

General Practice Series

THE PROBLEM OF DELAY IN THE FIRST STAGE OF LABOUR

T. ST. VINCENT BUSS, B.A., M.B., CH.B., M.R.C.P.I., F.R.C.O.G.

Senior Lecturer, Department of Obstetrics and Gynaecology, Cape Provincial Administration and University of Cape Town

Abnormal labour characterized by delay in the dilatation of the cervix constitutes one of the most difficult and worrying problems in obstetrics and it requires much care and patience on the part of the practitioner conducting the case, to ensure a successful result. Although labour lasting more than 48 hours is usually defined as prolonged labour, there is no doubt that the danger to both mother and foetus tends to increase after 24 hours. After 48 hours these dangers increase rapidly.

Dystocia of the first stage is usually ascribed to faults in the powers, the pelvis and the foetus. It is important to remember, however, that in most cases there is a combination of factors. A well-known example of such a combination of factors is the common co-existence of uterine inertia and the occipito-posterior position of the head. Whatever the underlying cause may be, the final result is a failure on the part of the powers to terminate the first stage successfully.

UTERINE INERTIA

The classification of inertia into primary and secondary has, in the past, tended to lead to some confusion owing to the different interpretations placed on these terms by various authorities. In this paper these terms have been abandoned in favour of inertia in the first and second stages of labour.

Inertia in the First Stage of Labour

Abnormal uterine action during this stage may be divided into: (1) Hypotonic uterine inertia, and (2) Incoordinate uterine action.

1. *Hypotonic uterine inertia.* This type of inertia is uncommon, and is characterized by contractions that are weak and of short duration. The contractions are irregular in time and the intervals between them are prolonged. This unsatisfactory state of affairs may persist for days, but providing the membranes are intact and that no complicating factor, such as cephalo-pelvic disproportion, is present, the labour may be allowed to continue without the mother and foetus being unduly exposed to harm.

2. *Incoordinate uterine action* (reversed polarity; colicky uterus). In the normal first stage of labour a uterine contraction is initiated in the fundus, and a wave passes down towards the lower segment. At the same time the cervix is 'taken up' and the os dilated. This is termed 'uterine polarity'.

In incoordinate action this normal mechanism fails and, despite contractions, the lower segment and cervix remain

in a state of spasm and the cervix fails to dilate. This type is sometimes called hypertonic inertia as opposed to the hypotonic variety. It is, however, doubtful whether an increased intra-uterine pressure is present in these cases. The contractions are irregular in strength, time and duration, and the amount of pain which the patient complains of is often out of all proportion to the degree of the contraction. The pain, which tends to precede the onset of the contraction, persists for some time after the contraction has ceased, and at the same time, the patient complains bitterly of persistent pain in the sacral region of the back. Vaginal examination may show that the cervix is thick, only partially dilated and not well-applied to the presenting part. Even in the absence of disproportion the presenting part may remain high as a result of spasm of the lower uterine segment.

Factors which Tend to Influence the Progress of the First Stage of Labour

1. *Mechanical factors.* The occipito-posterior position is probably the commonest factor associated with uterine inertia and this malposition should be considered and excluded if labour commences in an unsatisfactory manner.

When the duration of pregnancy has been prolonged beyond the estimated date of delivery, labour, when it commences, is apt to be prolonged. Here, too, an occipito-posterior position of the head is commonly a complicating factor.

In other cases cephalo-pelvic disproportion and malpresentations may be associated. Brow and face presentations are usually secondary phenomena that develop subsequent to the onset of labour. The underlying cause of the inertia in these cases is possibly the result of the presenting part being unable to exert pressure on the cervix and thereby interfering with the reflex stimulation of the upper segment.

The 'dystrophia dystocia syndrome' is sometimes encountered in primigravidae who belong to an interesting physical type. These patients are usually short and stocky. There is a thick deposit of fat around the pelvis and they have a male distribution of the pubic hair. The menstrual history is usually typical—the menarche is late, and menstruation, when it does occur, is accompanied by severe primary dysmenorrhoea. The patient is relatively infertile and has an android type of pelvis. If the patient falls pregnant the labour is prolonged, unsatisfactory, and frequently complicated by an occipito-posterior position of the head.

2. *Premature rupture of the membranes.* It is now accepted that premature rupture of the membranes is a result, and not the cause of prolonged labour. The fact that the membranes have ruptured does not adversely affect the course of the labour. On the contrary, intact membranes in the absence of other complicating factors may well delay the first stage and timely artificial rupture can rapidly improve the course.

3. *Parity.* The majority of cases of uterine inertia occur in primigravidae and it should be noted that a recurrence of the dystocia is unlikely in subsequent pregnancies. The incidence of prolonged labour tends to be higher in elderly primigravidae.

