REFRESHER COURSE FOR GENERAL PRACTITIONERS

DELAY IN THE SECOND STAGE OF LABOUR

BY

T. N. A. JEFFCOATE, M.D., F.R.C.S.Ed., F.R.C.O.G.

Professor of Obstetrics and Gynaecology, Liverpool University

"We seek to determine not what a woman can endure, but what she can accomplish."—BARNES.

The upper limit of normality for the duration of the second stage of labour is arbitrarily fixed at two hours in a primigravida and one hour in a multipara, and in neither should the presenting part remain on the perineum for more than one hour. These figures, however, are for general guidance only, and more important than time is the progress of labour and the condition of the mother and child. When the mother is handicapped by systemic disease, or when the foetus is small and feeble, a second stage measured in minutes may be all they can withstand, whereas in a young and healthy woman with a well-developed child sustained by an efficient placenta labour may continue for several hours without either suffering harm. In the latter case there is everything to be said for conservatism while the presenting part is in the mid-pelvis, but when it is arrested at the outlet it is wrong to wait on the clock before giving assistance. A timely episiotomy or simple low-forceps delivery prevents rather than causes permanent soft-tissue damage to the mother, and minimizes the chances of foetal injury and asphyxia. Foetal distress and failing uterine action should be anticipated if possible, for when either is established the risks of operative delivery are increased. In each case there is an optimum time for intervention, and this is determined by clinical observation and judgment. But in deciding whether and when to intervene the practitioner must take into consideration not only his own experience and ability but the conditions under which he is working, recognizing that the more deficient these are the more urgent must be the indication for meddling with Nature.

Causes of Delay

The causes are so well known that they do not require comment, and a list of the more important ones will suffice. Two or more causes—e.g., occipito-posterior position and inefficient uterine action, often occur in association.

1. *Forces*.—(a) *Incoordinate uterine action or inertia*, usually with an underlying minor degree of mechanical difficulty. (b) *Poor voluntary effort* owing to faulty instruction, nervousness and loss of morale, exhaustion, or overdosage with analgesics.

2. *Passages*.—(a) *Full bladder or rectum*. (b) *Unusually resistant perineum or vagina*. (c) *Contraction of bony outlet*, rarely enough to prevent the delivery of a live child, but a potent cause of extensive perineal lacerations. (d) *Contraction or deformity of the pelvic cavity*.

3. *Passenger*.—(a) *Large foetus*—an important factor and one likely to operate with increasing parity. (b) *Malposition and malpresentation*—especially persistent occipito-position and transverse arrest. (c) *Malformations*—e.g., the large head in hydrocephaly or the broad shoulders in anencephaly.

Approach to the Case

No decision regarding treatment should be made until the case has been fully investigated. The condition of the mother and foetus must be assessed and the cause of the delay determined. Never assume that the cause is merely

inefficient uterine action or lack of co-operation on the part of the patient without first making certain that these are not really the result of malpresentation or malrotation of the occiput. Close observation of uterine behaviour for a few minutes is well worth while, and meantime a careful abdominal and vaginal examination can be made. Provided reasonable care is taken over asepsis, vaginal examination involves very little risk and should never be omitted. It should be carried out methodically, if need be under general anaesthesia, and its first object is to make sure the cervix is fully dilated. On this point the most skilled attendant can be misled by bearing-down efforts, rupture of the membranes, and the findings on rectal examination.

Having confirmed the stage of labour and that the head is presenting, the position of the presenting part must be determined accurately. This means identifying the sagittal suture and the fontanelles or, if they are obscured by caput, the ears or other features of the skull. Next diagnose the "station" or degree of descent of the presenting part in the pelvis; and here the important landmarks are the ischial spines. If the vertex is on a level with these it usually means that the head is engaged. Again a warning is necessary: extreme moulding and excessive caput formation can deceive even experienced obstetricians into thinking the head is lower than it really is. Indeed, such changes can result in part of it being visible at the outlet when the widest diameter is still above the brim. The perineum and vagina should be palpated and the size and shape of the pelvis estimated. Is the transverse diameter of the outlet contracted and the subpubic angle narrow? Are the ischial spines prominent and set close together? Is the cavity cramped? The size of the foetus also is assessed during abdominal and vaginal examinations.

