EMERGENCIES IN GENERAL PRACTICE**OBSTRUCTED LABOUR**

BY

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The end-result of obstructed labour, if unrelieved, is rupture of the uterus, unless the mother dies of exhaustion and shock before rupture takes place. If the uterus ruptures, the maternal mortality varies with the cause of the obstruction and the availability of expert obstetrical care, but it is always very high. It is rare for the foetus ever to survive. These considerations serve to emphasize the seriousness of neglecting actual or potential obstruction during labour.

In modern obstetric practice in Britain, rupture of the uterus following obstructed labour is rapidly becoming a rarity, although it still presents a problem of major importance in backward countries, where adequate antenatal care is not available to the large mass of the population. Obstruction is nearly always the result of malposition of the foetus or else of contraction of the maternal pelvis; less commonly it is due to atresia of the soft tissues of the birth canal or obstructing tumours. Reference to any standard textbook of obstetrics will supply a list of the malpresentations, the different types of pelvic contraction, and the soft-tissue tumours that may lead to obstruction, and there is no point in enumerating such a series here. In any case they are mostly well known and obvious. Nor will space permit of a detailed description of every individual condition that may cause obstruction. It must therefore suffice to discuss in general terms the prophylaxis and early detection of potential obstruction, and the principles underlying the management of established obstruction.

Theoretical Considerations

Within recent years we have come to understand the behaviour of the uterine muscle in labour much more clearly as the result of the work of Reynolds and others using the Lorand tocograph and other methods of obtaining tracings of uterine contractions for accurate study and analysis.

Fig. 1.—Prolapsed arm: retracted upper segment, thinned lower segment.

This confirms two fundamental facts about uterine action in obstructed labour.

1. In the presence of obstruction the pattern of uterine contractions is essentially normal; that is to say, the upper segment muscle contracts more and more strongly while the lower segment remains passive. The lower segment becomes progressively thinner (Fig. 1), and through this thinned lower segment rupture will ultimately take

place. Before this occurs, however, a pathological retraction ring (Bandl's ring), which is detectable clinically, forms at the junction of the two segments.

2. The response of the primiparous uterus to obstruction is in marked contrast to that of the multiparous one. In the former the response is a gradual increase in tonus, associated with diminishing activity. The lower segment may therefore not dilate and labour may be very prolonged, with less risk of rupture. In extreme cases the mother may die, undelivered, of shock and exhaustion; if she is ultimately delivered and survives, extensive soft-tissue sloughing may occur as a result of prolonged pressure causing ischaemia and fistulae between the rectum or bladder and the genital tract; before either of these disasters occurs the foetus may die of anoxia from progressive increase in uterine tone. In the multiparous patient, on the other hand, the response to obstruction is rapidly increasing contractions and thinning of the lower segment. Hence the uterus may rupture soon unless the obstruction is overcome relatively early in the course of labour. This difference in behaviour of the uterus is of great practical importance, and is mentioned to emphasize the greater need for urgency and speed in the management of obstruction in the multipara than in the woman labouring for the first time.

Apart from the danger of rupture of the uterus or extensive post-partum soft-tissue sloughing, there is the danger to the mother of ascending infection. This risk is especially great if the membranes rupture early and labour is protracted. In addition to the risk of injury from direct pressure, the foetus may perish from placental anoxia due to a hypertonic uterus; if it survives a prolonged labour, pulmonary or other infection, initiated during labour, may develop in the neonatal period.

From the practical point of view it will be best to consider potential or actual obstruction at different levels in the pelvis, because there are important clinical differences.

Obstruction at the Pelvic Brim

The commonest causes of this are: (a) maternal: contraction of the pelvic inlet, fibroids, or ovarian cysts; and (b) foetal: transverse lie, brow presentation, and hydrocephalus. In all these conditions there is no foetal presenting part in the pelvic cavity during the last weeks of pregnancy and in the early stages of labour, and the diagnosis is usually made before the onset of labour. However, in many cases it may be necessary to allow labour to start before certain obstruction can be detected. It is often surprising how a fibroid, even when low down in the uterus and below the foetal head, may become drawn up during labour, thereby allowing the head to descend into the pelvic cavity. Only a cervical fibroid must inevitably lead to obstruction, unless caesarean section is carried out. Should obstruction develop owing to an ovarian cyst impacted in the pelvis, caesarean section is again necessary. Such a cyst is usually adherent, and attempts to displace it upwards as recommended in older textbooks may result in rupture of or haemorrhage into the cyst.