Inertia of a severe type may also complicate labour in multigravidae who have had a number of children in rapid succession, and who show evidence of marked uterine obliquity or pendulosity of the abdomen.

4. *Cervical dystocia.* Occasionally the cervix itself may be at fault and remain undilated despite normal uterine action. The term 'rigid cervix' has been given to the type where, despite being well applied, a hard undilated rim of cervix is present at the external os. This condition is rare, occurs in primigravidae and does not tend to recur in subsequent pregnancies. Slow dilatation of the cervix may also occur in cases where previous operations, such as amputation, have been performed or where the cervix is the seat of a chronic infection. Carcinoma of the cervix is another cause of non-dilatation. The anterior lip of the cervix may become compressed between the presenting part and the symphysis pubis during labour, and dystocia may result from the development of swelling of the anterior lip.

An interesting, though rare, complication is known as 'atresia' of the cervix (conglutination of the external os). Here the external os remains closed although the cervix is well taken up. On examination the thinned external os may be represented by a small dimple, or it may even be completely absent in which case the cervix is felt as a thin membrane over the presenting part. Where a dimple is present gentle pressure on it will result in its perforation. If no external os is apparent, a small cruciate incision may be made over the approximate site of the external os. In either case rapid dilatation usually follows.

5. *Constriction-ring dystocia.* Both types of uterine inertia may be complicated during the first stage by the formation of a constriction ring, but whether this is a cause or result of the inertia is not known. Localized annular spasm of the uterus occurs; and although the spasm may develop anywhere above the level of the internal os, in practice it is commonly found at the junction of the upper and lower segments, i.e. at the level of Bandl's ring or the retraction ring.

6. *Over-distension of the uterus.* Contrary to previous statements, cases of over-distension of the uterus resulting from multiple pregnancy or hydramnios and uterine fibroids, are rarely followed by dystocia in the first stages of labour. Emotional factors have also been overrated as a cause.

THE SYMPTOMS AND SIGNS OF PROLONGED LABOUR

1. Maternal

During the first 24 hours the unsatisfactory state of the labour may have little effect on the patient's general condition. However, as the hours pass she tends to become worried and anxious, and later restless and distressed. Pain, which

may not be significant in the hypotonic type of inertia, sometimes becomes extremely severe and prolonged in the presence of incoordinate action. Backache is intense, and the pain may also be referred to the rectum. This will tend to produce a desire to bear down despite the fact that the cervix is not fully dilated. Bearing down at this stage must be resisted rigorously because it will increase the oedema of the cervix and add to the difficulties of labour. Later, a rising pulse and temperature will appear and intractable vomiting may develop. Difficulty in emptying the bladder is experienced and the bowel becomes distended. Ketosis with acetone-urea develops. In neglected cases the exhaustion and dehydration become more aggravated and a rising Bandl's ring may indicate the approach of rupture of the uterus.

On vaginal examination the presenting part may be found to be high with the cervix partially dilated and ill-applied to the presenting part. In these cases it is common to find a thick cervix hanging down into the vagina. The membranes usually rupture early and a caput succedaneum may be evident. The vagina in the later stages becomes hot and dry and oedema of the vulva may be present.

2. Foetal

A careful watch should be kept on the foetal heart. Although the foetus is reasonably safe while the membranes are intact, there are exceptions to this rule, and marked distress may develop before rupture takes place. A rising foetal heart rate up to 160 or 180 per minute is significant because it is an early indication of foetal distress and because it usually precedes the ominous slowing of the rate. The development of irregular rhythm and strength is also of grave import. The presence of meconium is a further sign of distress. Apart from the foetal risks inherent in the prolonged labour an added complication may be sudden foetal death resulting from prolapse of the cord.

THE MANAGEMENT OF PROLONGED LABOUR

1. The Value of Antenatal Care

A factor of major importance in antenatal care is the correct doctor-patient relationship. A mutual feeling of confidence is essential. With adequate antenatal care the patient should be free of all fear of the impending labour and she should be taught to approach it in a spirit of pleasant anticipation. The value of relaxation as an adjunct to this approach is fully appreciated.

Many of the complications leading to prolongation of the first stage can be diagnosed and dealt with before labour occurs. It is obvious, however, that factors such as uterine inertia cannot be anticipated and these will have to be dealt with as they arise.

Where disproportion is suspected, a careful pelvic assessment should be made at about the 36th week in an attempt to determine whether any diminution in the pelvic capacity exists. At the time of writing this paper pelvic radiology is suspect on account of the possible dangers to the foetus. It is therefore better to avoid radiological examinations until the matter has been clarified. Suspected hydrocephaly is, however, an exception—the value of a correct diagnosis here outweighs any possible disadvantages.

