

VIRGINAL BIRTH AFTER PRIMARY CAESAREAN SECTION-FUNCTIONAL VS STATIC MAKER

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ABSTRACT

BACKGROUND: Primary caesarean section increases the chances of repeat caesarean section. In our society, we have high incidence of teenage pregnancies who are high risk for primary caesarean section for cephalo-pelvic disproportion. Continuing growth of these adolescents and their pelvic bone, makes their pelvis to be bigger in the next pregnancy with a favourable prospect of vaginal delivery. A reliable method of assessment of these patients to identify those who are suitable for trial of labour is invaluable.

AIMS: This study is aimed at assessing the reliability of the Head Fitting Test, (HFT) compared with antepartum X-ray pelvimetry (AXRP) in selecting patients for trial of labour after primary caesarean section.

Study Design, setting and subjects: This is a prospective study of 300 women with a previous lower uterine segment caesarean section who were managed and / or delivered at Aminu,

Kano, Nigeria over a six year period (1998-2003). They were alternatively allocated at first contact into one of two groups viz: - Head fitting test group and Antepartum X-ray pelvimetry group and they were allowed to have trial of labour. Following delivery all the 150 women in the Head fitting

Test group had postpartum X-ray Pelvimetry done before discharge.

Main Outcome Measured: Mode of delivery, birth weight, maternal and perinatal morbidity and mortality in the two groups.

Result : the sensitivity of Head Fitting Test was found to be 97.0 %, while specificity was 96.1 % and with a positive predictive value of 98.0 % and negative predictive value of 94.2 %. The sensitivity of Antepartum X-ray pelvimetry was found to be 34.7 % and specificity 24.0 %. The positive predictive value was 26.9 %. The sensitivity of Postpartum X-ray pelvimetry was found to be 49.3 % and specificity of 18.7 %. The positive predictive value was 37.8 % and

negative predictive value was 26.9 %. Virginal delivery rate of 66.0% was obtained in the Head Fitting group. The birth weights of the babies was similar in the two groups and there was maternal or perinatal death in the two groups. The average length of stay in the hospital was similar in the two groups.

Conclusion: Head Fitting Test is better method of identifying the women with a previous caesarean section who are suitable trial of labour and vaginal delivery than antepartum X-ray pelvimetry unnecessarily increase the caesarean section rate and should be abandoned because it is a poor predictor of the outcome of labour.

Key Words: Virginal birth , primary caesarean section, outcome of labour

INTRODUCTION

The high caesarean section rate in developing countries like Nigeria is said to be a consequence of the pelvis secondary to genetic factors, childhood malnutrition and infection / infections which prevent the females from attaining their full growth potential including their pelvic capacity^{2,7,8} in developing countries for the same reasons their babies tend to be smaller,⁷ giving rise to a situation where there is a small pelvis and a small baby that can pass through it without any difficulty.

X-ray pelvimetry in deciding on patients who are suitable for trial of labour because it is objective^{2,4,5} and an adequate pelvis

has been said to be an important factor in the successful outcome of labour^{2,4,5} . it is the opinion of the authors that the minimum fixed values on X-ray pelvimetry below which the women should be delivered by elective repeat caesarean section^{2,4,5} , does not put into consideration the smaller size of our babies in the developing countries, and the use of Antepartum X-ray pelvimetry will lead to high caesarean section rate because it is a static marker. The authors decided to choose a functional marker- the Head Fitting Test, which relates the size for the fetal head to that of the pelvis in deciding those who will have trial of labour after one previous caesarean section . This method of selection, which can be done easily in labour is to be preferred in developing countries where many of our patients are unbooked⁹

And they come in labour without prior selection. In our society, childhood marriage and early teenage pregnancies are common, with high incidence of primary caesarean section for cephalopelvic disproportion because of incomplete pelvic growth and eclampsia which is a non recurrent indication^{1,6,7,8,9}.

The prospects of virginal delivery in the second pregnancy is as high as 65-80 %, because the pelvis continue to grow in these teenagers up to the age of 18 years when it attains optimal obstetric size⁷.

