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Association of Maternal Height with Feto Maternal Outcome

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Abstract

Background: Height of the mother is an important predictor of pregnancy outcome. The shorter the mother more the chances of poor fetal outcome in the form of prematurity and increased perinatal morbidity and mortality.

Methods: This study was conducted in the Department of obstetrics and gynaecology, SMS medical College Jaipur. This was a hospital based prospective case control study. 80 primigravida with gestational age 37 to 42 weeks, with a viable fetus and with spontaneous onset of labor were recruited for the study. Primigravida with fetal malpresentation, multiple gestation, Antepartum haemorrhage, congenitally anomalous fetus or with intra uterine fetal death were excluded from the study. Gravidas with medical co morbidities were also excluded from the study. 40 Primi term gravidas with height \leq 150cm were alloted group I (cases) and 40 women with height > 150 (controls) were allotted Group II.

Results: Out of 24 women , 8 (33.3%) women had LSCS due to contracted pelvis and obstructed labor . While out of 7 women, 5(20.8%) were from group I, and 2 (20%) from group II had LSCS due to obstructed labor.Whereas LSCS due to MSL and non progress of labor was found in both groups.

Conclusion: From our study we concluded that height of a gravid woman is an important parameter for predicting pregnancy outcome, but it cannot be taken as an absolute parameter. Trial of labour should be given after meticulous pelvic assessment to rule out cephelo pelvic disproportion as a large number of short statured gravidas deliver vaginally without any maternal or foetal complication. However a larger study is required to substantiate the above facts.

Keywords: Women, Height, Fetomaternal outcome. **Introduction**

Short stature refers to height of a human being which is below typical. In medical context, short stature is typically defined as an adult height that is more than 2SD below the mean for age and gender, which corresponds to the shortest 2.3% of individuals.¹

Most common causes of short stature in childhood are constitutional growth delay or familial short stature. Average Indian women height is 152.6cm(5 feet) and in rajasthan it is 154.6^2

Height of the mother is an important predictor of pregnancy outcome. The shorter the mother more the chances of poor fetal outcome in the form of prematurity and increased perinatal morbidity and mortality. The maternal outcome is also poor in shorts statured individuals in the form of obstructed labor , uterine rupture , increased Caesarean rate and increased chances of instrumental delivery and perineal injuries.^{3,4} But this does not mean that all shorts statured individuals will have a poor pregnancy outcome. The present study was conducted to study the effect of height of a woman on feto maternal Outcome.

Material and Methods

This study was conducted in the Department of obstetrics and gynaecology, SMS medical College Jaipur. This was a hospital based prospective case control study. 80 primigravida with gestational age 37 to 42 weeks, with a viable fetus and with spontaneous onset of labor were recruited for the study. Primigravida with fetal malpresentation, multiple gestation, Antepartum haemorrhage, congenitally anomalous fetus or with intra uterine fetal death were excluded from the study. Gravidas with medical co morbidities were also excluded from the study. 40 Primi term gravidas with height \leq 150cm were alloted group I (cases) and 40 women with height > 150 (controls) were allotted Group II.

The allocation was done randomly by flip coin method. They were subjected to detailed history taking, complete general physical examination, systemic examination and obstetric examination was done.

The demographic details such as height, weight, age, residence, education, socioeconomic status and religion were noted.

Height of study population (standing with flat feet, together, against the wall, straight legs, arms at side and looking straight) was measured.

Obstetrical abdominal examination was done for fundal height, lie, presentation, engagement, amount of liquor, palpable uterine contractions and fetal heart rate.

Per vaginal examination was done for assessment of pelvis.

Bishops score was calculated.

Women with contracted pelvis were not given trial of labor and elective LSCS was done.

All pregnant women received continous fetal heart monitoring.

Women with favourable bishops score were given trial of labor by induction or augmentation as and when required.

The progress of labor was assessed regularly by uterine contractions and descent of head with the use of

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partogram . Augmentation would be considered by either artificial rupture of membranes and/or intravenous oxytocin infusion provided that both maternal and fetal conditions were stable. LSCS was decided if progress of labor remained slow in spite of good uterine contraction and partograph shifts right to action line.

For second stage management, active pushing would be commenced following confirmation of full cervical dialatation. Active management of the third stage was provided for all women.

Maternal outcome in terms of mode of delivery, vaginal and cervical tear, post partum hemorrhage, and hospital stay was noted.

Fetal outcome in terms of birth weight, APGAR score, and NICU admission was noted. Any neonatal or perinatal mortality was also noted.

Results & Discussion

Table 1 : Distribution of study population according todemographic factors

	Group I	Group II	P value
Mean age	23.98±2.37	2.73	0.931
Rural	26(65.0%)	25(62.5%)	1.00
Urban	14(35%)	15(37.5%)	1.00
Hindu	33 (82.5%)	7(17.5%)	1.00
Muslim	33(82.5%)	7(17.5%)	1.00
Mean	38.53±0.96	39.05±0.95	.017
gestational			
age			

Table 2: Distribution of study population according tomode of delivery

mode	Group				Total
of	Case		Control (Group)		
delivery	(Group)				
	Ν	%	Ν	%	Ν

LSCS	24	60.0%	10	25.0%	34
ND	16	40.0%	30	75.0%	46
Total	40	100.0%	40	100.0%	80

Odds ratio = 4.500 (95% confidence interval: 1.731 to 11.696)

Chi-square = 8.645 with 1 degree of freedom

P value- 0.003 (significant)

Out of 80 women 34 had LSCS and 46 had ND.