The treatment depends on (a) the cause of the delay, (b) the nature and position of the presenting part, (c) its station in the pelvis, and (d) the capacity of the pelvis at and below the level of arrest, but in *domiciliary* practice is governed by the following overriding principles:

1. There should be no attempt at operative delivery unless (a) the cervix is fully dilated, (b) the presenting part is below the level of the ischial spines and preferably is visible at the introitus, (c) a catheter has been passed, and (d) the operator is confident that he can effect delivery without using undue force or causing injury to mother or child.

2. If difficulty is envisaged the patient should be transferred to hospital, or a consultant called—depending on the circumstances. In many areas a "flying squad" based on a hospital unit is now available and should be used.

3. If forceps delivery or other operation should prove more difficult than anticipated it is better to desist at once than to continue with more strenuous efforts or resort to heroic but dangerous manœuvres such as internal version or craniotomy.

4. It is not enough to protect the mother—it is equally important to safeguard the life and health of the child; but if the latter is already dead it should be delivered in a manner which is safest for the mother.

Treatment

Assuming the child is alive, normally formed, and presenting by the vertex, and assuming that simple treatments such as instruction and encouragement in bearing-down effort, relief of pain, and emptying of the bladder are not all that is necessary, the treatment of second-stage delay can be reduced almost to two alternatives—episiotomy or forceps delivery—and these are considered below in more detail. Sometimes, however, when the membranes are tough, all that is needed to promote a rapid conclusion of the second stage is to rupture the forewaters. Sometimes in multigravidae when the sagittal suture remains in the oblique or transverse diameter, forward rotation of the occiput may be favoured by inserting two or more fingers into the vagina to promote flexion and to act as an inclined plane against which the foetal head is driven with each pain.

Except in the rare condition of contraction-ring dystocia there is no place for treating inefficient uterine action in the second stage by means of analgesics and antispasmodics. In practice the uterus is rarely, if ever, completely inert at this stage, and if uterine action is failing it is the obstetrician's duty to intervene before it deteriorates further. To wait longer does no good and only increases the risk of third-stage and post-partum haemorrhage. Many practitioners have used oxytocin with satisfactory results in second-stage inertia. If given at all it should only be to multiparous women when the head is on the perineum and when malposition and disproportion have been excluded, and the intramuscular dose should not exceed two units. Even with such safeguards the practice is not free from danger; posterior position of the occiput may be overlooked, the multiparous uterus can rupture at the slightest provocation, and a violent uterine response may kill the foetus or rupture the birth canal. Low forceps delivery is usually a safer procedure.

Episiotomy.—Episiotomy is the ideal treatment when the presenting part is arrested at the outlet, but by itself it will not be sufficient unless the perineum is well distended and the introitus gaping. It is nearly always indicated as an adjunct to forceps delivery. If the incision is correctly placed the danger of injury to the anal sphincter, and overstretching of the vaginal walls and their investing fascia and muscular tissue, are avoided. Episiotomy also reduces the chances of intracranial injury to the child, and makes any operative delivery much easier to perform. Various incisions are described, but the best is either a medio-lateral straight cut starting in the midline at the fourchette and directed backwards and to one or other side to a point midway between the anus and the ischial tuberosity, or a J-shaped incision starting as before, keeping a little nearer to the middle line until the anal sphincter is approached, and then curving well away to the side. If the perineum is short the incision may have to extend into the ischio-rectal fossa behind the line of the anus. On no account should bilateral episiotomy be performed; it interferes with the blood supply to the perineum and poor healing results. Any incision must be carefully repaired in layers when delivery is complete.

Forceps Delivery.—Under no circumstances should forceps be applied before the widest diameter of the head has passed the pelvic brim, and it should be recognized that even a mid-forceps delivery can be a hazardous undertaking. When the foetal head has not reached the pelvic floor it is nearly always incompletely or faultily rotated, and its manipulation followed by the accurate cephalic application of the blades is often difficult—even for the expert working in the best conditions. Indeed, in certain cases caesarean section is preferable to a difficult mid-

forceps delivery. As a rule in domiciliary midwifery the vertex should be well below the level of the ischial spines and visible at the introitus before the operation is undertaken (Fig. 1). It follows that the case suitable for delivery at home never requires more than the simplest pattern of light curved or straight forceps. There is no place for the pelvic application of the blades to a head lying obliquely or transversely, and for its forcible delivery. The application must always be cephalic and be preceded by manual rotation of the head to the antero-posterior diameter whenever necessary. When the position remains L.O.A. or R.O.A. the blades can still be applied to the sides of the foetal head and then lie in the oblique diameter of the out-

