop score	Vaginal=64	Caesarean Section=39
0 - 4	05	10
5 - 6	13	20
7 - 8	39	06
9 ± above	07	-

Table-2: Neonatal outcome.

Mode of Delivery	Frequency	Neonatal outcome
VBAC	64	One baby admitted to nursery
Repeat C Section	36	One baby admitted to nursery
C Section	-	One baby explred (Uterine rupture)
Another bay died on second day of life due to meconium aspiration syndrome		

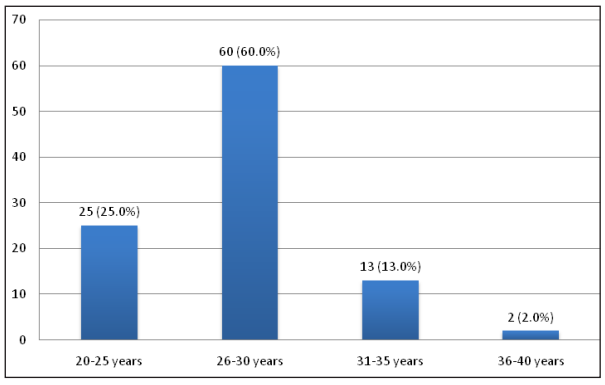

Fig-I: %age of patients according to age group (n=100).

Table-3: Neonatal outcome * induction cross tabulation.

			INDUCTION		
			Single dose prostin	Double dose porstin	Total
Neonatal outcome	Alive n healthy	Count	58	38	96
		% within neonatal outcome	60.4%	39.6%	100.0%
	NNU Discharged	Count	02	0	02
		% within neonatal outcome	100.0%	0.0%	100.0%
	Expired	Count	1	1	2
		% within neonatal outcome	50.0%	50.0%	100.0%
Total		Count	61	39	100
		% within neonatal outcome	61.0%	39.0%	100.0%

Discussion

According to RCOG guideline no. 45 VBAC(Vaginal birth after caesarean section) updated in Oct 2015, VBAC should be offered to majority of women with a singleton, cephalic presentation at 37 weeks or beyond who have had a previous one caesarean section with or without history of previous vaginal birth. Success rate of planned VBAC without history of prior vaginal delivery is 72 75% & success rate of planned VBAC in women with previous one vaginal birth is 85 90%.[10]A study was conducted by Rageth in Switzerland on 29045 deliveries after caesarean section & reported success rate was 73.73%, after inducing labour, with 92 cases of uterine rupture while in our study we induced 100 women with previous one caesarean section with prostin E2 vaginal tablet, successful vaginal delivery was achieved in 64% and there was one case of uterine rupture.[11]In a retrospective cohort study of 1028 consecutive women with previous one cesarean section, 97 underwent induction (study group) while 931 were admitted with spontaneous onset of labour (control group). PGE2 Vaginal tablets were used for cervical ripening in study group. There was no significant difference between study and control group in mean SD (±SD), maternal age (30.9±4.7) versus (31.2±4.8, P=0.06), gestational age at delivery (39. 2±1.8) P value .36, overall rate of caesarean section (36 versus 37.3 P=0.8), rate of low 5 min Apgar score < at 7 (3.1% versus 3.7% P=0.067). There were four cases of uterine rupture, all in (control group) compared to none in study group (non significant).[12]

Many systematic reviews evaluated labour induction in women with caesarean section using different agents with successful VBAC in 50% - 70% of women. Dinoprostone vaginal tablets are the simplest formulation to administer but it may need repeated application. The progressive cervical ripening induced by controlled release of Dinoprostone may become acceptable to patients than the rapid onset of contractions observed with Dinoprostone vaginal tablet.[13] Furthermore two recent prospective studies had evaluated Dinoprostone for labour induction in patients with previous caesarean delivery and demonstrated a comparable successful vaginal delivery rate. On the other hand, Gomez and colleges conducted a retrospective study to compare the efficacy and safely profile between Dinoprostone vaginal pessary and oxytocin for labour induction in 526 patients with prior caesarean section. They revealed no significant difference between the two methods in rate of vaginal delivery between (64.4% for Dinoprostone group ±65.9% and oxytocin group p=0.71).[14]A study was conducted at regional institute of medical sciences India. The use of PGE2 for induction of labour in women with previous one caesarean section was discouraged in past because of High risk of uterine rupture. Total 60 patients were selected in this study, 30 in each group. One group was induced with Foleys catheter and 2nd group induced with oxytocin. Successful vaginal delivery was achieved in 20 women in Foley's group (66.7%) and 18 women delivered in oxytocin group (60%). There were two cases of scar dehiscence in oxytocin group. So IOL can be done in women with previous one caesarean section with high success rate of VBAC1.[15] An 18 years retrospective review was conducted at King Fahad Hospital Saudi Arabia in which 161 women with history of of previous one caesarean section were induced with prostin E2 vagina tablet (study group). While 320 women were induced with prostin E2 vaginal tablet but there was no history of previous Caesarean delivery (control group). When results of the two groups were compared, there was no difference in

rate of vaginal delivery between study group and control group (68.3% vs 73.5%) with p value 0.033 when there was 30 times higher risk of uterine rupture in study group (2.5% vs 0.03%). In our study risk of uterine rupture detected was only 1 %.[16]

Conclusion

We concluded from out study that PGE2 vaginal tablets are safe for induction of labour in women with previous one caesarean section but it should be administered with caution. IOL results in an acceptable rate of vaginal delivery and appears safe for both mother and fetus. An optimal decision for mode of delivery should be shared with pregnant women and all above mentioned factors should be taken into consideration. Risk of uterine rupture in our study was 1% i.e. comparable with IOL with oxytocin. IOL in women with previous one caesarean section should be encouraged in order to decrease the rising rate of caesarean delivery.

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