CHAPTER 22

Suspected fetopelvic disproportion and abnormal lie

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1 Fetopelvic disproportion

Fetopelvic disproportion exists when the capacity of the woman’s pelvis is insufficient for the safe vaginal delivery of the baby. In the past, antenatal strategies to diagnose fetopelvic disproportion received considerable attention, with the objective of early induction of labor or delivery by planned cesarean section if disproportion was diagnosed. Attempts to predict the occurrence of fetopelvic disproportion have included measurement of maternal height and shoe size, and clinical and X-ray pelvimetry.

The correlations between maternal height or shoe size and cephalopelvic disproportion are of limited clinical use, because of the large overlap in obstetrical outcome between small and large women. There is a reasonable correlation between clinical and radiological assessment of pelvic dimensions, but neither are particularly accurate in predicting the outcome of labor. The effects of clinical pelvimetry have not been evaluated by randomized studies.

The meaning of non-engagement of the fetal head near term as an indicator of cephalopelvic disproportion is not well established. In black women having their first babies, in whom such non-engagement commonly occurs, it is associated with longer labors, but not with an increased rate of operative delivery or increased maternal or fetal


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morbidity. The most reliable predictor of pelvic adequacy remains the previous uncomplicated delivery of a baby of similar or greater birth-weight than that estimated for the current pregnancy.

The formerly widespread use of X-ray pelvimetry to predict cephalopelvic disproportion has come under critical scrutiny since the reports of an association between prenatal irradiation and childhood leukaemia. As a general principle, irradiation that is not likely to benefit mother or baby should be avoided. The use of ultrasound for pelvimetry has been reported, but it has not been widely adopted. Computed tomographic pelvimetry, which greatly reduces the radiation exposure to the fetus, has been found in two small studies to be easier to perform, and in the measurement of a model pelvis, probably more accurate than conventional X-ray pelvimetry.

There is wide variation among individuals and institutions in the use of X-ray pelvimetry. Its utility has been questioned because of its poor predictive value as a screening test for cephalopelvic disproportion, and the infrequency with which the results influence management. Prospective randomized studies of X-ray pelvimetry, without and with previous cesarean section (two trials each), failed to detect any clear benefit of X-ray pelvimetry to either mother or baby. Their combined results show a substantial increase in the rate of cesarean section with the use of X-ray pelvimetry. The numbers studied were too small to evaluate perinatal outcome adequately.

Neither X-ray nor clinical pelvimetry have been shown to predict cephalopelvic disproportion with sufficient accuracy to justify elective cesarean section with cephalic presentations. Cephalopelvic disproportion is best diagnosed by a carefully monitored trial of labor, and X-ray pelvimetry should seldom, if ever, be necessary. Observational studies of labor induction for suspected macrosomia to reduce the likelihood of cesarean section and of difficult operative delivery cast doubts on the effectiveness of such a policy.

It is important to distinguish between the risk of disproportion related to the presenting fetal part and that related to a non-leading part of the fetus, because of the special hazards of obstructed labor to the partly born fetus, as in shoulder dystocia, or obstruction to the after-coming head in a breech presentation.
2 Shoulder dystocia

Shoulder dystocia (where the baby’s head is delivered, but the shoulders remain stuck) is an obstetric emergency associated with considerable risk of fetal trauma and death. If a high likelihood of the condition could be predicted antenatally, it could be prevented by elective cesarean section. Cesarean section has been suggested for diabetic women with a fetal weight estimated to be above 4000 g and for non-diabetic women with an estimated fetal weight above 4500 g and slow progress of labor. Such a policy has not been subjected to randomized evaluation. Even if fetal weight estimation were accurate, this would prevent only a small proportion of potential cases of shoulder dystocia, while the majority of the cesarean sections would be unnecessary. Almost half of the cases of shoulder dystocia occur in infants weighing less than 4000 g.

Induction of labor in women thought to have large-for-gestational-age babies has not been shown to improve outcome, nor has detection of macrosomia by measurement of the distance from the symphysis to the fundus.

