AUCTORES
Globalize your Research

Journal of Obstetrics Gynecology and Reproductive Sciences
Ahmed Sherif Abdel Hamid *

Open Access

Research Article

Trial of Labor After Cs Either by Induction of Labor by Prostaglandin Versus Spontaneous Onset of Labor; A Comparative Prospective Observational Trial

Ahmed Sherif Abdel Hamid [1,2*], Osama Deif [3,4], Ibrahim Mohamed Al Handalishy[,4,1,2,] Ayman Aly Hamed El-Sallamy [5]

[1] Department of obstetrics and gynecology, Ain shams university. Cairo Egypt

[2] Department of Obstetrics and Gynecology, Air Force Specialized Hospital, Cairo Egypt.

[3] Department of Obstetrics and Gynecology, faculty of medicine, Cairo University, Cairo, Egypt.

[4] Department of Obstetrics and Gynecology, faculty of medicine, Al-Azhar University, Cairo, Egypt.

[5] Department of Obstetrics and gynecology, faculty of Medicine, Misr University for Science and Technology, 6 th October city, Egypt.

***Corresponding Author:** Ahmed Sherif Abdel Hamid, Assistant prof of OB/GYN Faculty of medicine, Ain Shams University, Cairo-Egypt. Email: ahmedsherif@med.asu.edu.eg

Received date: February 27 2020; **Accepted date:** March 10 2020; **Published date:** April 04 2020

Citation: Sherif A. Hamid, Deif O, Sherif A. Hamid. (2020). Trial Of Labor After Cs Either by Induction of Labor by Prostaglandin Versus Spontaneous Onset of Labor; A Comparative Prospective Observational Trial. *J.Obstetrics Gynecology and Reproductive Sciences* 4(4); DOI: 10.31579/2578-8965/031

Abstract:

Introduction: Introduction: The increased rates of complications of repeated CS encourage obstetricians to go for Trial Of Labor After CS (TOLAC). Aim: to study maternal and fetal outcome after labor induction with dinoprostone (PGE2) in women with previous one CS in comparison to spontaneous onset of labor Design: A prospective cross-sectional comparative study was conducted over from June 2019 to December 2019 in 2 hospitals one in Egypt and another in Saudi Arabia .

Patients and methods: A total of 96 patients fulfilling the inclusion criteria were divided into 2 groups: Group (I) 48 patients with history of one lower segment cesarean section (LCSC) with no labor pains where induction of labor was done by using vaginal dinoprostone gel (PGE2), Group (II) 48 patients with previous history of LSCS with spontaneous onset of labor during the same period. Patients with previous one CS who fulfilled the eligibility criteria for TOLAC were enrolled and divided into two groups. Group (I) was assigned to one hospital where induction was done and Group (II) was assigned to second hospital where patients came with spontaneous onset of labor. The outcomes of the study were: success rate of VBAC in both groups, rate of instrumental deliveries, maternal and fetal complications.

Results: The success rate of VBAC was 71.9% among all studied patients. The success rate of VBAC in group (I) was 68.8% while in group (II) was 75%. NO statistical significance difference between type of vaginal delivery among studied patients or indication of repeated cesarean section among 2 groups. Success rate increased in cases with previous VBAC, decreased gestational age and fetal weight. One case of rupture uterus occurred during the study with successful repair. Conclusion: Induction of labor in women with one previous CS is safe as trial of VBAC with spontaneous onset

Keywords: VBAC; TOLAC; induction in previous CS; prostaglandin

Introduction

Before years 1970, the phrase "once a Cesarean, always a Cesarean'' ruled obstetrics practice, in fact the Cesarean section rates are steadily increasing throughout the twentieth century. Rate of repeated CS came to account in almost 40% of all CS. This has negative impacts on economy as well as maternal and neonatal morbidity. Maternal complications associated with elective repeat CS include placenta accrete, bladder and bowel injury, ICU admission, peripartum hysterectomy, blood transfusion, and a long hospital stay [1].

First in 2007 and then in 2015, Royal College of Obstetricians and Gynecologists (RCOG) published their guidelines for VBAC that planned VBAC is a clinically safe choice for most women with a single previous lower segment Cesarean delivery [2]. There is evidence of safety of trial of labor, either through induction of labor or spontaneous onset, resulting in reduction of iatrogenic prematurity, and maternal morbidity and mortality. The vaginal birth after Cesarean section (VBAC) has its own risk including rupture uterus and increase rate of endometritis. A successful trial of labor after Cesarean section (TOLAC) is defined as spontaneous or instrumental (assisted by vacuum or low forceps) delivery to a woman undergoing TOLAC. An unsuccessful TOLAC is defined as failure to achieve a vaginal birth after Cesarean section in women undergoing a TOLAC and the delivery ending by emergency CS [3].

