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ORIGINAL ARTICLE

Maternal and Perinatal Outcomes of Induced Labor for Breech Presentations

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Abstract

Background: Inducing labor for breech presentation is a relatively harmless and effective approach when carefully chosen for the right cases regarding both maternal and perinatal outcomes.
Objective: To determine the safety of induction of labor in women with a breech presentation concerning maternal and perinatal outcomes.
Material and Methods: This descriptive case series included Para 1-5 with the single alive fetus, frank or complete breech with a flexed head after 37 weeks. Labor induced with prostaglandin E2 vaginal pessary either alone or with balloon catheter combination. Maternal outcomes (postpartum hemorrhage, postoperative fever, perinatal trauma, and hospital stay of > 24 hrs) and neonatal morbidity APGAR scores (A/S) of <7, Neonatal Intensive Care Unit admission, any trauma, and mortality were recorded.
Results: The study showed about 43 (86%) of women between the age group of 18-35 years and 37(74%) with parity 1-3. Emergency cesarean section was observed in 7 (14%) while vaginal delivery in 43(86%) cases. Maternal adverse outcomes observed were PPH in 4(8%) (P= 0.50), postoperative fever3 (6%) (P =0.68), perinatal trauma 2(4%) (P =0.68), and hospital stay 9(18%) cases (P =0.84).Observed neonatal outcomes were A/S of < 7 in 5(10%) (P =0.07), Neonatal Intensive Care Unit admission in4(8%) (P =0.59), injury to humorous in 1(2 %)P =0.64)case.
Conclusion: Induction of labor for term breech showed no statistically significant change in feto-maternal outcomes about mode of delivery
Keywords: Labor, induced, breech presentation, maternal and perinatal outcomes

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Introduction

Safe-term breech vaginal delivery is justified after a difficult selection process, careful birth monitoring, and in the presence of skilled obstetricians, anesthesiologists, and pediatricians of well-resourced obstetrical units. Term breech Trial 2001, favoring cesarean delivery for all breech presentations, created extensive evaluation and argument about the controversial issue of breech vaginal delivery. [1,2,3]

Multiple risks are associated with cesarean section (CS) i.e., loss of obstetric learning skills in vaginal breech birth, placenta accrete spectrum with catastrophic hemorrhage, hysterectomy, uterine scar rupture, transfusion, sepsis, visceral injury, returns to theatre, maternal death, psycho-social, finance implications, perinatal mortality, and

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cerebral palsy.[4,5]

In contrast, induction of labor (IOL) for breech presentation is a debatable and rarely practiced issue. Only a few studies have been published for induction of term breech and these have not observed any increase in adverse neonatal outcomes.[5,6]

International recommendations for IOL of breech presentation vary to authorize it. The American and Royal College of Obstetricians and Gynecologists (RCOG) guidelines conclude to inform women that IOL is neither a contraindication nor recommended and to consider it favorable for individual circumstances (if the obstetrical conditions like pelvic, cervical, and fetal conditions are fulfilled) while the Society of Obstetricians and Gynecologists of Canada does not recommend it. [7,8,9,10]

IOL is considered as effective and safe for breech presentation as for cephalic presentation, particularly regarding maternal outcomes, provided eligible candidates are selected, as some studies observed moderate fetal acidosis more frequent amongst the IOL group.[11]

Cesarean section, a costly and invasive issue, needs attention in our resource-poor setting. There is limited evidence on the safety of IOL for breech presentation. This study seeks out maternal and perinatal safety of IOL for breech at term and will provide some additional information to handle it.

Material and Method:

Study design: Descriptive case series

Setting and duration: Department of Gynecology and Obstetrics of Lady Reading Hospital Peshawar, from Dec 2022 to Sep 2023. About 50 participants were enrolled after obtaining ethical approval from the institutional review board (Ref No 387/LRH/MTI, dated: 01/06/22) and participants' informed consent.

Inclusion criteria: all para 1-5 with the single alive fetus, frank or complete breech with flexed head after 37 weeks, reassuring clinical pelvic measurements, estimated fetal weight ≤4000 grams evaluated by ultrasound.

Exclusion Criteria: Women with spontaneous labor onset, previously incised uterus, fetal congenital malformations, growth-restricted fetus, and twin pregnancies.

