BREECH PRESENTATION-An overview

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Introduction

Breech presentation is a form of mal-presentation in which the fetal buttocks or lower extremities occupy or is in direct relationship with the maternal pelvic inlet. It is the commonest form of mal-presentation of the fetus. Its incidence decreases with advancing age from 25% at 28 Weeks, through 15% at 32 Weeks to 2-4% at term [1-3].

It accounts for 3-4% of infants born at term or at least 20,000 babies per year in the United Kingdom [3-5]. It is commoner in preterm babies and may be associated with both fetal and maternal anomalies. There has been intense debate about the safest mode of delivery for breech babies [5, 6].
Depending on the attitude of the fetus, breech presentation has been classified as:

(a) Frank or Extended breech presentation when the fetal hips are flexed and the knees extended. It is also called 'pike'. This accounts for 50-70% of breech presentations and is commoner in Primigravidae;

(b) Complete or Flexed breech presentation when both the hips and the knees are flexed. It is also described as 'cannon ball' and accounts for 5-10% of breech presentations. It is commoner in Multiparous women.

(c) Footling or Incomplete breech presentation when one or both hips are extended. Here the foot (or feet) lies below the fetal buttock and either it or the knee(s) may be presenting [3, 5, 7].

Clinically, two varieties of breech presentation exist uncomplicated and complicated breech presentations. Uncomplicated breech presentation is one in which no other associated obstetric complication(s) apart from the breech and prematurity exist while Complicated breech presentation occurs when it is associated with factors which adversely influence the prognosis such as multiple pregnancy, contracted pelvis, placenta praevia etc. It should be noted that extended legs or arms, cord prolapse and other difficulties encountered during delivery are also designated abnormal or complicated breech delivery [8].

Complications/problems of breech presentation

Complications associated with breech presentation could be maternal or foetal. Maternal risk is related to both operative and vaginal deliveries and includes genital tract trauma, sepsis and anaesthetic complications. The perinatal mortality is increased by 2-4 fold with breech presentation compared to cephalic presentation regardless of mode of delivery [9]. This is associated with malformations, pre-maturity and intrauterine death. Fetal complications associated with vaginal breech delivery include falx cerebri, tentorial & cerebellar tears, subarachnoid haemorrhages, cephal-haematomas, spinal cord disruption, brachial plexus stretch (Erbs & klumpke's palsy), fractures of long bones (femur & humerus) and rupture of sternocleidomastoid muscles [3, 10]. Injury to the fetal adrenal glands, liver, anus, external genitalia, hip joint and sciatic nerve could also occur during vaginal breech delivery. Asphyxia could result from cord prolapse and compression, placental site retraction, delayed delivery of the after-coming fetal head as well as premature attempt at respiration with incompletely delivered head [3, 8-10].

The increase resort to abdominal delivery is associated with some anaesthetic risks, haemorrhage and increased need for blood transfusion and increased maternal morbidity [3].

Aetiologic associations

Breech presentation is multifactorial in origin. It may however occur in the absence of any known predisposing factor(s) [5]. Advancing maternal age, nulliparity, female fetus, caffeine and a variety of fetal abnormalities have been implicated. The commonest cause however, is prematurity as a higher incidence of breech presentation has been found in earlier weeks of pregnancy. This is due to a smaller fetal size and a comparatively larger amniotic fluid volume which allows the fetus to undergo spontaneous version by kicking movements until 36 weeks when the position becomes stabilized as the liquor volume ratio decreases [3, 4, 8].

Certain factors which prevent spontaneous version such as extended breech, multiple pregnancy, oligohydramnios, congenital uterine malformations (septate, bicornuate and unicornuate uterus), a relatively short umblical cord and intrauterine fetal

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death may predispose to breech presentation [8, 11]. Other factors may also cause it by encouraging favourable adaptation of the fetus to the uterine anatomy. Such factors include hydrocephalous, placenta praevia, contracted pelvis, leiomyomata uteri and other pelvic tumors as well as cornuo-fundal placental attachment [8, 12]. Excessive fetal mobility as may occur in polyhydramnios and multipara with lax abdomen as well as fetal anomalies like anencephaly & hydrocephalous may also predispose to breech presentation [13].