Aim of the work:

To compare between induced labor by dinoprostone and spontaneous labor in women with one previous lower segment cesarean section as regard the success of vaginal birth and pregnancy outcomes.

Patients & Methods:

This prospective cross-section trial was conducted in two hospitals in Saudia Arabia and Egypt from June 2019 to December 2019. The Ethical Committee of each hospital approved this study. All patients willing to participate signed an informed consent immediately after admission to labor ward. The inclusion criteria were: Singleton pregnancy, previous one LSCS, gestational age of more than 40 weeks, patients not in labor for Group (I) and with spontaneous onset in Group (II). Patients who were excluded are those with cephalopelvic disproportion, contracted pelvis, macrosomia, malpresentation, medical disorders with pregnancy, fetal distress, multiple pregnancy, previous rupture uterus or previous myomectomy.

Patients were subjected to detailed history taking (personal, menstrual, obstetric & past history), examination (general, abdominal & local pelvic examination), laboratory investigations (C.B.C, Rh, blood grouping and albumin in urine), Ultrasonography: for fetal viability, lie, presentation, gestational age, liquor amount, placental site, scar thickness and estimated fetal weight. The women were induced with 1 mg dinoprostone gel (prostaglandin E2). According to our hospitals protocol, PGE2 gel was repeated every 6 h for a maximum of 3 doses to achieve adequate contractions. Progress of labor was documented by using a portograms, the active phase began from 4 cm dilated cervix (active phase of labor). Continuous fetal monitoring by using the CTG was performed for all patients. Once adequate contractions were achieved, artificial rupture of membranes was performed. Oxytocin was given according to our hospitals protocol of 10 miu/ml and titrated according to strength and frequency of contractions; oxytocin augmentation was titrated such that it should not exceed the maximum rate of contractions of 3-5 in 10 minutes; the ideal contraction frequency would be three to four in 10 minutes. Patients were monitored for signs of uterine rupture as loss of variability or decelerations

on CTG, vaginal bleeding, maternal tachycardia or hypotension or change in abdominal contour [3].

Emergency CS was done if delayed progress of labor (arrest in first stage or second stage in labor) or any fetal distress.

Primary Outcome

Mode of delivery (successful VBAC or Cesarean section) was the primary outcome.

Secondary outcomes

Indications of emergency CS were compared between both groups. Postpartum events were recorded including blood transfusion, fetal outcome, fetal weight, Apgar score. Comparison of fetal and maternal outcome in both routes of delivery was performed.

Sample Size Justification

The study included all women (96) fulfilling the inclusion and exclusion criteria who were admitted between June 2019 and December 2019 at the 2 hospitals and approved the participation in the study

Statistical analysis:

Statistical package for Social Science (SPSS 25.0.1 for windows; SPSS Inc, Chicago, IL, 2001). Shapiro wilk's test was used to evaluate normal distribution of quantitative continuous data. Quantitative non parametric variables are expressed as mean and SD. Qualitative variables are expressed as frequencies and percent. Student t test was used to compare a quantitative variable between two study groups. Chi square and Fisher's exact test were used to correlate between groups.

Results

This study included finally 96 patients. There was no statistically significant difference between both groups as regard maternal age and gestational age. The mean maternal age among induction group was 26.35±3.12 with a range between 19.0-33.0 years, while among spontaneous onset group the mean age was 24.04±3.76 with a range between 17.0-33.0 years. The mean gestational age among group (I) was 39.77±0.83 with a range between 38.0-41 weeks, while among group (II) the mean was 39.00±0.85 with a range between 37 -40.0 weeks. (Data not tabulated)

As shown in table 1 ,the incidence of successful VBAC was 71.9% among all studied patients. In group (I) it was 70% while in group (II) it was 75%, which was statistically non-significant. Table 2 shows indication of repeated (present) cesarean section among studied patient. There was no statistically significant difference between both groups in the indication of repeated CS, fetal distress, failure of progress, failure of induction in group (I), and refused trial in group (II).

