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Research Article

STUDY OF MATERNAL HEIGHT AND FETAL WEIGHT ON PREGNANCY OUTCOME

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ABSTRACT
Aim of the study is to compare maternal height and fetal weight in the outcome of pregnancy. *Methods*: The Prospective study was carried out in Head Quarters Hospital, Dept of Obstetrics and Gynecology, VIMS, Bellary. April 2010 to March 2012. All the mothers who were admitted to the labor room for their obstetric performances were considered. Amongst these, those patients who had intrapartum Caesarean delivery formed the study group. Those who gave birth vaginally formed the control group. *Results:* Out of 240 women 80 underwent caesarean section (study group) and 160 went for vaginal delivary (control group). In study group 52 (81.25%) cases went for intrapartum caesarean delivery were ≤ 145 cms (short mothers) and 28 (18.75%) were 146 cms or above. In controls 41 (17.07%) were less or equal to 145 cms and 119 (82.93%) were 146 cms or above. Incidence of intrapartum caesarean delivery in short mothers is 21.65%. Fetal weight in study group is 3400gms, while control group is 2700gms. Applying t test the difference was found to be significant. In the present study short structured women have different types of obstetric complications, especially Prolonged labor, obstructed labor, threatened rupture or ruptured uterus. *Conclusion*: Women with lesser Ht and larger fetal weight are more likely to go in for Cesarean delivery. The increased incidence of operative interference and instrumental deliveries are seen in short mothers. The result of this study upholds the importance of short stature.

***Keywords*:** *Casearen Section, Maternal Height, Fetal Weight*

INTRODUCTION
Maternal mortality of less affluent countries relative to those of more affluent countries show the larger gap of all indicators of health (Royston and Armstrong, 1989). Obstructed labor is one of the major causes of maternal death in less affluent countries, and small adult body size, a recognized risk factor for obstructed labor is, prevalent in less affluent countries. Numerous studies of healthy women from both affluent (Thompson, 1959; Bernard, 1952; Thomson and Hanley, 1988; Parsons *et al.*, 1989) and less affluent (Tsu, 1992; Harrison, 1990) countries have shown shorter maternal height and or larger newborn weight to be associated with increased delivery complications.

Maternal and fetal mortality and morbidity are major health problems in developing countries like INDIA. Throughout the world 5,85,000 women die as a result of pregnancy and childbirth. Over 98% of all maternal mortality occurs in developing countries (AbouZahr and Royston, 1991). Many of these contributing factors are preventable. One of the important area in which obstetricians can contribute significantly is the care of pregnant women. One of the important aspects of antenatal care is recognition of cephalo pelvic disproportion.

The present study was carried out to analyze the effect of maternal height and fetal weight on her obstetric performance in particular to intrapartum caesarean delivery.

The present study was carried out in Head Quarters Hospital, Dept of Obstetrics and Gynecology, VIMS, Bellary. This prospective study conducted over a period extending from April 2010 to March 2012.

Inclusion Criteria

Primigravida with cephalic presentation culminating in

1. Normal vaginal delivery
2. Operative vaginal delivery
   - Forceps
   - Ventouse

3. Emergency caesarean section

Exclusion Criteria

1. Women with medical disorders like Diabetes, Hypertension, Severe Anemia, Cardiac disease and Epilepsy.
2. Women with obstetric risk like Antepartum hemorrhage, PIH, multiple pregnancy, non cephalic presentation.
3. Women with Previous caesarean section, Elective caesarean section.

After considering these inclusion and exclusion criteria 240 cases were selected out of which 80 cases who underwent intrapartum caesarean delivery formed the study group and 160 women who gave birth vaginally formed the control group. The approach, examination and history tables along with investigations were carried out in the same way as per protocol for each of the above-mentioned groups.

RESULTS AND DISCUSSION

Results

Out of 240 cases, 175 cases are booked cases and 65 cases are unbooked case.

Table 1: Antenatal care distribution

Antenatal care	Cases	Control
Booked	68	107
Unbooked	12	53
Total	80	160

The unbooked cases were more in study group when compared to controls and was found to be statistically significant. ($P < 0.05$).In our study, case group 72.5 %(58) hailed from rural areas and in control group 66.25 % woman (107) hailed from rural areas. Thus higher numbers of women in study were from rural areas.