Recurrent or habitual breech is said to occur when breech presentation occurs in 3 or more consecutive pregnancies. The causes of this include pelvic malformation, congenital uterine malformations and repeated cornuo-fundal placental attachment [8].

Diagnosis

This can be made clinically and confirmed by ancilliary or radiological investigations.

There may be complains of Epigastric or subcoastal discomfort due to pressure of the fetal head on the ribs, while some patients may experience fetal kicks more in the pelvic region. Inspection of the abdomen usually shows nothing specific whereas palpation may reveal a hard rounded and ballotable mass in the fundus. The lower segment may demonstrate an irregular, firm (but not `bony-hard`) less-rounded mass. Difficulties may arise in the presence of obesity, polyhydramnios and in an extended breech where ballotment of the head may be obscured by the fetal legs [2, 3, 9].

On Auscultation, the fetal heart sounds is heard best or loudest above the level of the maternal umblicus. However in a Frank breech, early engagement may make the fetal heart tones to be heard at levels lower than this. On vaginal examination, the fetal buttock which is less rounded and softer than the head will be felt [1-3]. When the cervix is dilated and membranes ruptured, the natal cleft may be felt with the feet close to the buttocks. Confirmatory investigations include an ultrasound scan (USS) which will show fetus in longitudinal lie with buttock or feet in lower uterine segment. A plain abdominal X-ray can also be used in the absence of an ultrasound scan machine late in pregnancy and this will show fetal skull in relation to the maternal ribs and fetal pelvic bones in relation to the maternal pelvis. A Computerized Tomographic (CT) scan can also be used if available. The USS is preferred as it is more common and has the added advantage of showing the fetal attitude, estimating the fetal weight, assessing the Biophysical profile, and excluding predisposing factors such as placenta praevia, pelvic tumors, polyhydramnios, fetal congenital anomalies etc [3]. In addition there is a lower risk of irradiation to the fetus when compared to X-rays.

Despite the above, many studies have demonstrated that over 25-30% of breech presentations at term are not diagnosed until labour has commenced, either after abdominal palpation or more commonly, following vaginal examination [13, 14]. This, unfortunately, represents a missed opportunity for external cephalic version in the antenatal period [12]

Management

The management of breech presentation begins in the antenatal period [3]. The aims of antenatal care are for the identification of complicating factors related to breech presentation, formation of a management plan and the performance of external cephalic version if not contraindicated. Early booking and regular check-ups are encouraged. Interventions are usually unnecessary when breech is detected before 30 weeks because of the inherent likelihood of spontaneous version [14]. After 32 weeks gestation, follow up at 36 weeks is important because of the relatively lower rate of spontaneous version thereafter. At 36 weeks patient is re-evaluated clinically and an USS examination is then performed for placental site, associated anomalies, fetal attitude, liquor volume and if appropriate Doppler measurement [4]. If fetus remains breech with no associated complications, then the three options of management i.e. External cephalic version, trial of vaginal breech delivery or elective Caesarean section are explained to the mother [11]. The findings from History, physical Examination, investigations and clinical pelvimetry, as well as maternal choice are considered and a decision on mode of delivery arrived at.

External Cephalic Version (ECV)

This is a manual trans-abdominal manipulation of the fetus into a cephalic presentation. It helps in a reduction in non cephalic births as well as the Caesarean section (CS) rate due to them. It is discussed with the patient at 36 weeks in nulliparous women, and after 37 weeks in multiparous women. Preterm ECV does not reduce CS Rate, however in nulliparous women or those with extended breech where spontaneous version is less frequent, ECV at 34-36 weeks might be effective and is currently an trial. It may also be performed post date and in early labour provided membrane is intact and cervix is less than 5cm dilated [4].

