

Primigravidae with Non-Engaged Fetal Head at Term : An Audit of Delivery Outcome

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The objective of the study was to audit the delivery outcome in primigravidae with non-engaged fetal head at 37 completed weeks of gestation. This study was prospectively performed at Fatima Memorial Hospital from 1st January 1998 to 30th June 1998. A total of 56 cases were studied over six months period. Out of 56 cases, 24(43%) had normal vaginal delivery, 30(53%) had Caesarean delivery and 2(4%) had instrumental delivery. Natural spontaneous onset of labour is the single most important predictor for normal vaginal delivery in such cases. Short maternal stature (<5 feet), induction of labour and fetal weight >3.5 Kg may lead to the Caesarean delivery. Primigravidae with non-engaged fetal head at term should be regarded as high risk cases. There is an increased risk of caesarean delivery in such cases. Labour should be allowed to establish naturally, if possible, to achieve normal vaginal delivery.

Key: Non-engaged head, Cephalopelvic disproportion, Caesarean section

To check for engagement of fetal head is a routine at antenatal examination. The fetal head is said to be engaged when the biparietal diameter has gone through the pelvic brim and only 2/5 of the fetal head is palpable abdominally, with the lowest point of the head is at the level of ischial spines. In historical perspective, the concept was developed for the recognition of the cases of cephalopelvic disproportion. The prevalence of inadequacy of maternal pelvis leading to non-engaged fetal head is low¹. According to Weeks & Flynn, the modal interval between engagement of the head and the onset of labour in primigravidae is less than 7 days, and in 80% of cases the interval is less than 14 days. The objective of this study was to audit the delivery outcome in those cases where fetal head has failed to engage after 37 completed weeks of gestation.

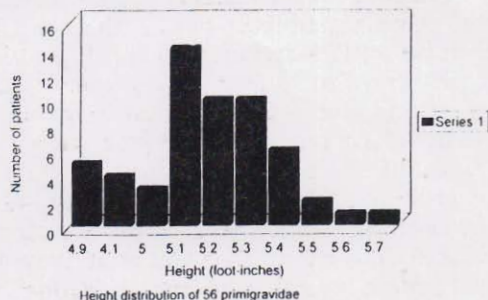
Materials and methods :

This study was prospectively performed at Fatima Memorial Hospital from January 1998 to June 1998. The hospital is a private teaching hospital and has a delivery rate over 6000 per year. Inclusion criterion for the study was primigravidae and confirmed dates on early ultrasound scan with fetal anomaly excluded. The ultrasound scan was usually performed at 16-20 weeks of gestation. The patients who were diabetic or had any degree of placenta praevia were excluded from the study. The clinical pelvimetry for assessment of adequacy of pelvis for trial of labour was performed by one of the authors (NSQ or FS) at term. Pelvis was regarded not suitable for trial of labour if sacral promontory was easily reachable. It was the policy of the unit to induce labour if it fails to start 10 days after the expected date of confinement. Induction of labour (IOL) was performed by using Dinoprostine pessaries (Prostin E2 Upjohn or Glandine E2 Nabiqasim pharmaceuticals) in the posterior fornix of vagina. No more than three pessaries were used at 8 hourly interval and if labour did not commence or artificial rupture of membranes (ARM) was not possible, a

diagnosis of failed induction was made and Caesarean section performed. Oxytocin (Syntocinon, Sandoz) infusion was only used when ARM had been performed. The dose of Oxytocin used in primigravidae was 10 units diluted in a litre of normal saline and dose escalated as per protocol of labour ward. Fetal heart rates were monitored throughout the labour either by intermittent auscultation by portable doppler (sonicaid) or by Cardiotocograph (CTG). The diagnosis for failure to progress in labour was made when at two consecutive vaginal examinations performed at three hour intervals there was no progress in cervical dilatation despite adequate, regular uterine contractions. Secondary arrest of cervical dilatation was defined when cervical dilatation ceases after a normal portion of active phase dilatation. Instrumental delivery was achieved by using either Wrigleys forceps or Neville-Barnes forceps or Ventouse (silicon cups) and Kiellands forceps were not used. For the purpose of the study birth weight of babies more than 4 Kg were considered as macrosomics.

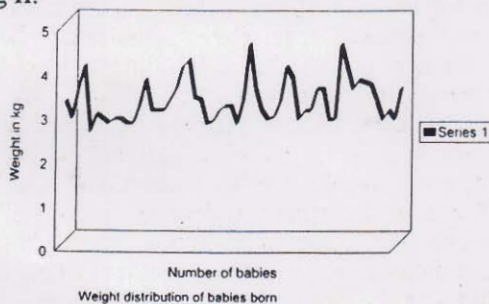
Results

A total of 56 cases with non-engaged fetal head were delivered in the six months. Age range of the mothers was from 20-30 years. The distribution of height range of the mothers is shown in the fig I



Out of 56 patients 24(43%) had normal vaginal delivery. Of the 24 patients who achieved normal vaginal delivery

18(75%) had spontaneous onset of labour. IOL was performed in 38(68%) of cases. The indication for IOL in 30(79%) of cases was postmaturity (term +10 days), 4(10%) of cases proteinuric hypertension of pregnancy and in remaining 4(10%) cases had IOL because of bleeding episodes in early pregnancy and on maternal request. Out of 56 cases 30(53%) had Caesarean section delivery. Four (13%), patients had elective Caesarean due to suspected cephalopelvic disproportion on clinical pelvimetry, 2(7%) had failed induction of labour and hence required operation. The indication for Caesarean section in 12(40%) cases was secondary arrest in cervical dilatation as the cervical dilatation at the time of decision for the Caesarean operation was between 4-7 cms. Five (42%) patients (out of twelve) had maternal height < 5 feet in this group. Ten(33%) patients had Caesarean section because of abnormal fetal heart rate patterns on CTG. Two (7%) patients had persistent occipitoposterior position (OP) at full cervical dilatation and had a failed trial of Ventouse and required Caesarean delivery. Only 15(50%) patients who ended up in Caesarean section had height less than 5 feet. Instrumental delivery took place in 2(4%) of cases, Naville -Barnes forceps were used as lift out forceps in one case and Ventouse was employed to deliver the other case. The birth weight of the babies are shown in fig II.



