Undiagnosed term breech

Management and outcome

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ABSTRACT

Objective: To assess the antenatal and intra-partum risk factors associated with undiagnosed breech at term and to compare their outcome with those diagnosed before the onset of labor, as well as identifying the determinants for cesarean section in breech presentation.

Methods: Case control study of 183 undiagnosed breech deliveries at term with those diagnosed before labor.

Results: There was no significant difference between diagnosed term breech and undiagnosed breech deliveries with regards to maternal, neonatal outcome and incidence of cesarean section. Footling breech presentation, hypertension and failure to attend antenatal visits were independent risk factor for cesarean section in all case of breech.

Conclusion: Undiagnosed breech at term are not at increased risk for cesarean section and there is no additional maternal or fetal morbidity.

Keywords: Undiagnosed breech, cesarean section, ultrasound.

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Between 2-4% of all deliveries are breech.[1] Yet, there has been controversy regarding the proper management of breech presentation. Despite the availability of good ultrasound equipment in the antenatal clinics and labor wards in most maternity units, breech presentation, diagnosed for the first time in labor, is still a problem to contend with. Therefore, an urgent assessment of pelvic adequacy and fetal size is needed. In addition, there is the medico legal issues that may arise, if the outcome is not satisfactory.

In the literature, little is documented regarding the current incidence or comparison of the outcome of labor between term breeches diagnosed before or during labor. The present study was thus undertaken to assess the antenatal and intra-partum risk factors associated with undiagnosed breech at term, and to compare their outcome with those diagnosed before the onset of labor, as well as identifying the determinants for cesarean section (C/S) in breech presentation.

Methods. King Khalid University Hospital (KKUH) is a tertiary care center situated in Riyadh City, in the central region of Saudi Arabia. Decision of the mode of delivery for cases of breech presentation is usually made by a Senior Staff, after assessment of pelvic adequacy, either clinically or by x-ray pelvimetry, and ultrasound assessment of fetal weight, after exclusion of fetal anomalies. External cephalic version (ECV) is not a common practice in the Unit. Induction of labor is not carried out routinely in breech presentation.

Breech deliveries are usually conducted by experienced Resident Staff, and delivery is usually attended by anesthetist and pediatrician. Cesarean section is not routinely performed for undiagnosed

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breech presentation.

During the period between August 1997 to August 1993, the case records of full term singleton breech deliveries, which were diagnosed for the first time in labor, were extracted from the hospital delivery registry. Controls were the cases of full term singleton breech deliveries prior to labor diagnosed next in order to undiagnosed breech deliveries and matched for age and parity. Cases of fetal congenital malformations and cases planned for elective cesarean sections were excluded.

The data extracted from the maternal notes include age, parity, height, history of previous breech delivery, past medical and surgical history, booking gestational age for antenatal care, antenatal complication, degree of antenatal care utilization, assessed as either never, or at least one visit to a consultant or Primary health care physician, and ultrasound scan data.

Delivery information collected included gestational age and cervical dilatation on admission, duration of labor, type of breech, mode of delivery, birth weight, fetal abnormality, apgar score at 1 and 5 minutes, blood loss during delivery, duration of hospital stay after delivery, and any signs of short term neurological abnormality of babies.

Statistical analysis. Student T-test was used to test the differences between groups. Chi-square tests were used to test significance between categorical data. Odd ratio (OR) of cesarean section and the corresponding 95% confidence intervals were calculated for the independent risk factors and were simultaneously adjusted for other known cofounders. Statistical significant at $P<0.05$ was considered.

Validity of ultrasound at $\leq$ 20 weeks and $\geq$ 20 weeks in the diagnosis of persistent breech in labor were also determined and interpreted in terms of sensitivity, specificity and predictive values.

Results. The general incidence of the breech deliveries at KKUH was 4%. Out of these 12.9% were undiagnosed before the onset of labor. Over the last 10 years the rate of undiagnosed breech in labor has not changed significantly at KKUH.

The files of 366 single breech pregnancies were available for analysis, (183 undiagnosed before onset of labor vs 183 diagnosed before onset of labor), the mean maternal age was 28.9 $\pm$ 5.9 years, and the mean gestational age at delivery was 39.4 weeks. There was no significant difference between cases of breech deliveries diagnosed before labor and those undiagnosed prior to onset of labor with regards to the mean maternal age (28.9 years vs 27.9 years), maternal height (155.7 cm vs 157.8 cm), parity (3.3 vs 3.0), gravidity (4.8 vs 4.4), history of previous breech delivery (1.3% vs 1.0%), history of previous cesarean section (0.7% vs 0.7%), gestational age at booking (20.1 weeks vs 19.4 weeks) and gestational age at admission to labor room (39.4 weeks vs 39.3 weeks).