Prior to the procedure, the patient's haematocrit

must be known and optimal, two pints of blood must be grouped and cross matched, the anaesthetist and theatre must be informed and an informed consent obtained from the patient. An obstetric ultrasound scan is carried out to confirm breech presentation, fetal attitude, estimate liquor volume and rule out any associated anomalies. This followed by a non- stress test (NST) and a back up biophysical profile to ascertain fetal well being [15]. An intravenous line is then established. The procedure is carried out in the delivery room near the obstetrics theatre as follows: The patient lies in left lateral or semi recumbent position and some talcum powder is sprinkled on the abdomen. With both hands, the breech is gently lifted up from the pelvis. The procedure is unlikely to be successful if this cannot be accomplished. One is then placed on each of the fetal poles and a steady gentle pressure is applied to the poles in opposite directions (one upwards and the other downwards) in order to accomplish the rotation. The fetus is gently turned in such a way that the face appears to be following the breech. If unsuccessful, rotation may be attempted in the opposite direction (a "forward roll" and a "backward tumble" or "backward flip"). Several attempts can be made [4, 8, 14]. During attempts, the fetal condition is monitored using real-time ultrasound scan. An attempt is stopped if there is fetal deceleration and the whole procedure is abandoned if there are repeated decelerations.

After ECV, whether successful or not, a repeat non stress test with or without a biophysical profile is carried out before discharge and Rhesus Immunoglobulin is administered if patient is Rhesus 'D' negative.

Following successful ECV, labour may either be induced or spontaneous onset awaited as if the fetus has always been cephalic [3, 9, 13]. A success rate of 35-86%(average 58%) is reported and this is improved in multiparous patients, earlier gestation age (with attendant risk of spontanous version), Frank breech, Transverse lie and in Africa-American patients [7] .Several attempts have been made to predict success of ECV. For example, a bishop-like Score was developed by Newman[7] as shown above:

		SCORES	
PARAMETER.	0	1	2
Parity	0	1	>2
Dilatation	>3	1 -2cm	0cm
EFW(g)	<2500	2500-3500	>3500
Placenta	Anterior	Posterior	Lateral/fundal
Station	>-1	-1	<3

Newman Scoring Index for Prediction of Success of External Cephalic Version [7]

Success rate was 0% with a score of <2 and 100% with a score of >9. The usefulness of this scoring system is criticized due to overlap in score between successful and unsuccessful ECV. It was generally adjudged that best candidates are women with breech presentation at term with a reassuring FHR tracing who had no contraindications to vaginal delivery. A 50% spontaneous reversal rate has made ECV in preterm breeches no longer recommended [4, 11, 16]. Absolute contraindications to ECV include multiple gestation, non-reassuring FHR tracing, previous antepartum haemorrhage in index pregnancy, two previous caesarean sections and other contraindications to vaginal delivery while poly- or oligohydramnios, growth restriction, hypertension and one previous caesarean section are considered relative contraindications. ECV could be complicated by fracture of long bones, abruptio placenta, ruptured viscera, premature rupture of membranes, cord entanglement and feto-maternal haemorrhage [1, 4, 7-10, 13, 15].

Other manoeuvres believed to encourage version include the Elkin`s manoeuvres [2, 17] where the mother puts herself in knee-chest position for 15 minutes every two hours of waking time for 5 days at 37 weeks and the Moxibustion, which is the burning of herbs in traditional Chinese medicine beside acupuncture points at 33 weeks for 1-2 weeks in primigravid Chinese women [4, 18]. In those patients whom Moxibustion, Elkin`s manoeuvre or ECV is unsuccessful, undesirable or is contraindicated, the options of either planning a vaginal breech delivery or elective Caesarean section are considered.

Mode of delivery for term breech

Women should be counseled on elective Caesarean section versus planned vaginal delivery so that they can make an informed decision. The relative safety of elective Caesarean section should be discussed. The overall findings from the term breech trial published in the Lancet, 2000 and other findings concludes that planned Caesarean section is associated with a 2/3rd reduction in perinatal mortality, neonatal mortality and morbidity without

much increase in serious maternal morbidity [4, 7, 11, 13, 19, 20]

The problems of predicting the chances of success of vaginal breech delivery (VBD), the implications of failure and attendant risk to the mother and fetus has led many workers to introduce several selection criteria or conditions for attempting Vaginal breech birth. Some of these include the Zatuchni-Androsbreech scoring[5, 7] which is used for undiagnosed breech in labour. It uses 6 parameters parity, gestational age, estimated fetal weight, previous vaginal breech delivery, cervical dilation and station of presenting part.

