Original Article

To Assess the Association of Cesarean Section with Unengaged Fetal Head in Primigravida Females Presenting in Labour for Delivery

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ABSTRACT

Objective: To assess the association of cesarean section with unengaged fetal head in primigravida females presenting in labour for delivery.

Study Design: Cohort study

Place and Duration of Study: This study was conducted at the Department of Obstetrics and Gynaecology, Unit-3, Jinnah Hospital, Lahore, from 20th January 2018 to 19th July 2018.

Materials and Methods: A total of 230 patients (115 in each group) were enrolled in the study. Females were divided in to two groups i.e. group-A females with unengaged fetal head and group-B females with engaged fetal head.

Results: Patients ranged between 18-40 years. Mean age of the patients was 28.2±6.3 and 28.2±5.0 in group-A and B, respectively. In group-A mean gestational age was 38.4±1.2 and in group-B 38.3±1.1 weeks. Mean BMI in group-A was 24.7±3.2 and in group-B 24.7±3.1 kg/m^2. Association between cesarean section and engaged fetal head was found, RR value was 4.2. Stratification with regard to age, gestational age and BMI was carried out.

Conclusion: In conclusion, there was an association between cesarean section and unengaged fetal head in primigravida ladies.

Key Words: Unengaged fetal head, Cesarean section, Primigravida

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INTRODUCTION

Labour is onset of regular uterine contraction followed by progressive cervical dilatation, effacement and descent of the presenting part. It has been traditional concept in obstetrics that engagement of fetal head occurs by the 38th week. clinically in majority of primigravida the engagement occurs between 38-42 weeks even during the first stage of labour[1]. In the last two decades, the rising rate of LSCS is under critical review. One of the main reasons of this escalation is direct LSCS of primigravidas with non- engaged fetal head at term, which is a frequently encountered finding in obstetric practice [2].

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Engagement of head is most important event in labour which decides obstetric and neonatal outcome. Primigravida is considered important obstetric risk factor. Similarly, unengaged head at term should be regarded as high-risk case [3]. It has been concepted in obstetrics that engagement occurs by 38 weeks in primigravida, and that engagement before the onset of labour will increase the chance of safe vaginal delivery, and non-engagement before onset of labour will decrease the chance of vaginal delivery [2]. Dabby in 2003 found that the incidence of unengaged head in primigravida was 31% out of which 82.9% was delivered vaginally and 17.1% had caesarean section (CS); a rate which was 4 times higher than the rate among controls of 4.2% ($p<0.0001$)[4]. One study has showed that the frequency of cesarean section was 16.98% with unengaged fetal head and 5.33% with engaged fetal head in primigravida females presenting for delivery. The difference was significant ($p=0.000$)[5]. Another study also showed that the frequency of cesarean section was 38% with unengaged fetal head and 15% with engaged fetal head in primigravida presenting for delivery. The difference was significant ($p=0.000$)[6]. The rationale of this study is to assess the association of cesarean section with unengaged fetal head in primigravida presenting in labor for delivery. Literature has showed that

primigravida with unengaged fetal head has higher chances of cesarean delivery. But controversial evidence has been found in literature. So, we want to conduct this study to confirm the extent of the problem in local population.

MATERIALS AND METHODS

Sample size of 230 cases (115 cases in each group) was calculated with 80% power of test, 5% level of significance and taking expected percentage of C-section i.e. 16.8% in unengaged fetal head and 5.33% in engaged fetal head in primigravida presenting in labour[5]. Data was collected through Non-probability consecutive sampling technique.

Inclusion Criteria: Booked females of age 18-40 years presenting at gestational age >37 weeks on IMP presenting in labour for delivery (cervical opening>2cm, labour pains>3 in 10 minutes).

Group-A: females with unengaged fetal head on abdominal and vaginal examination.

Group-B: females with engaged fetal head on abdominal and vaginal examination.

Exclusion Criteria: Multiple pregnancies (on USG). Females with associated medical problems like hypertension (BP>140/90mml Ig), diabetes (BSR>186mg/dl,), anemia (Hemoglobin< l Omg/dl) and preterm labour.

Data collection procedure: 230 females fulfilling selection criteria will be enrolled in study from labour room of Department of Obstetrics & Gynecology, Jinnah Hospital, Lahore after approval from Ethical Committee. A consent was obtained. Demographic information (name, age, gestational age, and BMI) also obtained. Females were divided in two groups i.e. group-A females with unengaged fetal head and group-B females with engaged fetal head. Then females underwent delivery, conducted by researcher herself. During delivery, females were continuously monitored for normal vaginal delivery. Cervical dilatation was monitored along with CTG for fetal surveillance. If there was fetal distress or second stage prolonged, then females underwent cesarean section under spinal anesthesia by researcher herself and delivery through cesarean section were labeled (as per operational definition). All this information was collected through pre-designed proforma.