There is at present no reliable method for antenatal prediction of shoulder dystocia, and efforts to reduce the problem should be directed towards ensuring that birth attendants are skilled in the management of this condition when it occurs. The woman should be placed in the recumbent position with exaggerated flexion of her thighs and her knees pushed against her chest. A large episiotomy should be done. Attempts to then deliver the baby with maternal effort and downward traction, with or without suprapubic pressure or digital rotation of the shoulders, are often successful. Rarely, deliberate fracture of the baby’s clavicles may be necessary.

Other methods of management of shoulder dystocia have been reported, including use of the squatting position. Symphysiotomy has been long practised in Africa. A maneuver in which the head is pushed back followed by cesarean section has been described.

3 Breech presentation

Breech presentation (where the baby’s bottom, foot or feet present instead of the head), although sometimes associated with uterine, placental, or fetal abnormalities, is often simply an error of orientation that places a healthy mother and a healthy baby at risk. The prevalence
of breech presentation decreases from about 15% at 29–32 weeks’ gestation to between 3 and 4% at term. Spontaneous changes from breech to cephalic presentation occur with decreasing frequency as gestational age advances in the third trimester, and are more likely to occur at all gestational ages in women who have previously given birth.

The risk of a breech presentation to the mother is an increased likelihood of cesarean section, and to the baby, the risk of cord prolapse and difficult vaginal or cesarean breech delivery. The perinatal outcome following breech birth is less favorable than for cephalic presentations, irrespective of the mode of delivery; childhood handicap is common following both vaginal and cesarean breech delivery. It is possible that breech presentation may be a marker for underlying impairment—a failure of the baby to achieve its first developmental milestone. The widespread use of cesarean section for term breech presentation has been based on the unproved assumption that the poorer outcome is at least in part the result of damage sustained during vaginal breech delivery.

Elective section for breech presentation makes a considerable contribution to cesarean section rates in many areas. It is important to determine whether cesarean section for term breech improves perinatal outcome sufficiently to justify the current and future risks to the mother. This is still unclear. The two small randomized trials that have been performed suggest that a policy of elective cesarean section for term breech presentation is associated with some decrease in short-term neonatal morbidity and an increase in maternal morbidity. The numbers studied are far too small to address the important issues of perinatal mortality or morbidity, nor has the question of long-term neonatal morbidity been addressed. The use of cesarean section for breech delivery in the belief that it is safer may become a self-fulfilling prophecy, as attendants become less skilled at breech delivery. A large international trial of planned vaginal delivery versus elective cesarean section for term breech is currently under way.

Cephalopelvic disproportion, if present, is perilous in a breech presentation because of the risk that the after-coming head may be trapped. There is no reason to expect that X-ray pelvimetry should be more accurately predictive of cephalopelvic disproportion for breech than it is for cephalic presentations. In breech presentations, however, it is usual to avoid vaginal delivery when pelvic dimensions are even slightly reduced, in an attempt to exclude all potential cases of cephalopelvic disproportion. If vaginal birth of an infant presenting as a breech is planned, fetopelvic relationships should be carefully
monitored as labor progresses. If the frank or complete breech passes easily through the pelvis, the head can be expected to follow without difficulty. For women admitted in advanced labor, tocolysis may be used to allow time for careful assessment before proceeding to vaginal or cesarean delivery.

The rare condition of deflexion of the head with a breech presentation may add additional risk to vaginal delivery. Ultrasound examination in early labor can diagnose or exclude the condition.

During vaginal breech delivery, expulsion by maternal effort is encouraged as traction on the breech may cause extension of arms and head. One quasi-random trial of routine expedited breech delivery (aimed at completion of delivery with a single uterine contraction), was methodologically inadequate to support firm conclusions. The fact that traction is usually used for cesarean breech delivery may account for cases of trauma due to delivery of the after-coming head.

4 External cephalic version for breech presentation

Over the years, many postural techniques have been used by midwives, doctors, and traditional birth attendants to turn the baby so that the head presents (cephalic version). Little, however, has appeared in the medical literature on this subject. A midwifery technique claimed to be effective is to ask the mother to lie on her back, with her hips slightly elevated, and hips and knees flexed. She then rolls gently through 180 degrees from side to side for 10 min, and repeats this three times a day. Another example of traditional practice is to attempt to correct abnormal presentations during labor by manually shaking the uterus, while the mother is in the knee–elbow position on the floor.