		Group I		Group II		Total		X^2	P-value
		N	%	N	%	N	%		
Mode of Delivery	VBAC	35	70.0	28	73.68	63	71.59	0.144[a]	0.704
	C.S	15	30.0	10	26.32	25	28.41		
Vaginal delivery	Normal	27	77.14	22	78.57	49	77.8	0.018[a]	0.892
	Forceps	8	22.86	6	21.43	14	22.22		

Table 1: showing mode of delivery in 2 groups

a Chi square test

	Group I N=15		Group II N=12		P-value (a)
	N	%	N	%	
Fetal Distress	6	40.0%	6	50.0%	0.707
Failure of progress	5	33.3%	3	25.0%	0.696
Failure of Induction in cases of Group (I)	4	26.7%	----	-----	
Refused trial in cases of Group (II)	---	------	3	25.0%	1.000

Table 2: Indications of CS in 2 groups

a). Fisher exact test

As regard factors affecting success of TOLAC in present study; higher parities had more successful VBAC than those with low parities in both groups, with no statistical significance difference. As regard the effect of indication of previous cesarean section in the outcome of TOLAC among Group (I); the highest success rate of TOLAC was recorded with the primary indication of previous CS was due to elective cesarean section (100%) malpresentation (90.9%), macrosomia (75%). Among group (II); the highest success rate of TOLAC was when the primary indication of previous CS was due to twins (100%), elective cesarean section (75%) and macrosomia (66.7%). The history of previous successful VBAC increased the success rate of TOLAC (Data not tabulated).Table 3: maternal complications in both groups

		Group I N=48		Group II N=48		P	Sig
		N	%	N	%		
Maternal complication	No	38	79.2%	41	85.4%	0.423 a	NS
	Yes	10	20.8%	7	14.6%		
Type of Complication Where total is n=10	Rupture uterus	1	10.0%	0	0.0%	1.000 b	NS
	Blood transfusion	3	30.0%	1	14.3%	0.603 b	NS
	1ry PP hemorrhage	6	60.0%	6	85.7%	0.338 b	NS
Fetal complication	No	33	68.8	30	62.5	0.667 a	NS
	Yes	15	31.2	18	37.5		

Table 3: maternal complications in both groups

(a). Chi square test

(b). Fisher exact test

There was one case of rupture uterus which was successfully repaired in group (I).

Similarly, there was no statistically significant difference between both groups as regard the fetal complication.

Groups	Fetal Complication	Outcome Of TOLAC							
		C.S		Vaginal		Total		Chi-Square	
		N	%	N	%	N	%	X2	P-Value
Group I	Fetal Distress	7	58.3%	5	41.7%	12	25.0%	0.634	0.426
	Meconium	3	100.0%	0	0.0%	3	6.3%	5.000	0.025*
	No Complication	5	15.2%	28	84.8%	33	68.8%	31.487	<0.001**
Group II	Fetal Distress	2	25.0%	6	75.0%	8	16.7%	3.750	0.053
	Meconium	4	40.0%	6	60.0%	10	20.8%	0.760	0.383
	No Complication	6	20.0%	24	80.0%	30	62.5%	21.240	<0.001**

Table 4: fetal complications in both groups

Groups	Indication Of Previous .C.S	Outcome Of TOLAC							
		C.S		Vaginal		Total		Chi-Square	
		N	%	N	%	N	%	X2	P-Value
Group I	Antepartum hemorrhage	4	80.0%	1	20.0%	5	10.4%	3.240	0.072
	Elective CS	0	0.0%	3	100.0%	3	6.3%	5.000	0.025*
	Failure of Progress	2	40.0%	3	60.0%	5	10.4%	0.360	0.549
	Fetal Distress	5	38.5%	8	61.5%	13	27.1%	1.323	0.250
	Macrosomia	1	25.0%	3	75.0%	4	8.3%	1.750	0.186
	Malpresentation	1	9.1%	10	90.9%	11	22.9%	14.052	<0.001**
	Twins	2	28.6%	5	71.4%	7	14.6%	2.381	0.123
Group II	Antepartum hemorrhage	4	80.0%	1	20.0%	5	10.4%	3.240	0.072
	Elective	1	25.0%	3	75.0%	4	8.3%	1.750	0.186
	Failure of progress	2	25.0%	6	75.0%	8	16.7%	3.750	0.053
	Fetal Distress	1	10.0%	9	90.0%	10	20.8%	12.160	<0.001**
	Macrosomia	1	33.3%	2	66.7%	3	6.3%	0.558	0.455
	Malpresentation	3	21.4%	11	78.6%	14	29.2%	8.834	0.003*
	Twins	0	0.0%	4	100.0%	4	8.3%	7.000	0.008*

Table 5: The indications of previous CS in both froups in relation to outcomes of TOLAC

Aphge: Antepartum Hemorrhage **Elective:** Elective Cesarean Section

Discussion:

Our results interpretation and their comparison to other studies:

We classified the patients among this study into patients who had a successful trial of labor delivered vaginal birth after cesarean section (VBAC) and those who had repeated cesarean section. In the present study; the incidence of successful VBAC was 71.9% among all studied patients. In group (I) it was 70% while in group (II) it was 75%, which was statistically non-significant. Type of vaginal delivery was assessed either normal vaginal delivery or forceps to shorten 2nd stage of labor, that was insignificant among both groups. This success rate was similar to that recorded in most of literatures that ranges from 60% to 80% [4].