Data analysis procedure: Data were entered and analyzed through SPSS version 21. Quantitative variables like age, gestational age and BMI was calculated as mean and standard. Qualitative variables like cesarean section was calculated as frequency and percentage. Chi square test was applied to check the association among both groups. A relative risk was calculated to measure association between cesarean section and unengaged fetal head. RR>1 was considered as significant. Data was stratified for age, gestational age, and BMI. Adjusted RR was calculated and Chi square test was applied for stratified groups. Adjusted RR>1 was considered as significant.

RESULTS

A total of 230 females were enrolled and age ranged between 18-40 years. Mean age of the patients was 28.2±6.3 and 28.2±5.0 in group-A and B, respectively. In group-A mean gestational age was 38.4±1.2 and in group-B 38.3±1.1 weeks. Mean BMI in group-A was 24.7±3.2 and in group-B 24.7±3.1 kg/m^2. Association between cesarean section and engaged fetal head was found, RR value was 4.2. Stratification with regard to age, gestational age and BMI was carried out.

Table No. 1: Distribution of patients by age

Age (Year)	Group-A (Unengaged fetal head)		Group-B (Engaged fetal head)	
	No.	%	No.	%
18-30	68	59.2	83	72.2
31-40	47	40.8	32	27.8
Total	**115**	**100.0**	**115**	**100.0**
Mean±SD	**28.2±6.3**		**28.2±5.0**	

Table No. 2 Distribution of patients by gestational age

Gestational age (week)	Group-A (Unengaged fetal head)		Group-B (Engaged fetal head)	
	No.	%	No.	%
37.1-39	90	78.3	96	83.5
39.1-41	25	21.7	19	16.5
Total	115	100.0	115	100.0
Mean±SD	38.4±1.2		38.3±1.1	

Table No. 3 Relative risk for mode of delivery

Group	Mode of delivery		Total
	C section	SVD	
Group-A (unengaged fetal head)	21 (18.3%)	94 (81.7%)	115
Group-B (Engaged fetal head)	5 (4.3%)	110 (95.7%)	115
Total	26	204	230
Relative Risk	RR=4.2		

Table No. 4 Stratification for gestational age with regard to mode of delivery

Gestational Age (week)	Group	Mode of delivery		Total	aRR
		C section	SVD		
37.1-39	Group-A	19	71	90	5.0
	Group-B	4	92	96	
Total		23	163	186	
39.1-41	Group-A	2	23	25	1.5
	Group-B	1	18	19	
Total		3	41	44	

DISCUSSION

Parturition encompasses all physiological processes involved in birthing. There are 4 phases from uterine quiescence, awakening active labour and the puerperium[7-8]. It has been the traditional concept in obstetrics that engagement of head occurs by 38 weeks in primigravida. This traditional concept is not validated in clinical practice. In majority of primigravidas the engagement occurs between 38-42 weeks or even during the first stage of labour[9]. Unengagement of head in primigravida has long been considered a possible sign of cephalopelvic disproportion. It is associated with a higher risk of obstructed labour. Non-engagement at the onset of active phase of labour is a predictor of increased risk of caesarean section. Latent phase is prolonged and duration of first stage increased from 12 to 14 hours due to improper adaptation of fetal head, high station and misdirection of uterine expulsive forces. In primigravidas with high head, latent phase is increased and mean duration of labour was 14.4 hrs. The causes in these patients (were) improper adaptation of presenting part, high station at the beginning of the labour, deflexed head, misdirection of uterine expulsive forces, high incidence of rupture of membranes and dry labour and ineffective uterine contractions. Our study showed, in unengaged fetal head group there were 21 (18.3%) caesarean sections were carried out while in engaged fetal groups 5 caesarean sections (4.3%) were performed. our findings were comparable with the other study[10], reported 82.9% of the women with high heads delivered vaginally and 17.1% had a caesarean section. In another study[11-13] stated 34% caesarean section rate in patients with unengaged fetal head which is quite high than our findings[14].

CONCLUSION

In conclusion, there was an association between cesarean section and unengaged fetal head in primigravida ladies. The primigravida with unengaged head at term during labour should be regarded with suspicion and the same woman in labour should be regarded with apprehension.

Author's Contribution:

Concept & Design of Study:	Sidra Asif
Drafting:	Sana Navaid, Mehvish Gul
Data Analysis:	Arooj Butt, Amna Aslam, Saman Ahmad
Revisiting Critically:	Sidra Asif, Sana Navaid
Final Approval of version:	Sidra Asif

Conflict of Interest: The study has no conflict of interest to declare by any author.

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