In present study out of 80 patients, 28 (35%) had height less than 140 cms. 24 (30%) patients had height in between 141-145 cms. 22 (27.5) had height 146-150. Only 6 (7.5) had height above 150 cms. In control group out of 160 women, 21(14.25%) patients were belonging to less than 140 cms. 20(11.38%) women in between 141-145 cms. While 75 (46.35%) patients in between 146-150. 44 (26.88%) had height more than 150 cms.

The difference between cases and controls was found to be statistically significant ($P < 0.05$). In the study group mean height is 143cm, where as in the controls it is 147 cms.

Table 2: Height distribution of pregnant women in this study

Height(cm)	Cases	Control
< 140	52	21
141- 145	22	20
146 -150	6	75
>150	0	44

The present study mean fetal weight in study group is 3400gms while in control group it is 2700gms. By applying t test the difference was found to be significant. Women with lesser height and larger baby are more likely to go in for caesarean delivery.

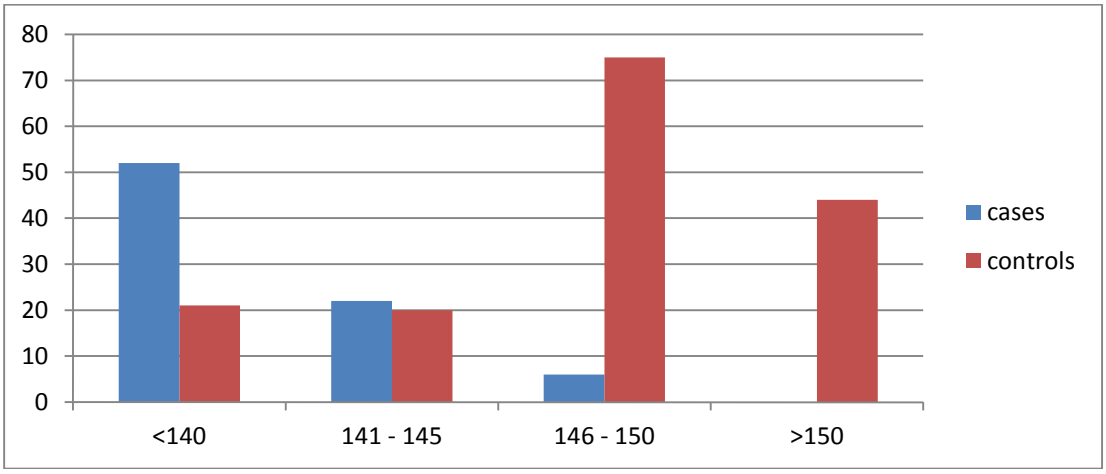

Chart 1: Height distribution of pregnant women in this study

Table 3: Fetal weight distribution in cases and control

Fetal Weight (grams)	Cases	Control
2500 – 3000	39	78
3000 – 3500	26	74
>3500	15	8

Perinatal Outcome

In present study, in Study group 2 babies (2.5%) were stillborn, 4 (5%) babies had early neonatal deaths, while in control group, 10 (6.25%) babies were stillborn, 14 (8.5%) babies died in early neonatal period.