Thus, difference in two groups was statistically significant. P value = 0.003.

Sakael TM et al⁵ conducted a hospital based study from 2001-2005 which showed that proportion of Caesarean section cases were 32.6%.

Similar study conducted by Haider G et al^6 in Hyderabad, Pakistan showed that 64% deliveries were conducted by caesarean section.

Table 3: Distribution of study population according toindication of LSCS

Indication of	Group				
	Case (G	roup)	Control(Group)		
LSCS	Ν	%	Ν	%	
CPD (Big baby)	3	12.5%	0	0.0%	
contracted pelvis	5	20.8%	0	0.0%	
failed induction	1	4.1%	2	20.0%	
fetal distress (NRFHS)	1	4.1%	0	0.0%	
MSL	4	16.6%	3	30.0%	
Non progress of labor	4	16.6%	2	20.0%	
obstructed labor	5	20.8%	2	20.0%	
severe oligo + IUGR	1	4.1%	1	10.0%	
Total	24	100.0%	10	100.0%	

Out of 24 women, 8 (33.3%) women had LSCS due to contracted pelvis and obstructed labor .

While out of 7 women, 5(20.8%) were from group I, and 2 (20%) from group II had LSCS due to obstructed labor.

Whereas LSCS due to MSL and non progress of labor was found in both groups.

Vijay L. Badge, Sumit Suresh Aggarwal, Deepti D. Ambalkar, Arun

Humne, Neethika Raghuwanshi⁷ studied various indications of LSCS.

Ashmita Jawa, Swati Garg, Arihant Tater, Urvashi Sharma⁸ did a study in which total number of women delivered over the study period was 1645, out of which caesarean sections (CS) were 523(31.79%).

Table 4: Distribution of study population according tomaternal outcome

Maternal outcome	Group I	Group II	Total
Vaginal wall tear	3	0	3
Cervical tear	3	1	4
РРН	2	1	3
Hospital stay >48	4	1	5
hours			

7 women had vaginal wall tear and cervical tear while 3 had PPH out of total population.

Melamed N , Ben-Haroush A, Chen R, Kaplan B, Yogev Y.⁹ The clinical characteristics, risk factors, and effects on subsequent pregnancies of intrapartum cervical lacerations.

Table 5: Distribution of study population according tobirth weight

Baby weight	Group			
(kg)	Case (Group I)		Control (Group II)	
(18)	Ν	%	Ν	%
1.5-2	7	17.5%	5	12.5%

2.1-2.5	13	32.5%	7	17.5%
2.6-3	13	32.5%	20	50.0%
3.1-3.5	6	15.0%	8	20.0%
>3.5	1	2.5%	0	0.0%
Total	40	100.0%	40	100.0%

Chi-square = 4.904 with 4 degrees of freedom; P = 0.297

Maximum women 26 (65%) had baby weight of 2-3 kg. In group I, 28 women (70%) women had baby weight >2.5 kg.

Thus, difference in all groups were not statistically not significant. P value=0.219.

Kathleen M. Merchant et al¹⁰ in their study told that increase in newborn head circumference and weight (from -1 to +1 SD) were each independently associated with an increase in risk of intrapartum caesarean delivery.

Samiran Bisai¹¹ also had similar relationship in his study.

Table 6: Distribution of study population according toneonatal outcome

Fetal	Group				
Outcomo	Case(Gro	up I)	Control (group II)		
Outcome	Ν	%	Ν	%	
NICU	4	10.0%	2	5.0%	
days ≤ 2	-	10.070	2	5.070	
NICU	2	5.0%	4	10.0%	
days >2	_	0.070		101070	
Death	1	2.5%	0	0.0%	
IUGR	1	2.5%	0	0.0%	
Nil	32	80.0%	34	85.0%	
Total	40	100.0%	40	100.0%	

Odds ratio = 1.714 (95% confidence interval: 0.613 to 4.794)

Chi-square = 0.600 with 1 degree of freedom;

P = 0.439

The table shows distribution of study population according to neonatal outcome. In Group I, 4 babies (10%) had NICU admission for ≤ 2 days, but in Group II, 2 babies(5%) had NICU admission ≤ 2 days and 4 babies(10%) had NICU admission for >2 days. Only 1 neonatal death was reported in study population.

Bhagat Baghel et al ¹² studied that prematurity, HIE and sepsis are the most common causes of admission and mortality in newborn babies of NICU.

Conclusion

From our study we concluded that height of a gravid woman is an important parameter for predicting pregnancy outcome , but it cannot be taken as an absolute parameter. Trial of labour should be given after meticulous pelvic assessment to rule out cephelo pelvic disproportion as a large number of short statured gravidas deliver vaginally without any maternal or foetal complication. However a larger study is required to substantiate the above facts.

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