Uncontrolled studies have suggested that use of the knee–chest position is associated with a high rate of spontaneous version and normal vaginal birth. The woman is instructed to kneel with her hips flexed slightly more than 90 degrees, but with her thighs not pressing against the abdomen, while her head, shoulders, and upper chest lie flat on the mattress. This is done for 15 min every 2 waking hours for 5 days. The small reduction in non-cephalic births found in controlled studies, and the marginally lower overall cesarean section rate and rate of low Apgar score at 1 min, could all be the result of chance. They are consistent with anything between a large positive and a large negative effect. Larger studies are needed to establish whether or not postural management is effective.
There are fundamental differences between external cephalic version (where the attendant attempts to turn the baby by rotating its body through the mother’s abdominal wall) attempted before term and at term, and these two approaches must be considered separately.

While external cephalic version before term can be readily accomplished, it serves little purpose. A high proportion of fetuses revert to breech presentation. Three controlled trials (one randomized and two quasi-randomized) failed to demonstrate any effect of external cephalic version before term on the incidence of breech birth, cesarean section, or perinatal outcome. Although there was no overall difference in perinatal mortality rate for treatment and control groups, the close to 1% fetal mortality rate, thought to be associated with the procedure, led to a decline in its use.

Interest in external cephalic version for breech presentation was revived by a 1975 report that cephalic version could be achieved after 37 weeks’ gestation, provided that the uterus was relaxed with betamimetic agents, when necessary. In contrast to external cephalic version before term, version at term shows better results. The procedure, with or without tocolysis, results in a 58% reduction in the relative risk of a non-cephalic presentation at birth, and a 48% reduction in the risk of cesarean section. Delay of external cephalic version attempts until term allows time for a maximal number of spontaneous versions to take place, and for obstetrical complications that may require delivery by cesarean section to become apparent. Thus, by waiting until term, fewer unnecessary attempts at external cephalic version are required. At term complications of the version can be readily managed by prompt abdominal delivery of the mature infant. Following successful external cephalic version, fewer reversions to breech presentation occur. The disadvantage of delaying external cephalic version until term is that the opportunity to attempt external cephalic version may be missed when the breech descends in the pelvis, when the membranes rupture, or when labor commences before term.

Routine use of tocolysis for external cephalic version at term reduces the rate of failed and difficult procedures and fetal heart rate slowing. These advantages must be weighed against the risk of maternal cardiovascular side-effects. Tocolysis should be used at least in women with high uterine tone or failed initial attempt, if not routinely.

Fetal vibro-acoustic stimulation, to stimulate movement of the fetus from the dorso-anterior to the dorso-lateral position, has been used in one small trial to facilitate external cephalic version, as have epidural analgesia and transabdominal amnio-infusion. Theoretically, oral
hydration might achieve similar amniotic fluid expansion. None of these procedures has been investigated sufficiently to be recommended for general use.

Several authors have investigated which factors are associated with an increased chance of successful external cephalic version. Successful version at term rates are low in some populations, particularly in North America and Europe, and amongst nulliparous women. For this reason, there may be a role for external version to be commenced before term for selected breech pregnancies. This procedure should not be undertaken except as part of a randomized controlled trial.

External cephalic version at term in women with previous cesarean section has not been studied in controlled trials, but observational data are encouraging.

External cephalic version in early labor is worthy of consideration as an extension of the trend towards version later in pregnancy. Earlier reports have included occasional references to attempted external cephalic versions during labor, and success rates up to almost 75% have been reported. In theory, this approach has several advantages. Maximum time would be allowed for spontaneous version to take place and for possible contra-indications to external cephalic version to appear, thus limiting the number of versions that would be necessary. The risks of external cephalic version may be reduced further by performing the procedure in the labor ward, with continuous monitoring of the fetal condition until delivery. In cases assessed as unsuitable for vaginal breech birth, the external cephalic version may be attempted in the operating theatre, and in the event of failure followed immediately by cesarean section.