let. If the handles of the forceps do not come together easily the blades are not accurately placed and should be re-applied. Although in hospital special forceps such as Kielland's can be used for rotating the head, forceps rotation should never be attempted in domiciliary practice. In a few cases when rotation proves difficult, and when the head is already on the perineum (but not when it is higher in the pelvis), it is permissible to deliver the child face to pubes. This is particularly true if the pelvis is relatively large from before backwards and narrow from side to side (anthropoid). Episiotomy is always desirable in forceps delivery, and when the foetal occiput is posterior it is essential.

The lithotomy position is best for all operative deliveries, and this can be achieved in domiciliary work by putting the patient across the bed with the legs supported by the straps of an "obstetric help."

FIG. 1.—The head in four degrees of engagement: the uppermost is not engaged, the second is just engaged, the third is well engaged, and the lowermost is at the outlet. The head should be in either of the two lower positions before forceps delivery is attempted in domiciliary practice.

Anaesthesia

The safe and easy performance of the above operations depends to a large extent on anaesthesia. The stomach empties slowly during labour, and the induction of inhalation anaesthesia in a woman embarrassed by a large abdominal tumour, and unprepared, involves considerable risk of vomiting and inhalation asphyxia or pneumonia. Long labour also often means starvation, which leaves the liver unprotected and very vulnerable to chloroform. Ether and chloroform inhibit uterine action and play a significant part in the increased risk of third-stage and post-partum haemorrhage, which is well known to attend instrumental delivery for prolonged labour. General anaesthesia also prejudices the outlook for the child, especially if it be small and weakly, or anoxaemic. Nevertheless, if these dangers are recognized they are minimized, and, provided the patient has received liberal amounts of glucose during labour, light chloroform anaesthesia has much to commend it for easy low-forceps delivery in domiciliary practice.

Intravenous sodium thiopentone is also appropriate. Inhalation anaesthesia should be kept at the lightest possible plane at the time of actual delivery and should not be continued during the repair of an episiotomy or perineal tear. Difficulty with the third stage should be expected and anticipated, and if it occurs there is much to be said for immediate manual removal of the placenta followed by the intravenous administration of 0.5 mg. of ergometrine.

Local analgesia (Fig. 2) avoids all the above risks, and with a patient who is reasonably co-operative is the ideal for the simple type of operations carried out in the home.

FIG. 2.—Arrangement of nerves to be blocked in local analgesia of the perineum.

It is not only safe but efficient, and it allows the single-handed obstetrician to work without hurry and anxiety. For episiotomy and its subsequent repair all that is necessary is to infiltrate the line of the incision with 0.5 or 1% procaine solution. For low-forceps delivery the main essential is to block the pudendal nerve as it rounds the ischial tuberosity. Several techniques are described, and none is difficult to learn. A weal is raised at the point midway between the anus and the ischial tuberosity on one side. The adjacent tissues, and in particular the line of a proposed episiotomy incision, are infiltrated. With the finger in the vagina (some prefer the rectum in order to ensure that the bowel is not punctured) the ischial spine is identified and a long needle is guided from the original weal up to the spine. About 10 ml. of procaine solution is injected around the spine and in the area between it and the inner aspect of the ischial tuberosity. The needle is then redirected parallel to the lateral wall of the vagina, and the levator ani muscle, together with the fascia above and below it, is infiltrated. Finally the needle is passed forwards subcutaneously through the labium majus towards the mons, and solution injected along its tract to interrupt local cutaneous branches. The opposite side is then treated in like manner. The total amount of procaine solution used need never exceed 100 ml. of 0.5%, and about half this amount is usually sufficient. If the pudendal nerve is properly blocked the superficial tissues require very little

attention. Gentle operating is essential to success. Whereas with general anaesthesia it is unnecessary and wrong to await each uterine contraction before exerting traction with forceps, when operating under local analgesia it is imperative to do this and, as the woman bears down, a smooth pull should be made in the direction taken by the handles of the forceps at that time.

