

To Determine the Frequency of Modes of Delivery in Short-Statured Primigravidae at Term

1. Shadab Akhtar 2. Saima Gillani

1. Registrar of Obst & Gynae 2. Prof. of Obst & Gynae, Khyber Teaching Hospital, Peshawar, Khyber Pakhtunkhwa

ABSTRACT

Objective: The aim of this study was to determine the frequency of modes of delivery in short-statured primigravidae at term.

Study Design: Descriptive cross sectional study.

Place and Duration of Study: This study was conducted in the Department of Obstetrics and Gynaecology, Khyber Teaching Hospital, Peshawar, from Apr 2010 to Mar 2011.

Materials and Methods: 369 primigravidae, 15-35 years old with singleton pregnancy, cephalic presentation and with height less than 152 cm were randomized for the study. Pelvic assessment was done clinically in all and radiologically in some cases. Monitoring of labour was done and modes of deliveries were recorded.

Results: Mean age and height was 25.57 years $\pm$ 3.22SD and 148.9cm $\pm$ 2.1SD respectively. Normal vaginal delivery occurred in 96 (26.02%) while 32 (8.67%) patients had instrumental vaginal delivery (13 (3.52%) vacuum and 19 (5.15%) outlet forceps). Elective and emergency cesarean section was done in 28 (7.59%) and 207 (56.09%) patients respectively.

Conclusion: Primigravidae with short stature constitutes a high risk group for poor progress in labour. Emergency cesarean section is more common in short statured primigravidae.

Key Words: Short stature, Primigravida, Modes of delivery, Cesarean section.

INTRODUCTION

In many developing countries most women deliver at home or in health facilities without operative capacities^{1,2,3}. Identification before labour of women at risk of dystocia and timely referral to a district hospital for delivery is one strategy to reduce maternal and perinatal mortality and morbidity^{1,3,4}. In a country like Pakistan, maternal and perinatal/ morbidity and mortality are high⁵. Anthropometric measurements which are not costly, none invasive may be used as predictors to pick up women at risky labour^{6,7,8}. It is a well-established fact that the height of mother is correlated to the size of the pelvis^{9,10,11}. Several studies have demonstrated that mothers with CPD are shorter than those who have normal vaginal deliveries^{11,12}. Timed optimally, a cesarean delivery for CPD is best for the mother as well as her fetus^{13,14}. To facilitate this it is imperative that CPD is diagnosed sufficiently early^{15,16}. The consequences of late detection are particularly grave in the developing world where the mother may go into labor in a setting where facilities for performing cesarean section are inadequate^{1,2,3,5}. In such situations, it is vital that women at potential risk of CPD are identified prior to the onset of labor to facilitate referral to a center where a cesarean delivery can be performed^{17,18}. There is, however, no consensus on the height below which CPD is likely to occur.^{19,20,21} Several studies have used a cut-off value of 150cm for height to predict CPD^{1,8}. However, this will not be appropriate for all ethnic populations. Yet the recognition and prediction of possible CPD is necessary at every birth to prevent the serious complications

associated with undiagnosed disproportion.^{1,9,22,23} Many studies and literature stress on the use of height as an indicator for identification of CPD.^{1,2,6,7,24} Maternal height is related strongly to the ability of primiparous women to be delivered vaginally without great difficulty.^{25,26,27,28}

MATERIALS AND METHODS

Primigravidae, 15 to 35 years old with height less than 152 cm and at term with singleton pregnancy and cephalic presentation were included in the study. After taking an informed consent, a questionnaire was used to collect data and the mode of delivery was recorded. Detailed history was taken from every patient to exclude those having diseases and/or complications of pregnancy influencing the mode of delivery like diabetes, hypertension, intrauterine growth restriction, oligo/polyhydramnios, antepartum hemorrhage. Maternal height and weight were recorded. A thorough abdominal and pelvic examination was done. Based on clinical pelvimetry an impression was made whether pelvis was grossly inadequate, borderline or adequate. In borderline &/or doubtful cases radiological pelvimetry was advised. In cases with inadequate pelvis, findings were confirmed by radiological pelvimetry. However it was not done in laboring patients. Cases with grossly inadequate pelvic diameters either clinically or radiologically were scheduled for elective cesarean section taking into consideration patient's wishes. Patients having borderline pelvis were given trial of labour. Progress of labour was charted on partogram. Patients with primary or secondary arrest of

labour in first stage were delivered through emergency cesarean section. Patients with P/V findings favorable for instrumental vaginal delivery were delivered through outlet forceps or ventouse (vacuum). Mode of delivery for each case was recorded in the proforma.