Data Collection procedure: The planned induction method and delivery route, as per unit protocol, was thoroughly discussed with the woman at the outpatient clinic. Socio-demographic and clinical details regarding the mode of delivery and postnatal information were collected via maternal and neonatal hospital records.

Gestational age calculated from the last menstrual period and first-trimester ultrasound confirmed it. Labor induced for medical and obstetrical indications after 37 weeks of gestation. Mandatory obstetrical ultrasound is done before induction for presentation, estimated fetal weight, and fetal head attitude. Induction of labor done for unripe cervix with Bishop Score of ≤ 6. Methods of induction used were: prostaglandin E2 vaginal pessary either alone or with balloon catheter combination in case of need. All breech deliveries are handled or guided by a senior resident or consultant. Cesarean section was performed for obstetrical indications like failure to progress, failed IOL, and fetal distress.

Data regarding maternal general and obstetrical characteristics, mode of delivery (either vaginal delivery or CS), maternal and perinatal morbidity, and mortality chosen as primary outcomes were collected in medical Proforma. Maternal outcomes were postpartum hemorrhage of ≥ 500 mL for vaginal delivery and ≥ 1000 mL for cesarean section, postoperative fever for more than 24 hrs, perineal trauma, and hospital stay of > 24 hrs.

Neonatal morbidity evaluated was (a) APGAR scores (A/S) of <4 and between 4-7 at 1 min of birth (b) admission in neonatal intensive care unit (NICU) for > 24 hours (c) a traumatic event during labor like brachial plexus, bone or visceral injury (d) neonatal mortality.

Statistical analysis: Data computed for qualitative variables (frequency and percentages) like age groups, parity, maternal outcomes, and neonatal outcomes. Categorical variables were compared using the Chi-squared test. A p-value of <0.05 is considered significant. SPSS version 25 (IBM-SPSSV-25) was used for data analysis.

Results:

During the study period about 10,234 births occurred at our tertiary care hospital. Among them, 492 women (4.8%) with single alive term breech were managed and IOL was done in 50 women.

About 43(86%) were between age group of 18-35 years and 37(74%) had parity 1-3. Spontaneous or assisted breech vaginal delivery was observed in 43 (86%) cases while emergency cesarean section in 7(14%) cases (Table 1).

Table 1: Demographic features of study participants

	NO OF PATIENTS (%age)
18-35 years	43 (86%)

>35 years	7 (14%)
Para 1-3	37 (74%)
Para > 3	13 (26%)
Cesarean deliveries	07 (14%)
Normal vaginal deliveries	43 (86%)

The indications for induction were pre-labor rupture of membranes 23(46%), postdate pregnancy 8(16%), maternal comorbidities 11(22%), planned delivery 7 (14%), and reduced fetal movement 1(2%) (Table 2).

Table 2: INDICATION FOR INDUCTION OF LABOR

S NO	Indications	No of patients (%age)
1	Pre-labor rupture membranes(PROM)	23 (46%)
2	Postdates	8(16%)
3	Maternal diseases	11(22%)
4	Planned delivery	7(14%)
5	Reduced fetal movement	1(2%)
Total		50 (100%)

About 7(14%) women were delivered via Emergency (Emg) CS and 43 (86%) by vaginal route. Indications for Emg CS are shown in Table 3.

Table 3: Indications for cesarean section

S.NO	Indications	No of patients (%age)
1	Failed progress of labor	2(4%)
2	Fetal distress	3(6%)
3	Failed IOL	2(4%)
4	Others	43(86%)

Maternal adverse outcomes observed were PPH in 4(8%), postoperative fever in 3(6%), Peripheral trauma in 2(4%), and a hospital stay of >24 hours in 9 (18%) cases (Table 4). No statistically significant association of any maternal outcome was found with either mode of delivery (P val >0.05)) i.e. vaginal delivery or c/section after induction of labor.