		SCORE	
PARAMETERS	0	1	2
Parity	0	1	2
GA(weeks)	39+	38	<37
EFW(g)	>3500	2500 - 3500	<2500
Previous vaginal b reech delivery	0	1	2
Cervical dilatation	2	3	>4
Station	-3	-2	- 1

Zatuchini-Andros Breech Score

With scores of 0-4, Caesarean section is recommended. The modified Zatuchni-Andros score uses the above parameters except gestational age. Here a score of more than 3 is required for trial of labour if the clinical pelvimetry is adequate [5, 6, 16]. The Schutte, O`Driscoll and Foley's criteria for vaginal breech deliveries have parameters such as anticipated fetal weight of $\leq$3.5 kg by USS, normal pelvic shape and dimensions by lateral X-ray or CT pelvimetry, frank breech presentation with flexed head and the presence of an experienced obstetrician to conduct the delivery. Generally an adequate/capacious pelvis adjudged by previous delivery of term infant $\geq$2.5 kg, obstetric conjugate $\geq$10.5 cm, CT or X-ray pelvimetry inlet transverse diameter $\geq$ 11.5 cm, anterior-posterior diameter $\geq$ 10.5 cm and mid-pelvis with transverse diameter of 10 cm and anterior-posterior diameter of 11.5 cm, in the presence of an average sized fetus (1.5-3.5 kg), frank breech with well flexed head in a preferably multiparous patient and an obstetrician experienced in the conduct of breech delivery are considered favourable [1-3, 10, 11, 15]. However the use of X-ray or CT pelvimetry is considered controversial, and has not been shown to be of benefit in decision making by some authors [4].

Vaginal Breech Delivery (VBD)

Vaginal Breech Delivery VBD is best conducted in a unit equipped for Caesarean section by an obstetrician experienced in the procedure in the presence of an obstetric anaesthetist and a neonatologist. The first stage is not longer or more painful. Once labour is diagnosed, a partograph is opened, blood cross-matched with at least two pints of blood saved and a vein accessed with dextrose saline to avoid ketosis. The fetal heart rate is monitored quarter-hourly or continuously with a cardiotocograph. Epidural analgesia is the preferred form of analgesia as premature bearing down is prevented. Artificial rupture of membranes is avoided for as long as possible, though membranes tend to rupture early in breech presentation; and once it occurs, a vaginal examination must be performed to exclude cord prolapse. Augmentation and induction of labour is controversial [5] and should be avoided as much as possible. The theatre must be ready for possible emergency Caesarean section any time [1, 2, 4, 11]

The second stage of labour may occur spontaneously in the absence of any assistance from an accoucheur. Spontaneous breech delivery, often occurring as precipitate labour, is commoner in multiparous patients with premature labour and carries a huge perinatal morbidity and mortality and maternal morbidity hence it is not recommended. Assisted breech delivery (ABD) is vaginal breech delivery occurring with the aid of the patient (mother) and assistance from an accoucheur. A pediatrician and an