In addition, the undiagnosed breech cases did not differ from diagnosed cases in the mean duration of the first stage of labor (389.5 minutes vs 405 minutes) and mean duration of the second stage of labor (17.3 minutes vs 17.0 minutes) or mean blood loss (387.0 mls vs 363.2 mls). However, significant differences were present in the cervical dilatation at first vaginal examination on admission to labor room (5.7 cm vs 4.5 cm (<0.05).

There was no significant difference between diagnosed and undiagnosed breech in terms of rate of use of forceps for the after coming head (8.6% vs 6.2%), footling breech presentation (9.1% vs 13.7%), neonatal infection (1.5% vs 1.6%), neonatal death (1.5% vs 1.6%), and frequency of NICU admission (9.0% vs 9.3%). Interestingly the rate of C/S for delivery was significantly higher in the diagnosed breech 74 (38.3%) as compared with 53 (29.3%) for undiagnosed breech in labor ($P = 0.05$).

Table 1 shows no significant differences in the Apgar score at 1 and 5 minutes, birth weight, duration of NICU stay and post natal hospitalization for either diagnosed or undiagnosed breech.

Table 2 shows the adjusted odd ratio of cesarean section in all the cases of term breech presentation (diagnosed and undiagnosed). Those with pelvic inadequacy were 3.2 times more at risk of C/S than those with adequate pelvis (OR=3.2, 95% CI 1.2 - 8.6). Similarly, those with cervical dilatation of less than 5 cm at the time of first examination in labor were 7 times more susceptible to be delivered by C/S than those presented with less cervical dilatation (OR = 7.1, 95% CI 2.5 - 20.1). Prolonged 1st stage of labor also increased the risk of C/S 14 times. (OR = 14.2, 95% CI 8.5 - 23.7), pasi passu, the prolonged 2nd stage of labor increased the risk of C/S (OR = 32.9, 95% CI 18.1 - 59.5). Non engagement of the breech also increased the risk of C/S (OR=8.8, 95% 1.2 - 67.3%).

Table 3 illustrates that among the antenatal independent risk factor of C/S, footling breech presentation increased the risk of C/S 3 times (OR = 3.3, 95% CI 1.8-6.5). Hypertension increased the risk of C/S two fold (OR = 2.2, 95% CI 1.2-3.9). Similarly, patients who had at least one visit to ANC after booking had higher chance of having vaginal delivery than those who had no visits (OR=1.6 95%, CI 1.3 - 4.6).

Table 4 shows the validity of ultrasound in diagnosis of persistence of breech presentation at term. When the ultrasound at $\leq$ 20 weeks shows breech presentation it has 62% Positive Predictive

Table 1 - Neonatal data of singleton breech deliveries at KKUH 1987-1997.

Characteristics	Diagnosed breech mean (±SD) (No = 183)	Undiagnosed breech mean (±SD) (No = 183)	T value	P value
Apgar score (1 minute)	8.8 (1.1)	8.6 (8.6)	1.0	NS
Apgar score (5 minutes)	5.0 (4.4)	5.3 (8.8)	0.2	NS
Birth weight (kg)	3.1 (0.5)	3.2 (0.5)	0.7	NS
NICU stay (days)*	3.6 (2.5)	2.6 (4.7)	1.1	NS
Postnatal hospitalization (days)	3.6 (2.5)	3.3 (2.1)	1.4	NS
*25 babies were admitted for both groups				

Table 2 - ORs and the corresponding 95% CI of Intrapartum risk factors of cesarean section in cases of breech presentation admitted to KKUH, Riyadh Saudi Arabia 1987 - 1997.