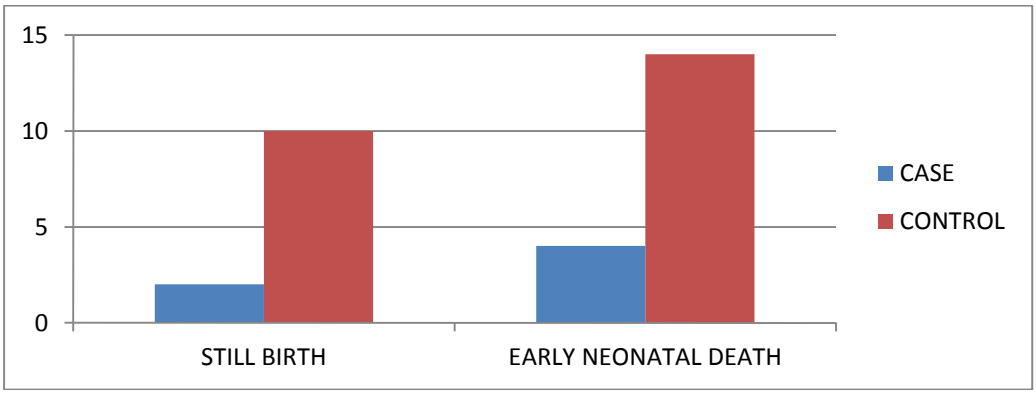

Chart 2: Perinatal outcome in study and control group

The above chart shows a higher incidence of neonatal deaths in children born to short mothers. This may be due to delay in seeking tertiary care leading on to prolonged labour and obstructions in study women. Desai *et al.,* found higher incidence of neonatal deaths as well as stillbirths born to short mothers.

Table 4: Obstetric interventions in this study

Interventions	Study group	Control group
LSCS	80	0
Forceps	0	8
Ventouse	0	24
Total	80	32

8 (5%) cases in Control group had forceps delivery and 24 (10%) had Ventouse assisted delivery. Hence the incidence of operative vaginal delivery is 32 (13.33%) cases. Desai *et al.*, showed 12.6% instrumental delivery among the short statured in comparison to controls. However, Mahmood *et al.*, and found no effect of maternal height on instrumental delivery.

Table 5: Duration of labour

	Study group	Control group
First Stage (>12 hr)	36.25 %	26.25 %
Second Stage (> 2 hr)	43.25 %	18.25 %

In the present study, as shown in the table No. 5 duration of first stage in the study group is >12 hours is 36.25% where as in the controls is 26.25% and in the second stage >2 hours is 43.25% that in the controls is 18.25%. S in both stages of the labour more women are experiencing prolonged labour. Numbers of women in study group are from shorter height when compared to controls hence shorter women are more commonly experiencing prolonged labour and contributing to the bulk of intrapartum caesarean delivery.

Table 6: APGAR Score

APGAR	Study group	Control group
First minute (<7)	81.25 %	77.5 %
Fifth minute (<7)	18.75 %	22.5 %

In the present study, as we see from the table no. 6 more babies from the study group show higher incidence of lower when APGAR compared to controls. Babies of women of study group shows less at first APGAR minute when compare to controls. This is probably due to the prolonged labour for which these shorter women in study group were exposed and delay in seeking the emergency obstetric care, which is very well reflected by more number of women hailing from rural areas where the women lack necessary emergency obstetric services.

Hence women with shorter height need to be referred to higher centers at the earliest for better maternal and perinatal outcome.

Discussion

In the present study, incidence of intrapartum caesarean delivery in short mothers is 21.65%. The above table no.5 shows the comparative figures of caesarean delivery. Though our study show higher incidence of caesarean section as compared to Karltreinder, while results of the present series are in near comparison with that of Desai *et al.*

Table7: Comparative studies

Caesarean	Karltreinder	Desai *et al.*,	Parsons *et al.*,	Present series
Section	5.2 - 10.4 %	22.6%	35.45%	21.65%

Sir D. Baird postulates that every woman has a potential height. This is decided by factors like race and genetics. However, there occur certain insults that are entirely influential, if it is so during her period of development. As a result of which she becomes short statured.

Karltreinder mentions that taller women tend to produce heavier children in contrast to the shorter women who tend to produce lighter ones.

Waler *et al.*, had shown that out of all less than 2500 gms weight babies

- In 12% height was less than 155cms
- In 2% height was more than 165 cms.

Terris & Gold have produced results regarding baby weight that are similar to our study. However, she did not find such a regular correlation between the height of the mother and the weight of the child. Dinesh Shah in contrast to Saroj Saigal and in occurrence to the present study has been able to reproduce for positive regular correlation between the height of the mother and the baby weight.

Conclusion

In the present study, short statured women are considered as high risk category, even though this study does not represent the general population as a whole. Regular antenatal care helps in detecting the short stature mothers and to screen high risk mothers, and there by preventing morbidity associated with delivery. Reduce the burden of Maternal and fetal morbidity and mortality

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