anaesthetist must be present. Once full dilatation of the cervix is reached, the patient is put in lithotomy position, cleaned and draped and the bladder is emptied. The pelvic phase should not exceed 30 minutes unless patient has epidural anaesthesia. Masterly in-activity, i.e. a `hands-off` approach, is the rule. An episiotomy should be considered as the breech distends the perineum (to facilitate manoeuvres to deliver after-coming head) but maternal effort should deliver the breech and trunk, not the obstetrician. Spontaneous delivery is allowed up to the umbilicus, when the extended legs are freed by gentle pressure on the popliteal fossa to flex the knees and sweep the femur gently backwards and outwards on the fetal trunk (Pinard's maneouvre) and the pressure reduced off the cord by gently pulling it a little down. With further maternal effort during contraction, the trunk is delivered up to when the scapula is visible and the arms hooked down using the index fingers to sweep first the anterior then the posterior shoulder over the front of the fetal chest. The Lovset's manoeuvre is used only if the arms are nuchal or extended by grasping the fetal loin firmly with both hands (thumbs on the back pointing cranially) and with gentle downward traction, the anterior shoulder is rotated 180^0 posteriorly and then rotated back 180^0 still maintaining the fraction. With further contraction the nape of the neck becomes visible when delivery of the head can be carried out with next contraction. The delivery of the head can be accomplished using Obstetric forceps (Piper or Laufe), Mauriceau-Smellie-Veit or BurnsMarshall manoeuvres. In the Mauriceau-Smellie-Veit, the index finger of the right hand is inserted into the baby's mouth, whilst resting the baby on the forearm. The left hand can be used to maintain flexion pushing on the back of the neck whilst some traction is exerted via the mouth. In the Burns-Marshal method, the fetal legs are brought to the maternal abdomen while the assistant gives suprapubic-fundal pressure. This is the least favoured method and is indeed being currently discouraged. In Forceps delivery, the assistant holds the baby's feet lifting the legs upwards to allow surgeon to apply the forceps. Following delivery the airway is cleared and baby handed over to the Paediatrician [1, 3, 4, 7, 13, 15].

Breech Extraction occurs when only the assistance of the accoucheur, without the aid of the mother is required to affect delivery. It's never performed with singleton breeches but currently advocated for delivery of the retained second twin in distress, as well as with cord prolapse [4].

The third stage of labour is managed actively with oxytocics administered only after complete delivery of the fetal head. The perineum, vagina and cervix are then inspected for any lacerations and sutured along with any episiotomy given.

Special Circumstances / Options

Difficulty delivering after coming head of breech can be managed by using suprapubic pressure to facilitate flexion of neck and descent into the pelvis, by the McRoberts manoeuvre or by Symphysiotomy if above manoeuvres fail. Entrapped after-coming head of breech in an incompletely dilated cervix especially with preterm breeches can be managed by a Duhrssen cervical incision at 4 and 8 o clock positions taking care to protect maternal and fetal tissues with left hand and fingers [13]. The indication for this incision must be certain as there is a high risk of haemorrhage, and must therefore be used with caution.

Caesarean Section in breech presentation

Caesarean section has clear advantages over vaginal breech deliveries even in uncomplicated breech presentation as its associated with lower perinatal and neonatal morbidity and mortality [21]. Despite the occasional aversion shown especially in developing nations to Caesarean section, the presence of other obstetrics problems in association with breech presentation renders caesarean section almost inevitable. The conditions which contraindicate vaginal breech delivery could be maternal factors such as contracted or abnormal pelvis, moderate/severe pre-eclampsia, medical disorders complicating pregnancy like diabetes mellitus and renal diseases and hypertension as well as prolonged pregnancy and bad obstetrics history. Fetal indications for Caesarean section include footing breech, nuchal arm, hyper-extended head, large fetus more than 3.75 kg, severe intrauterine growth restriction, pre-maturity especially with fetal weight less than 1.5 kg and presence of anomalies that may hinder or obstruct labour. Placental indications include praevia and abruption while intrapartum indications include poor progress in first stage and failure of descent of breech in second stage In primips/nulliparous patients with breech presentation, most obstetricians will electively perform caesarean section because of the increased risk of dysfunctional labour, the controversy surrounding augmentation and induction of labour, the increased chance of premature bearing down and the fact that the pelvis has not been tried and may be borderline. However with good case selection, pelvimetry and epidural anaesthesia, and electronic fetal monitoring, vaginal breech delivery may be allowed.

Conclusions

Breeches are at increased risk whatever obstetric management is employed, though Caesarean section has been shown to be safer for the fetus, it is

associated with increased maternal morbidity. However improvement in the skill of young obstetricians in external cephalic version and assisted vaginal breech deliveries through training will go a long way both in reducing the Caesarean section rate for breech and minimizing the morbidity and mortality associated with the procedures-ECV & ABD as not only will breech presentation always occur or be seen first on the perineum, but a second twin may deliver breech and some women will still decline Caesarean section when no other complications exist.

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