2. Management of a Case of Abnormal Labour

It is essential that all cases showing evidence of an abnormal onset of labour should be managed in an adequately

equipped maternity hospital. Constant attention is necessary and all facilities should be available for dealing with any sudden emergency. While the majority of cases will proceed to a successful conclusion, a small percentage will require operative interference, and it is only by careful observation that these cases can be properly assessed.

The fundamental points in the management of abnormal labour are: (1) Freedom from worry, (2) freedom from pain, (3) adequate sleep, and (4) adequate nourishment. The drug of choice used to achieve freedom from worry and pain and adequate sleep is still morphine, although lately pethidine in doses up to 200 mg. has been extensively used. The possible depressant effects of these drugs on the foetus can now be counteracted by the use of Lethedrone (Burroughs Wellcome and Co.). This is a specific antagonist to morphine, pethidine and similar drugs, and it is either given as an injection of 10 mg. to the mother shortly before delivery, or to the infant (0.5-1 mg.) after birth.

Glucose is of value in providing nourishment and in combating the acidosis which may develop. The oral route is better avoided, however, because glucose, if inhaled into the air passages, is an irritant. The danger of inhalation of glucose must be considered as a definite possibility owing to the common tendency of these patients to vomit. A 10%-glucose infusion given intravenously is the method of choice.

3. The Use of the 'Pitocin Drip'

In an attempt to improve the uterine contractions the pitocin drip may be tried. The use of the oxytocic, however, requires careful management and should only be used where the patient is in a hospital and under constant medical supervision. The '2-bottle technique', where glucose is first run into the vein, is advised because in this method there is no danger of an excessive amount of pitocin being administered at the commencement of the treatment.

Most authorities agree that cases treated by the pitocin-drip method should be carefully selected, and the most suitable type of case is one of hypotonic inertia where no evidence of disproportion or mechanical obstruction to delivery is present. It is usually conceded that pitocin is contra-indicated where incoordinate action is present, since it may initiate tetanic contractions of the uterus leading to the death of the foetus and possible rupture of the uterus.

It is of interest to mention that Theobald and Muirhead¹ disagree with the opinion expressed here. They maintain that, provided the primary drip does not exceed a concentration of more than 1 in 5,000, and that no untoward alterations occur in the rhythm or rate of the foetal heart during the first half hour, pitocin can be used in all types of prolonged labour during the first stage. Their routine

is to commence the drip with a concentration of 1 in 10,000 and on no occasion do they exceed 1 in 2,500. In addition to the pitocin drip they rely on early low rupture of the membranes and heavy sedation. They claim that this triple form of treatment reduces the incidence of Caesarean section to the minimum.

While the membranes remain intact the patient and foetus are reasonably safe. Nevertheless, a careful watch should be kept on the foetal heart. Once the membranes have ruptured both the maternal and foetal dangers increase the longer the labour lasts.

The main object in uterine inertia is to encourage full dilatation of the cervix so that a spontaneous delivery can occur. Alternatively, the second stage can be completed by using forceps to extract the foetus.

In a small percentage of cases, where the cervix remains undilated, or where evidence of threatened maternal or foetal distress is developing, the labour should be terminated by means of a lower-uterine-segment Caesarean section. Attempts at vaginal delivery before full dilatation should be discouraged.

4. Vaginal Examination during Labour

The only satisfactory way of determining the cause of an abnormal onset of labour is by a vaginal examination. Owing to the potential danger from infection, however, this should be done with strict aseptic precautions. This examination affords an opportunity of determining the presentation of the foetus and ascertaining whether or not the cervix is well applied to the presenting part. The thickness and amount of dilatation of the cervix should be noted, and an attempt made to feel whether the cord is presenting or not. A second vaginal examination should be made after 12 hours or following rupture of the membranes. A malpresentation not previously diagnosed may be apparent at this stage. Further vaginal examinations should not be neglected if they are considered necessary. The rectal examination, to my mind, is unsatisfactory, and can be dangerous because it may give misleading information.

The Prognosis

An obvious question that the mother will ask (and she is usually a primipara) is: Am I going to have the same difficulty during subsequent pregnancies? If the delivery has terminated naturally or by the aid of forceps the chances of a normal delivery in the next pregnancy are good. Where a Caesarean section has had to be performed the future prognosis should be more guarded, but even here more than 50% of cases have a good chance of a vaginal delivery in a subsequent pregnancy.

REFERENCE

1. Theobald, G. W. and Muirhead, J. M. B. (1956): *J. Obstet. Gynaec. Brit. Emp.*, 63, 641.