The problems of brim contraction are many and varied, and can only be discussed here in general terms. Inlet contraction should be suspected in all cases of high head in the last weeks of pregnancy or early in labour, although disproportion and obstruction will develop in only relatively few of such cases. In the presence of a normal-sized foetus obstruction to labour is almost certain if the true conjugate is less than 9 cm., whereas if it is more than 10 cm. over

95% will end in spontaneous or assisted vaginal delivery. It is in the intermediate cases with conjugate measurements of between 9 and 10 cm. that trial of labour is especially indicated.

It is sometimes stated that it is impossible to determine whether there is or is not true cephalo-pelvic disproportion unless and until the cervix is fully dilated so that the head can descend in the birth canal. While this may be true in theory it is not entirely true in relation to inlet contraction. Early in the course of labour in these cases the membranes rupture and if the presenting part is unable to pass the pelvic brim because of disproportion the cervix may never become fully dilated, and yet obstructed labour may develop and the lower uterine segment become so thinned that it ruptures. In this type of case the differential diagnosis between delay due to cephalo-pelvic disproportion and that due to incoordinate uterine action of the hypertonic variety may be very difficult indeed. This in point of fact is a not uncommon clinical problem. Errors in judgment account for some at any rate of those patients whose first labour is terminated by caesarean section for alleged cephalo-pelvic disproportion and who are subsequently delivered successfully per vaginam of a similar-sized or even larger baby. Whilst trial of labour steers the patient between the Scylla of unnecessary caesarean section and the Charybdis of dangerous induction, it is not an infallible means of determining cephalo-pelvic disproportion in all cases.

The management of inlet contraction can be considered briefly under three headings.

1. Prophylaxis

Careful assessment of the high head in the last weeks of pregnancy is essential. In the multiparous patient who has previously lost a baby during the course of an obstructed labour, premature induction of labour is often advisable. Remember that the size of the baby tends to increase in succeeding pregnancies, and that obstructed labour may develop in a woman who has had several successful vaginal deliveries.

2. Early Detection

It is important to diagnose as early as possible that delay in labour is due to disproportion which will eventually cause obstruction if neglected. Early detection while the mother's condition is good and the foetus still alive and well is imperative if good results are to be obtained. Marshall's figures presented to the 12th British Congress of Obstetrics and Gynaecology, analysing 2,276 caesarean sections, showed no maternal mortality if caesarean section was undertaken within six hours of the onset of labour, 0.35% if undertaken within six to twenty-four hours, but 2.49% if labour had lasted over forty-eight hours. Nevertheless, the differential diagnosis of the cause of delay during the first stage of labour between disproportion and incoordinate action is sometimes far from easy. In some cases both conditions may in fact be present.

In cases of disproportion the pattern of uterine action is essentially normal. Upper segment tone increases, but at first there is normal relaxation between contractions which are regular and of normal strength. As the duration of labour increases the lower segment becomes more and more dilated and thinned until ultimately a Bandl retraction ring is formed which is visible in the abdomen. With the drawing upwards of the junction between the upper and lower segments the bladder too is drawn up, so that it becomes easily visible even though it may contain only a few ounces of urine. On vaginal examination the cervix tends to hang down from the head, which is lodged tightly in the brim and becomes progressively more oedematous from prolonged pressure. There is no spasm of the cervix during a contraction of the upper segment. A large caput forms on the head and moulding is excessive. In brim contraction asynclitism is exaggerated and posterior parietal presentation is a bad prognostic sign. The head cannot be pushed down between contractions, nor does it descend during a contraction. Moir and others have shown the value of lateral radiography

during labour in helping to arrive at a prognosis. Once the labour is obstructed lower segment caesarean section must be carried out before foetal distress or death occurs.