As regard factors affecting the success rate of vaginal birth after cesarean section (VBAC), we found that in present study; there was no relation between the maternal age and the outcome of trial of labor. Indications of emergency CS in this study were due to fetal distress, failure of progress and failed induction. T here was a statistical significant relation when comparing patients who had successful trial of labor and patients with failed trial as regard having previous successful VBAC.

The results of the current study showed that the presence of a history of vaginal birth increase the success rate of trial of labor especially when it occurred after previous cesarean section (previous successful VBAC). This is generally in agreement with the findings of previous studies where they concluded that the only variable that predicted successful outcome in VBAC was previous vaginal delivery. [5-8].

In the present study analysis; patients with previous primary cesarean section performed for malpresentation was more likely to deliver

vaginally, the lowest success rate of TOLAC recorded when the primary cesarean section was due to antepartum hemorrhage this is consistent with Landan et al., [7]. Generally, about 60 to 80% of trial of labor after prior cesarean birth result in vaginal delivery, the success rate is same what improved when the original cesarean was performed for breech presentation or fetal distress. There was no statistical significant effect of fetal weight on success of TOLAC in the present study. This is in agreement with the results of Devarajan et al., 2018 who found no statistically significant association between a higher average birth weight and a higher failure rate [8].

Grobman et al., 2007 examined effect of increasing birth weight on success of vaginal birth among women who had previous one cesarean section and found that women who delivered infants with a birth weight of 4000gm or more had lower success rate of VBAC and high risk of rupture uterus [9]. In the present study, there was one rupture uterus in group (I) which was repaired successfully and the patient received 2 units of blood.

Strength and limitations of Study

strength of present study it is one of the few studies that done in private hospitals in Arab countries where the private sector has the great share in medical field. The weakness of present study is that it is not randomized as it compares between 2 groups one of them is spontaneous onset also the small number of patients which is limited due to patient refusal to participate due to cultural back ground.

Clinical Implications of Study

The present results should encourage induction of previous one CS by prostaglandin gel in their private hospitals; if these hospitals are equipped with blood banks, continuous fetal monitoring and well-trained residents.

Recommendations for Further studies

Further studies are needed to be done in private hospitals to see outcome and real rates of VBAC; as all literature is only about governmental hospitals.

Conclusion:

Induction of labor in women with previous CS is safe as trial of VBAC with spontaneous onset.

Ethics approval:

Study approved by Ethical Committee of 2 private hospitals.

Consent for publication:

Non applicable.

Availability and data material:

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests:

The authors report there are no competing interests to declare.

Funding:

This study received no financial support.

References

1. Giuseppe Trojano, Gianluca Raffaello Damiani, Claudiana Olivieri, Mario Villa, Antonio Malvasi, et al. (2019). VBAC: antenatal predictors of success. *Acta Biomed*. 90(3): 300–309.
2. (2015). Royal College of Obstetricians and Gynaecologists. Birth after Previous Caesarean Birth. *Green-top Guideline.* No. 45.
3. (2015). WHO systematic review of maternal mortality and morbidity: the prevalence of uterine rupture. *BJOG*; 112:1221–1228.
4. Wallstrom T, Bjorklund J, Frykman J, Jarnbert-Pettersson H, Akerud H, et al. (2018). Induction of labor after one previous Cesarean section in women with an unfavorable cervix: A retrospective cohort study. *PLoS One* 13: e0200024.
5. Gupta JK, Smith GC, Chodankar RR. (2015). Birth after previous caesarean birth. *Royal College of Obstetricians and Gynaecologists*; 45: 1-31.
6. Krispin E, Hiersch L, Wilk Goldsher Y, Wiznitzer A, Yogev Y, et al. (2018). Association between prior vaginal birth after cesarean and subsequent labor outcome. *J Matern Fetal Neonatal Med*. 31: 1066-1072.
7. Landon MB, Hauth JC, Leveno KJ, Spong CY, Leindecker S, et al. (2004). Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. *N Engl J Med*; 351: 2581-2589.
8. Devarajan S, Talaulikar VS, Arulkumaran S. (2018). Vaginal birth after caesarean. Obstetrics, *Gynaecology & Reproductive Medicine.* 28: 110-115.
9. Grobman WA, Gilbert S, Landon MB, Spong CY, Leveno KJ, et al. (2007). Outcomes of induction of labor after one prior cesarean. *Obstet Gynecol*; 109 (2 Pt 1): 262-269.

DOI: 10.31579/2578-8965/031