RESULTS

There were 369 primigravidae patients in the study fulfilling the inclusion criteria. Age range was 15 to 35 years as set forth in inclusion criteria. The mean age was 25.57 years + 3.22SD. Mean height was 148.9cm + 2.1SD. Among all cases 41(11.11%) were not in labour while 207 (56.09%) were in early labour and 121 (32.79%) were in advanced labour. Mean gestational age was 38.1wks + 1.43SD by dates and was 39.1wks + 1.09SD by scan.

Table No. 1: Modes of delivery in short statured primigravidae

Mode Of Delivery	Frequency
NVD with Episiotomy	n=102 (27.64%)
Outlet Forceps Delivery	n= 19 (5.16%)
Vacuum Vaginal Delivery	n=13 (3.52%)
Emergency C Section	n=207(56.09%)
Elective C Section	n= 28 (7.59%)
Total	n= 369(100%)

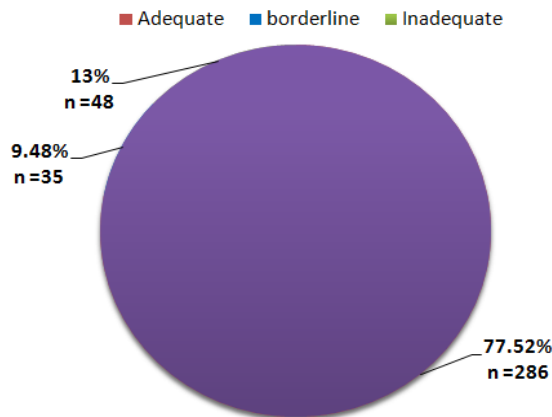


Figure No.1: Clinical Pelvimetry Findings in short statured primigravidae

Clinical pelvimetry findings are given in Figure No. 1. Trial of labour was given to 341(92.41%) cases, including those with borderline pelvis either clinically or radiologically. Mean total duration of labour in these cases was 9hours + 1.04SD. Mean duration of first stage of labour was 7.5 hours + 1.3SD and that of the second stage was 1.5hours + 0.56 SD. Out of those given trial of labour, 124 (33.60%) of cases were having secondary arrest of cervical dilatation (Table No.3). Mean dilatation of cervix at which arrest of labour occurred was 6cm + 1.0SD. There was failure of descent of head in 35 (9.49%) cases. Mean head station at which arrest occurred was -1 + 0.2SD.

Among those given trial of labour 207 (60.70%) ended up in emergency cesarean section while 134 (39.30%) were delivered vaginally.

Modes of delivery for all cases is given in Table No.1. Indication for all elective cesarean section cases was contracted pelvis diagnosed clinically and confirmed radiologically. Indications for emergency cesarean section is given in tabular form.(Table No. 2)

Table No. 2 :Indications for emergency cesarean section in short statured primigravidae

Indication	Number of Cases	Percent
Primary dysfunctional labour	8	3.86%
Secondary arrest	124	59.90%
2 nd Stage arrest	25	12.08%
Fetal Distress	9	4.35%
Failed Vacuum	0	0%
Failed Forceps	6	2.90%
Failed descent	35	16.91%
Total	207	100%

Table No.3: Mode of delivery according to height in short statured primigravidae

Height Range (Centimeters)	Elective C.Section	Emergency C.Section	Normal vaginal delivery	Outlet forceps delivery	Vacuum vaginal delivery
141-143, n = 19	16 (84.21%)	2 (10.53%)	0 (0%)	1(5.26%)	0 (0%)
144-146, n= 48	9 (18.75%)	23 (47.92%)	10 (20.83%)	6(12.5%)	0 (%)
147-149, n= 121	3 (2.48%)	74 (61.15%)	32 (26.45%)	9 (7.44%)	1 (0.83%)
150-152, n= 181	0 (0%)	108(59.67%)	54(29.83%)	9 (4.97%)	10 (5.52%)
Total	28 (7.59%)	207(56.09%)	96 (26.02%)	25(6.77%)	413(3.52%)

DISCUSSION

Short height in females is generally associated with a small pelvis. Pelvic size plays a very important role in obstetrics. It is a valuable tool for prediction about

mode of delivery. Hence height of the pregnant women which is readily measurable in antenatal clinics is of utmost importance in the antenatal assessment. In our study we recorded the frequency of modes of delivery in short statured primigravidae with term singleton

pregnancies. Age range chosen was between 15 to 35 years thus excluding teen and advanced age pregnancies which are themselves associated with various pregnancy and labour complications.