Recent studies have shown that antepartum X-ray pelvimetry is useful^{2,7,10}. It is against this background that this study was

carried out to look for a more reliable method of determining those who are suitable for trial of labour after one previous caesarean section. The use of Head Fitting Test that relates the size of fetal head to that of maternal pelvis was proposed by the authors.

Patient's Selection and Method

300 women with a history of one previous transverse lower uterine segment caesarean section who were managed and /or delivered in Aminu Kano Teaching Hospital, Kano, Nigeria between January 1998 and December 2003 were recruited into this prospective study and informed consent were obtained. The exclusion criteria were: Preterm labour, Multiple pregnancy intrauterine fetal death anormally, Patients with medical disorders in pregnancy, Obstetric complications that required elective caesarean section or discontinuation of labour other than for cephalopelvic disproportion. They were assigned alternatively to one of two groups viz: Antepartum/Intrapartum head fitting test group and Antepartum X-ray pelvimetry group. Each group consisted of 150 women. Both tests were conducted by the same person. In the first group, Head Fitting Test was done at 36 weeks of gestation, and was repeated in labour after membranes have ruptured at 5cm cervical dilation, using the Muller Monrone Kerr's method which check for overlap of the fetal head in addition. The second group had Antepartum X-ray pelvimetry done at 36weeks

gestation using an air gap technique with a single lateral view. The results obtained were noted. They were all allowed to have trial of labour irrespective of the indication for the previous caesarean section. Labour was managed by one of the authors without knowing their group of allocation in order to avoid bias. The mean anteroposterior pelvis diameter of the pelvic inlet of 11.07cm, mid cavity 11.9cm, and outlet of 7.81cm was taken as the minimum value for an adequate on all the patients in the Head Fitting Test group. The results that were obtained were recorded using tabulations and they were subjected to statistical test of significant difference using test of validity.

Results

A total of 300 women with one previous caesarean section were recruited and divided into groups of 150 each. The first group were allocated to Antepartum X-ray pelvimetry group. In the first group, 98 patients (65.3%) had satisfactory Head Fitting Test while 52 patients (34.7%) had unsatisfactory Head Fitting Test. Among the 98 patients who had satisfactory Head Fitting Test, 96 patients (98.0%) had vaginal delivery, while only 2 patients (2.0%) had caesarean section. Among the 52 patients who had unsatisfactory Head Fitting Test, only 3 patients (5.8%) had vaginal delivery, while 49 (94.2%) had caesarean section. The sensitivity of Head Fitting Test, was found to be 97.0% and the specificity was 96.1%. The positive predictive value was 98.0% and the negative

predictive value was 94.2%. Postpartum X-ray pelvimetry that was done on the 98 patients who had satisfactory Head Fitting Test after delivery showed that, 37 patients (37.8%) had adequate pelvis and 61(62.2%) had adequate pelvis. Among the 52 patients with unsatisfactory Head Fitting Test, 38 patients (73.1%) had adequate pelvis and 14 patients (26.9%) had inadequate pelvis on postpartum X-ray pelvimetry. The sensitivity of Postpartum X-ray pelvimetry was 49.3% and specificity was 18.7%. The positive predictive value was 37.8% and negative predictive value was 26.9%. In the Antepartum X-ray pelvimetry group 83 patients (55.3%) had adequate pelvis, among them 26 patients (31.3%) had vaginal delivery while 57 patients

(68.7%) had caesarean section. 67 patients (44.7%) had inadequate pelvis, and among them 49 patients (73.1%) had vaginal delivery while 18 patients (26.9%) had caesarean section. The sensitivity of antepartum X-ray pelvimetry was 34.7% and specificity was 24.0%. The positive predictive value was 31.3% and negative predictive value of 26.9%. Vaginal delivery rate of 66.0% was obtained among the Head Fitting Test group. The birth weight of the babies was similar in the two groups. The fetomaternal morbidity was minimal and similar in the two groups and there was no fetomaternal mortality in the two groups. The average length of stay in the hospital was similar in the two groups.