Because waiting for the onset of labor would involve the inconvenience of performing version as an emergency rather than as an elective procedure, and because the breech may be well engaged in some cases, it is unlikely that external cephalic version during labor will become a first-line approach for breech presentation. When breech presentation is encountered during labor while the membranes are still intact, however, the limited data available suggest that external cephalic version with tocolysis is a reasonable procedure to consider.

The randomized trials reported have not been of sufficient size to address issues of maternal or fetal safety. The risk of attempted external cephalic version to the mother is exceedingly small. It consists of the possibility of adverse effects from any of the drugs used to facilitate version and the hazards of placental abruption, a rare but recognized complication.
Attempted external cephalic version must be recognized as an invasive procedure that involves some risk to the fetus. Fetal risks are related to gestational age and to the methods employed. Findings from observational data suggest that the complication rate is greater when external cephalic version is attempted before 37 weeks’ gestation, when general anesthesia is employed, and when the placenta is situated anteriorly. Provided that fetal well-being is confirmed and monitored, and provided that appropriate precautions are observed (including administration of anti-D immunoglobulin to Rh-negative women), the risk to the mature fetus appears to be small.

Moxibustion (burning herbs to stimulate acupuncture points), a traditional Chinese method to promote version of fetuses in a breech presentation, has recently been evaluated in a randomized controlled trial. Despite the fact that more subjects in the control group received subsequent external cephalic version, significantly more fetuses in the intervention group had a cephalic presentation at birth.

5 Oblique and transverse lie

Oblique and transverse lies differ fundamentally from breech presentation in that factors maintaining a longitudinal lie are not present. They are associated with multiparity, abdominal laxity, uterine and fetal anomalies, shortening of the longitudinal axis of the uterus by fundal or low-lying placenta, and conditions that prevent the engagement of the presenting part, such as pelvic tumours and a small pelvic inlet. Abnormal lie, particularly oblique lie, may be transitory and related to maternal position.

When non-longitudinal lie is encountered after 32 weeks’ gestation, underlying abnormalities should be sought. Further care options include antenatal attempts at external version, version at term followed by induction of labor, or expectant care with or without intrapartum attempts at version, if the abnormal lie persists.

The role of external version in the management of oblique and transverse lie has not been assessed in a randomized trial. A number of descriptive case series have been reported. With expectant care, most cases of abnormal lie will revert to the longitudinal lie by the time of delivery. Less than 20% of transverse lies observed after 37 weeks’ gestation persist to delivery. Given the high spontaneous version rate and the unstable nature of the non-longitudinal lie, with a high probability of reversion following external version, there
is no firm case for external version prior to labor or planned delivery.

Care of the woman with a transverse or oblique lie encountered during labor is more straightforward, as the choice lies between cesarean section and external version. A prospective but uncontrolled study of external version for transverse lie in labor showed a modest rate of success. There were no fetal or maternal complications associated with the procedure, though larger studies would be needed to evaluate potential risks.

In the absence of controlled trials, the timing of intervention in pregnancies complicated by non-longitudinal lie must remain a matter of clinical judgement. The advantage of gaining fetal maturity, allowing time for spontaneous version to take place and allowing labor to begin spontaneously, must be weighed against the risk of membrane rupture or cord prolapse before the version can be attempted. Once labor has begun or the decision has been made to deliver the baby, attempted version with immediate recourse to cesarean section if necessary, is a reasonable option.

6 Conclusions

No reliable methods are available for accurate prediction of fetopelvic disproportion before labor. Labor is the best test of pelvic adequacy in cephalic presentations. The place of pelvimetry in breech presentations has not been established, and a trial to determine its benefits, if any, is warranted if this common practice is to be continued.

There is at present inadequate evidence either to substantiate or refute the effectiveness of routine cesarean section for term breech presentation in improving perinatal outcome.

The controlled trials reported to date are too small to support or refute the alleged benefits of postural management for breech presentation. External cephalic version for breech presentation before term is not warranted. External cephalic version at term, on the other hand, substantially reduces the incidence of breech presentation at birth and of cesarean section.
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