3. The Management of Established Obstruction

In some cases the foetus may be dead, and in multipara rupture of the uterus may be imminent. The alternatives of caesarean section and craniotomy are often debated. There is a natural tendency to avoid caesarean section if the foetus is already dead, but the hazards of craniotomy if the head is above the brim, the lower-segment dilated and on the point of rupture, and the cervix not completely obliterated cannot be stressed too strongly. In such cases perforation and embryotomy carry a grave risk of shock, haemorrhage, and trauma. Modern antibiotics have made caesarean section the safer alternative for the mother even though the foetus is dead. The exception to this is the hydrocephalic head. Here, perforation alone is all that is necessary to collapse the head and spontaneous delivery will take place.

The management of obstruction due to the impacted shoulder or brow presentation requires equally careful consideration. In the absence of pelvic contraction the brow

FIG. 2.—Internal podalic version.

presentation can usually be corrected manually to a face or vertex if the cervix is at or near full dilatation, and then a forceps delivery can be carried out. If diagnosed earlier in labour, very soon after rupture of the membranes, bipolar podalic version may be safely undertaken (Fig. 2). Sound obstetric judgment and experience are necessary to decide whether it is safe to carry out internal version when an arm or shoulder presents. If this is done the uterus should always be explored afterwards to make sure that the lower segment has not been ruptured. It is seldom if ever necessary to do a caesarean section for an impacted shoulder presentation with a dead foetus. Decapitation, using a decapitation saw, is not too dangerous or difficult to be undertaken by an experienced obstetrician. The patient is nearly always a multipara and the birth canal dilated so that the neck can be pulled well down into the pelvis before decapitation is undertaken. The transverse lie in the primigravida, due to gross inlet contraction, placenta praevia, or uterine fibroid, is an entirely different problem and always calls for caesarean section even though the child is dead.

Obstruction Associated With Mid-Pelvic Contraction

Mid-pelvic contraction occurs at the level of the ischial spines, the interspinous diameter falling below the normal 10 cm. and the posterior sagittal diameter of the mid-pelvis falling below 5 cm. Mid-pelvic contraction is often associated with the android-shaped pelvis, the fore-pelvis being narrowed and the anterior surface of the sacrum straightened. Often the head descends in the transverse instead of the oblique diameter of the pelvis and becomes arrested at this

level—deep transverse arrest. It is also at this level in the pelvis that obstruction may develop if contraction is present and the foetus is presenting as an extended breech.

The development of obstruction in the mid-pelvis will in most cases only become apparent in the second stage of labour. At the beginning of labour the head may be fixed in the brim, if not actually through it; the first stage proceeds normally and often rapidly, but delay occurs in the second stage. In some cases which are complicated by incoordinate action the cervix may not become quite fully dilated. This seldom occurs if uterine action is normal.

Failure to recognize mid-pelvic contraction accounts for a great many stillborn babies, because only rarely is the contraction so great that the child cannot be pulled through the contracted diameters with axis-traction forceps if enough force is used. In many cases if the occiput is posterior or transverse, correction of the position with consequent reduction of the diameter of the foetal head will enable a successful forceps delivery to be completed. In many cases the position of the foetus is favourable and yet the application of forceps fails to deliver the baby when reasonable force is used. Only experience can educate the obstetrician to know just what strength of pull is reasonable and safe following application when the head has not yet passed the ischial spines.

The application of forceps at this level has come to be known in recent obstetric literature as a trial of forceps. It is something that should never be undertaken deliberately outside hospital and then only by an experienced obstetrician. Few cases of trial labour should be carried to this limit, but it is important for the doctor to realize the possibility of failure of forceps being due to mid-pelvic contraction which may not have been diagnosed before labour. He may encounter such an emergency unexpectedly in domiciliary practice. If the head is very moulded he may think it is below the mid-pelvis, but in that case need experience no shame at removing his forceps and sending the patient to hospital. Caesarean section may be undertaken even at that late stage.