None of the babies required admission to special care baby unit for observation or treatment.

Discussion

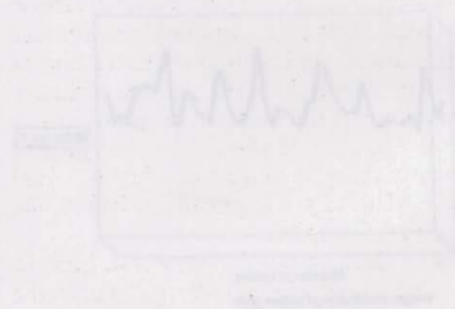
Our study has shown a higher Caesarean section delivery rate in primigravidae who has non-engaged fetal head at term as out of 56 cases 30(53%) had delivery through the abdominal route. Elective section was performed in 4(13%) of cases as sacral promontory was easily reachable on clinical pelvimetry in these cases. Although CPD is now rare in the western countries but is still prevalent in our part of world due to poor socio-economic status. Deficient calcium diet in childhood can seriously affect the development of pelvis. The sacral promontory may be pushed forward in such cases which narrows the antero-posterior diameter of the pelvic inlet³. Twelve (40%) of cases had emergency caesarean as there was secondary arrest of cervical dilatation. Davidson et al⁴ have shown that such pattern probably reflects borderline CPD. Recently, Gee & Olah⁵ argues secondary cervical arrest to be mainly due to malposition or deflexion of the

presenting part. Until clear guide lines are available in management of such cases we feel that Caesarean section is the safest mode of delivery in such cases. Out of twelve cases who had secondary arrest in labour, five(40%) had maternal height less than 5 feet. Maternal height measurement is an important screening test to suspect CPD if <5 feet. Two studies^{6,7} has also shown increase risk of disproportion with a shoe size less than 5. We relied on clinical pelvimetry in this series to pick any gross abnormality of the pelvis and X-ray pelvimetry was not performed. We believe that during labour stretching of ligaments and tissues can increase in pelvic dimensions for several millimetres and obviously this can not be predicted by prelabour X-ray pelvimetry. It is now a well established fact that CTG monitoring if used uncoupled with fetal PH monitoring leads to an increased caesarean section rate⁸. We had 10cases(33%) delivered by caesarean section because of unsatisfactory fetal heart rate finding but none of the babies required admission to neonatology care unit. In our hospital Fetal blood analysing machine is not available. We strongly feel that in the management of high risk pregnancies during labour facilities of fetal blood sampling and assessment of PH and base deficit on fetal blood should be available. This would certainly help to prevent many unnecessary Caesareans. There was a high incidence of IOL in our series, out of 56 cases 38 required IOL. Of these 38 cases, 30(79%) were post dates. The possible explanation for such a high number of patients going post dates could be because of high fetal head there is insufficiency of pressure of fetal head on cervix leading to poor cervical ripening (low Bishop's score). Anderson & Turnbull⁹ investigated the relationship between the state of the cervix and uterine contractility during pregnancy. They found that uterine contractility related to ripeness of the cervix only in some circumstances; for example, in women in whom the fetal head is engaged by the 36th week and in whom the internal os had been 1.5cm dilated for at least 4 weeks, uterine activity at 36 weeks was 107+25 activity units; if the cervix had remained closed, the level of uterine activity was only 66+15. The fetal causes of non-engagement of head are OP position, macrosomia, loops of umbilical cord around neck and rarely short umbilical cord. Out of these causes OP position and fetal macrosomia could be diagnosed in the antenatal period. There is little point in trying to alter the OP position antenatally as majority will correct themselves when labour commences¹⁰. It is prudent in such cases to exclude the presence of pelvic tumours by performing an USS as some times large Ovarian Cyst, fibroids or tumour of lateral pelvic wall may also prevent engagement of fetal head. Major degree of placenta praevia also needs exclusion in such cases. In summary, primigravidae with non-engaged fetal head should be regarded as high risk cases. There is an increased incidence of Caesarean delivery in such cases. If possible, labour should be allowed to commence and establish naturally in such cases.

Primigravida with non engaged fetal head at term

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...of the fetus reported admission to general ward for observation or treatment.

Discussion

Our study has shown a higher Caesarian section delivery rate in primigravidae who had non-engaged fetal head at term as out of 56 cases (30.2%) had delivery through the abdominal route. Obstetric section was performed in 41.2% of cases. Obstetric intervention was rarely needed on clinical grounds in these cases. Although C/S is still prevalent in the western country, but it still prevalent in our part of world due to poor socio-economic state. Evidence indicates that in countries with extremely high birth rates, the development of pelvic floor and pelvic girdle may be retarded forward in such cases which narrows the anteroposterior diameter of the pelvic inlet. Twink (1977) at term had emergency Caesarian section as fetal was nonengaged at cervical dilatation. Davidson et al have shown that each patient undergoes various obstetric interventions. Gee & Olah report secondary cervical arrest as a result due to malposition or deflexion of the