We did clinical pelvis assessment in all our cases since various studies shows that it is superior to radiological pelvimetry.^{11,12} However cases with inadequate findings were supported by CT & or X ray pelvimetry. Clinical pelvimetry findings in more than 90% cases were consistent with radiological findings. Since various studies.^{11,12,24} have shown that radiological pelvimetry underestimates the pelvic capacity in majority of cases, cases with borderline findings on clinical pelvimetry were given trial of labour. This approach was not only cost effective, but also reduced the frequency of elective cesarean section. Same was the recommendation of JI Adinma and AO Agbai.²⁵

Table No.4: Pelvic adequacy according to height

Height Range (Centimeters)	Inadequate n (%)	Borderline n (%)	Adequate n (%)
141-143 N= 19	13(68.42%)	3(15.78%)	3(15.78%)
144-146 N=48	19(39.58%)	16(33.33%)	13(27.08%)
147-149 N= 121	13(10.74%)	6(4.95%)	102(84.30%)
150-152 N= 181	3(1.66%)	10(5.52%)	168(92.82%)
Total (N= 369)	48(13%)	35(9.48%)	286(77.52%)

Although X Ray Pelvimetry has a limited role in the diagnosis of cephalopelvic disproportion and is considered obsolete nowadays. We, however did it in some cases due to poor financial circumstances of the patient and in some emergency cases presenting in early labour in the evening times where facilities for CT Pelvimetry was not available in our Hospital. But we did not decide the mode of delivery solely on the basis of X Ray Pelvimetry findings unless the pelvis was clinically inadequate

When we looked at the relation of different heights with the mode of delivery within our study group, we found that at the height below 148 cm the rate of operative delivery, both instrumental and cesarean section was drastically increased supporting the fact that as the height of the mother decreases the rate of cesarean section rises. This fact has been confirmed in a number of studies.^{2,4,10,14,16,20}

In Pakistan so far no study has been conducted to identify the relation between height and mode of delivery. So a cut off point for height below which the risk of cesarean section increases has never been identified. We selected a cut-off point based on the average height of women in our population which falls between 145 to 165 cm. More data about the anthropometric measurement in the Pakistani pregnant women is needed to establish the normal distribution of maternal height in our population.

Since most of the short statured women are favored by nature by producing small babies, fetal weight was not given any consideration in this study. However we feel that wherever possible pelvic capacity should be related to the fetal size while deciding about the mode of delivery.

Rate of emergency caesarean section in our study was 56.09%, the major indication being secondary arrest of cervical dilatation. This is close to the rate (53.2%) reported by Kathleen M Merchant²⁹. In majority of cases, cervical dystocia (59.90%) was the indication for emergency cesarean section indicating that there was failure of descent of head and hence no mechanical stimulus/stretch for the cervix to dilate due to inadequate pelvis.

Adequacy of pelvis should be assessed in every short statured primigravida once she reaches term. Clinical pelvimetry should be done in every short statured primigravidae presenting to health care facility at term. In case of any doubt about pelvic adequacy radiological assessment of the pelvis should be done preferably through CT pelvimetry. However in our setup, considering the fact that most of our patients belong to low socioeconomic class, it may not be cost effective in each case. Since labour is the best predictor of pelvic adequacy, unless the pelvis is grossly contracted clinically or radiologically, every primigravida with short stature needs to be given a well monitored trial of labour. In case of any signs of poor labour progression or fetal compromise, a timely decision regarding the preferred mode of delivery should be undertaken, either vaginal delivery or cesarean section.

The results of this study will be shared with other obstetricians and will help in developing a protocol for management of labour and delivery in short statured primigravidae at term.

CONCLUSION

This study concludes that maternal height is a simple indicator for pelvic adequacy. Short stature is associated with a small pelvis. The risk of cesarean section and instrumental vaginal delivery is higher in short statured primigravidae. Therefore, these women need to be delivered in a health care facility where labour can be monitored closely and timely decision could be taken regarding mode of delivery. This will

help reduce maternal and fetal morbidity and mortality in our country.

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Address for Corresponding Author:

Dr. Shadab Akhtar,

House No. 406, Street No.04 Sector F-9,
Phase- 6, Hayatabad, Peshawar, Khyber Pakhtunkhwa.
Cell No. 0333-9286929
Email: doc_saa@yahoo.com