In hospital trial of forceps is legitimate practice, even when these difficult cases have been studied thoroughly by radiography during the antenatal period. It requires much more experience and courage to admit that the baby cannot be delivered safely by forceps than it does to pull out a dead or damaged baby by sheer force. If the baby is already dead, owing to obstruction at this level, perforation and extraction is usually preferable to caesarean section and does not carry the same risk of maternal shock and trauma as when the foetus is obstructed at the pelvic brim. Mid-pelvic contraction may cause difficulty in the delivery of the extended breech, because impaction and obstruction may occur. It is deemed by some that a trial of labour is not possible in a breech delivery. It is reasonably fair to say, however, that if the extended breech is delayed in the mid-pelvic cavity the cause of the delay is not primarily the extended legs but disproportion, due either to mid-pelvic contraction or a very large child. Bringing down the leg may enable the baby to be delivered, but the foetal loss associated with this particular procedure at this level of obstruction is very high and in my opinion caesarean section is justified under these circumstances.

Obstruction at the Outlet

While delay at the outlet is relatively common, true obstruction is rare. It may occur if the foetus is abnormally large and/or in the posterior position. It may occur if there is true bony contraction. Some authorities deny the existence of the latter in the absence of inlet or mid-pelvic contraction, but most obstetricians of experience encounter the occasional funnel pelvis. Contraction of the intertuberous diameter below the normal 10 cm. does not necessarily lead to outlet dystocia provided the posterior sagittal diameter is generous, so that the head can be born posteriorly instead of close to the symphysis pubis. Very rarely obstruction at the outlet is due to extensive stenosis of the vaginal introitus due to scarring, or to soft-tissue tumours of the vagina

(fibromata, cysts of Gartner's duct, etc.). Vulval scarring enough to cause outlet dystocia is hardly ever seen in this country, but in the Kikuyu women of Kenya and in other native tribes where female circumcision is still practised it is a relatively common occurrence.

The management of outlet obstruction is always difficult if the foetus is still alive and normal. Generous episiotomy, if necessary passing wide of and behind the anus, increases the available space enormously, so that the baby may be delivered safely with forceps even face to pubis. Bony contraction so gross as to cause genuine outlet obstruction only rarely remains undetected until so late in labour. The choice in such cases falls between a difficult caesarean section and the operation of symphysiotomy. The latter operation has received something of a revival lately, but is only rarely undertaken and then only at the hands of those who are experienced in the operation. If the child is already dead or is abnormal—for example, hydrocephalic—perforation is not difficult or dangerous at this level.

While outlet contraction and disproportion are not uncommon in a minor degree and in association with contraction of the brim or cavity, true outlet obstruction due to bony contraction is very rare. Delay and minor disproportion can usually be overcome by generous episiotomy, an operation also necessary in cases of gross cicatrization of the soft tissues.

Space does not permit of more than a passing mention of obstructed labour associated with organic rigidity, stenosis, or atresia of the cervix. Suffice it to say that it is a relatively uncommon condition, most cases of so-called rigid cervix being in fact examples of cervical spasm or associated with hypertonic uterine inertia. Nevertheless, cases of organic stenosis do occur; reports of complete annular detachment of the cervix from the pressure of the advancing head have been recorded. In most cases caesarean section is necessary, but incision of the cervix (Dührssen's incisions) may be carried out, but only if bony disproportion at all levels in the pelvis can be ruled out for certain.

Modern antibiotics have made caesarean section late in labour a procedure which is relatively safe for the mother and child. By its use we can often escape from the consequences of poor judgment and carelessness. The better our antenatal care the fewer will be the examples of obstructed labour that we shall encounter, except those which occur during the course of a planned trial of labour. A steady decrease in the incidence of obstructed labour is one of the most spectacular successes of modern antenatal care.

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An outstanding problem in Singapore to-day, according to the *Medical Department Annual Report, 1953*, is the provision of facilities for out-patients. Immediately before the 1939–45 war the annual attendance of out-patients was 87,000, in 1947 it was over 305,000, while by 1953 the figure had reached 957,000. “This development,” writes Dr. W. J. VICKERS, the director of medical services, “is quite different to that in the United Kingdom and elsewhere in that the public has created and demands a direct patient-clinic service without the intervention of the private general medical practitioner.” The demand has been met by the Government providing a National Health Out-patient Service in its hospital divisions.