Table 1: Outcome of labour in the head fitting test group related to postpartum x-ray pelvimetry

Head fitting test	Vaginal delivery	Caesarean section	total	Postpartum pelvimetry adequate	
Satisfactory	96	2	98	37	61
Unsatisfactory	3	49	52	38	14
Total	99	51	150	75	75

Head fitting Test

Sensitivity =97.0%

Specificity=96.1%

Positive predictive value =98.0%

Negative predictive value =94.2%

vaginal delivery rate =66.0%

POSTPARTUM X-RAY PELVIMETRY

Sensitivity =49.3%

specificity =18.7%

positive predictive value 37.8%

negative predictive value 26.9%

Table 2: Outcome of labour in the antepartum x ray pelvimetry group

Outcome	Adequate	Inadequate	Total
Vaginal delivery	26	49	75
Caesarean section	57	18	75
Total	83	67	150

Sensitivity =34.7%

Specificity=24.0%

Positive predictive value=31.3%

Negative predictive value =26.9%

DISCUSSION

This study showed that head Fitting Test is an effective method of identifying those women with a history of a previous delivery by caesarean section who can achieve a vaginal delivery, and disproves the hypothesis that routing Antepartum X-ray Pelvimetry is an effective method of identifying these women. The ineffectiveness of Antepartum X-ray Pelvimetry has been reported by many authors.^{2,4,5,7,10} In the Head Fitting Test group, Postpartum X-ray pelvimetry result showed that if Antepartum X-ray pelvimetry was used to select these women with satisfactory Head Fitting Test, 61 (62.2%) of them would have had elective caesarean section while only 37 (37.8%) would have been allowed to have trial of labour, as against 96 patients (98.0%) who had vaginal delivery and only 2(2.0%) who had emergency caesarean section among the 98 women who had satisfactory Head Fitting Test, showing that head Fitting Test is a better method of selecting these women with a history of a previous caesarean

section for trial of labour than Antepartum head Fitting Test, if Antepartum X-ray Pelvimetry was used to select these women 38 (73.1%) of them would have been allowed to have trial of labour while 14(26.9%) of them would have had elective caesarean section as shown by postpartum X-ray Pelvimetry result, while only 3 (5.8%) had vaginal delivery and 49(94.2%) had emergency caesarean section. This showed that Head Fitting Test is a better method of identifying those women who will benefit from elective caesarean section.

In the Antepartum X-ray pelvimetry group, the pelvic diameters that were used were the minimum average diameters that were found in Nigeria women.⁴ The outcome of labour in the Antepartum X-ray pelvimetry group showed that it is a poor predictor and is similar to that of other studies.^{2,3,4,5} The sensitivity, specificity, positive predictive value and negative predictive value of Antepartum X-ray pelvimetry is similar to that of Postpartum X-ray pelvimetry, but lower than that of Head Fitting Test. This further

confirmed that Head Fitting Test is a better method of identifying those women who should be allowed to have trial of labour in their next pregnancy after a previous caesarean section than antepartum X-ray pelvimetry. Conventional X-ray pelvimetry using an air gap technique with a single lateral view was used because it is a relatively low dose alternative where computed Tomography (CT) is not available or as in our unit affordable.^{4,5} The advent of newer technologies in imaging such as CT pelvimetry or Magnetic resonance imaging which result in no irradiation have not yielded good result.^{4,5}

Vaginal delivery rate after one previous caesarean section of 66.0% was recorded in the head fitting test group, which is similar to 67.0% among teenagers in Maiduguri,⁷ but lower than 70-85% reported from developed countries,⁷ because developed nations have lower incidence of cephalopelvic disproportion due to favourable socio-economic conditions and most caesarean sections are done non-recurrent indications.^{2,3} Lower rates of 41.6% that was reported from some African countries² is because of the peculiarities of the African pelvis due to socio-economic deprivation with high incidence of cephalopelvic disproportion^{1,2,6,7,8,9}

The birth weight of the babies was similar in the two groups perhaps because they were all from the same population. The average length of stay in the hospital was similar in two groups, and foeto-maternal morbidity were minimal and similar in two

groups. There were no maternal or perinatal deaths in the study groups; the main reason for the good foeto-maternal outcomes was the labour was meticulously monitored. Trial of labour should only be conducted in centres where there are facilities for caesarean section and blood transfusion services 24 hours of the day, and labour must be monitored by experienced attendants^{2,3,7}

In conclusion, we found the head fitting test a better predictor of vaginal birth than antepartum x-ray pelvimetry in those women with primary caesarean section having trial of labour.

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