Risk factors	Vaginal delivery No (%)	Cesarean section No (%)	OR 95% CI
Pelvic adequacy			
Adequate	80 (88.9)	25 (71.4)	1.0
Inadequate	10 (11.1)	10 (28.6)	3.2 (1.2-8.6)
Cx. dilation			
Dilated <5 cm	46 (17.8)	4 (3.0)	1.0
Dilated ≥5 cm	213 (82.2)	131 (97.0)	7.1 (2.5-20.1)
Duration of the first stage			
<12 hours (normal)	227 (87.6)	45 (33.3)	1.0
≥12 hours (prolonged)	23 (12.4)	90 (73.3)	14.2 (8.5-23.7)
Duration of second stage			
Within normal ≤1 hour	239 (92.3)	36 (26.7)	1.0
Prolonged > 1 hour	20 (7.7)	99 (73.3)	32.9 (18.1-59.5)
Engagement of breech at first vaginal examination			
Engaged	16 (6.2)	1 (0.7)	1.0
Not engaged	213 (93.8)	134 (99.3)	8.8 (1.2-67.3)

Table 3 - OR and corresponding 95% CI of antenatal risk factors of cesarean section in cases of breech presentation admitted to KKUH, Riyadh, Saudi Arabia 1987-1997.

Risk factors	Vaginal delivery No (%)	Cesarean section No (%)	OR 95% CI
Type of breech			
Footling	17 (6.6)	26 (19.3)	1.00
Others	242 (93.4)	109 (80.7)	3.3 (1.8-6.5)
ANC utilization			
At least one visit	168 (64.9)	72 (53.3)	1.00
Never	91 (35.3)	63 (46.7)	1.6 (1.3-4.6)
Hypertension			
No	221 (89.1)	104 (78.8)	1.0
Yes	27 (10.9)	28 (21.2)	2.21 (1.2-3.9)

Table 4 - Validity of ultrasound diagnosis of persistent breech presentation at term.

Gestational age	PPV	NPV
At <20 weeks	62%	63%
At >20 weeks	70%	68%

Value (PPV) of persistent breech at term. When the ultrasound at (30 weeks shows breech presentation its PPV is 70%.

Discussion. Failure to detect breech presentation has been attributed to many factors including maternal obesity, increased abdominal tone, polyhydramnious, multiple pregnancy, inadequate antenatal care, and obstetric inexperience, although these variables has not been found to be significant in the latest report about undiagnosed breech in the literature.[4] Our study showed a low incidence of undiagnosed breech in labor at term (12.9%) compared to 26% and 21% reported lately.[4,5] This could be explained by the availability of ultrasound machines in most of the maternity units which can be used even by junior doctor to confirm presentation, in addition to the practice of external cephalic version (ECV) by experienced doctor.

The PPV of ultrasound at 30 weeks in predicting persistent breech presentation at term is 70%, a factor that has to be kept in mind whenever reviewing a patient with such ultrasound results, particularly if both ultrasounds at 20 and 30 weeks show breech presentation.

The vaginal delivery of a term breech is controversial, but recently a meta-analysis of 2 trials undertaken as part of a Cochrane systemic review found no significant differences between planned vaginal or caesarean delivery in terms of perinatal mortality (excluding malformation),[6] although there was a higher rate of maternal morbidity after Cesarean Section C/S.

The delivery of undiagnosed breech at term is even more controversial due to lack of adequate assessment of maternal pelvis and fetal size and normality, which are essential in deciding the mode of delivery. Our study shows that undiagnosed breech in labor at term is not at increased risk for C/S. On the contrary, the rate of C/S was higher among diagnosed breech compared to undiagnosed (38.3% vs 29.3%), although the difference was not statistically significant. There was no additional maternal or fetal morbidity in cases of undiagnosed breech, which is in agreement with previous studies. This could be partly attributed to the extra care given to the undiagnosed breech in labor. In addition women tend to request C/S for breech presentation if they were diagnosed antenatally.[7]

We further studied the risk factors for C/S in cases of term breech presentation in general (Diagnosed and Undiagnosed). Among the antenatal risk factors for C/S were footling breech, failure to attended any antenatal care visits, hypertension, and pelvic inadequacy. Prolonged first and second stages of labor were among the intrapartum risk factors, as well as a low cervical dilatation at the time of admission to the labor ward, which is in agreement with other studies,[5,8] while diagnosis of breech before the onset of labor was not one of the risk factor.

Although there are previous reports on the outcome of undiagnosed breech, our study is the first case control study comparing the outcome of term diagnosed with undiagnosed breech, in addition to assessing the risk factor for C/S in breech presentation. It is believed that the management of term breech in labor, whether diagnosed or undiagnosed, should be made after careful attention to the progress of labor and careful assessment of fetal weight and pelvic adequacy. Prompt surgical intervention should be available to achieve safe delivery of the breech baby as there is no reason to deliver all undiagnosed breeches by C/S.

However, the results of our study does not decrease the importance of diagnosing breech presentation antenatally as the careful assessment and follow up in labor are the key factors for a good outcome.

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