Table 4: Maternal outcomes

	PPH	Fever	Perineal Trauma	Hospital stay>24 hrs	Total
Cesarean section	1(2%)	1(2%)	0 (0%)	2(4%)	7(14%)
Vagina delivery	3(6%)	2(4%)	2(4%)	7(14%)	43(86%
Total	4 (8%)	3(6%)	2(4%)	9(18%)	100%
p . value	0.509	0.684	0.684	0.841	

Observed neonatal outcomes were A/S of <7 at one minute of birth in 5 (10%), of which two were intrapartum CS (ICS)due to fetal distress. About 4 (8%) neonates

Table 5: Neonatal adverse outcomes

Type of delivery	A/S <7/10	Brachial plexus injury	Bone injury	Visceral injury	NICU admission	Mortality	Total
Cesarean section	2(4%)	0(0%)	0(0%)	0(0%)	1(2%)	0(0%)	7 (14%)
Vaginal delivery	3(6%)	0(0%)	1(2%)	0(0%)	3(6%)	0(0%)	43(86%)
Total	5(10%)	0(0%)	1(2%)	0(0%)	4(8%)	0(0%)	50 (100%)
P value	0.07	0	0.68	0	0.50	0	

were admitted to NICU. Injury to humorous was noticed in 1(2%) case of assisted breech vaginal delivery. (Table 5)

No statistically significant difference was observed for adverse neonatal outcomes i.e. A/S <7/10, NICU admission, bone injury(P value>0.05) with either mode of delivery (vaginal or C/Section.

Discussion:

Induction of labor for breech presentation always remained an obstetric problem. In 2000, the Term breech multicenter Trial (TBT) Collaborative Group concluded lowest maternal morbidity risk following vaginal birth (odds ratio [OR] 1.0) and highest following CS after active labor (OR 3.33; 95% CI 1.75–6.33, P < 0.001) while significantly lower perinatal and neonatal mortality or serious neonatal morbidity with planned CS compared to planned vaginal birth. 1PREMODA 2006, a prospective observational multicenter study of France and Belgium, with strict selection criteria, along with many other publications concluded no increase in perinatal health issues and death rate with vaginal birth of breech fetus and no positive impact of planned CS.[12]

Our findings supported a practice of proposing cervical ripening to the suitably designated candidates with a single-term breech fetus, without escalating the risk of serious maternal and perinatal health challenges or mortality.

Our findings revealed poor short-term maternal and neonatal outcomes for breech vaginal delivery after IOL, although having a non-significant association with the mode of delivery. Perineal lacerations and tears were only observed with induced vaginal deliveries. A low APGAR score was observed more frequently with breech vaginal delivery compared to ICS. Time spent in NICU was reduced in ICS compared to the vaginal birth participants. The total number of adverse outcomes may differ from neonatal challenges as some neonates experienced multiple complications.

Many prospective and retrospective studies of breech vaginal birth following defined guidelines recognize better maternal and perinatal health issues. Elle Strand results

showed no significant difference for ICS rates, frequency of PPH or anal sphincter ruptures, neonatal umbilical artery pH <7.0, or metabolic acidosis (7.22 vs 7.25; p=0.02). Between induced and spontaneous breech deliveries.[13]

Conversely, Taner G reported a higher risk of fetal health concerns (OR, 9.48, 95% CI: 2.68 - 33.46, p < 0.001) and maternal difficulties (OR, 7.48, 95% CI: 2.52 - 22.20, p < 0.001) with induced vaginal birth compared to primary CS.[14]

Leblanc F concluded IOL for term breech as effective and safe as for cephalic presentation with no statistically significant difference for PPH between the two groups (14.4% in cephalic vs 12.9% in breech, OR 1.22, CI 95% 0.57-2.57). [15]

A meta-analysis of multiple studies with 2993 single-term breech deliveries comparing induced labor (n = 646) with spontaneous one (n = 2347) revealed a 1.48-fold increased risk for ICS and 1.86-fold for NICU admission in the induced participants but similar results for acidosis in newborns, 5-minute Low APGAR scores, maternal fever, and intrapartum stillbirth.[16]

Other studies observed a short stay in the ICU and A/S of >7 in 65.38% of vaginally delivered babies as compared to 87.61% of babies delivered by EMG CS.[6,16,17]

Further studies will help to better clarify the pros and cons of a particular delivery mode and affiliated maternal and perinatal risks for IOL with breech presentation.

Conclusion:

Induction of labor for term breech showed no statistically significant association of adverse feto-maternal outcomes with either mode of delivery i.e. vaginal delivery or cesarean section.

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