Delay in Delivery of the Shoulders

A disconcerting and sometimes serious complication of childbirth is delay in the delivery of the shoulders. If malformations of the trunk are excluded the usual cause is an over-weight child with broad and incompletely rotated shoulders. Indeed, when the baby is large this trouble should always be anticipated. In such case do not apply traction or lateral flexion to the head lest the cervical nerve roots be damaged. If the shoulders have entered the pelvis, skilfully applied fundal pressure with or without episiotomy often overcomes the difficulty, but, if not, a finger should be inserted into and across the posterior axilla to assist rotation and apply traction at the time of a uterine contraction. Arrest of the shoulders at the pelvic brim is recognized by the difficulty in freeing the head from the introitus, and presents a more serious problem. Suprapubic pressure on the anterior shoulder may secure its engagement. With a hand in the vagina the posterior shoulder, which always lies lower, can sometimes be rotated to the front and lifted out from under the pubic arch. Failing that, the posterior arm may have to be brought down over the foetal chest and delivered.

Prevention and Anticipation

Although delay in the second stage sometimes occurs when least expected and may be unavoidable, it can in many cases be prevented or at least anticipated. During pregnancy, assessment of the shape and size of the pelvic cavity and outlet, as well as the brim, is essential. Within certain limits this can be done quite efficiently by ordinary clinical examination, and where doubt arises x-ray pelvimetry, which has developed considerably in the last ten years, may help. If it is to be useful, however, it must be done by a radiologist with special experience in obstetric work, and the interpretation of his findings demands caution. Pelvic measurements, and especially those of the outlet, should not in themselves be allowed to direct treatment; they are merely one factor to be taken into consideration. The age and development of the pelvic musculature also need to be assessed antenatally, and the size of the foetus kept in mind during the weeks immediately preceding labour. When any factor likely to give rise to mechanical difficulty is found, the patient should be referred for a second opinion, and as a rule hospital delivery is indicated. There is no useful treatment for a posterior position recognized antenatally. Education of the expectant mother in the physiology of labour is of great value in assuring her efficient co-operation in the second stage. Antenatal exercises in relaxation are also in vogue and may help, although their intrinsic merit has not yet been proved.

During the first stage of labour much can be done to avoid difficulty in the second. Here the most important feature is adequate sedation and maintenance of morale. If the woman enters the second stage already exhausted either nervously or physically it is unlikely she will complete the delivery. Relaxation should be the keynote of the first stage, and no bearing-down efforts be allowed until it is absolutely certain that the cervix is fully dilated. It is better for the patient to begin expulsive efforts too

late than too soon. When she does, the greatest care should be taken to see that she works to the best advantage. "Fifteen minutes devoted to careful direction of the powers at the beginning of the second stage are more valuable than two hours of harsh exhortation after the patient has become fatigued" (Beck).

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RHEUMATIC DISEASES AS DISEASES OF ADAPTATION

PROFESSOR HANS SELYE'S HEBERDEN ORATION

Professor Hans Selye, of Montreal, divided his Heberden Oration before the Heberden Society into two parts, delivering the first on June 2, and the second on the following morning. Both were delivered in the Old Library of B.M.A. House, which was packed to the doors. Dr. W. S. C. Copeman presided.

The subject chosen was "Rheumatic Diseases as Diseases of Adaptation." In the first part Professor Hans Selye gave an outline of the theoretical basis of treatment directed against the stress factors in disease, and illustrated the development of this concept by what he called a somatic sketch of the various physiological relations. Any disease or any exposure which might be within the limits of the physiologically normal would not only cause damage but would also stimulate defence. The same exposure to stress might produce manifold and varied results, the particular result being conditioned by hereditary or dietary or many other factors.

The clinical applicability of this concept had been made possible thanks to the enormous advances made by organic chemists, who had furnished the hormones which were essential to the working out of the hypothesis on the clinical plane. He mentioned in particular the work of Kendall and of C. H. Li. Considerable credit must also go to the clinicians who first described the clinical applicability of this type of therapy, especially to Philip Hench, who was his predecessor as Heberden orator two years ago.

Clinical Demonstrations

Professor Hans Selye then showed by means of comparative photographs the rapid clinical improvement and even cure brought about in certain cases by A.C.T.H. or cortisone. His first example was of rheumatoid arthritis of the elbow joint. Within four days of the administration of A.C.T.H. the relaxation of the joint was such as to permit the normal raising of the arm, which had only been very restricted before. The result seemed to be due to the great absorption of the granulation tissue which had accumulated around the joint. In another case of rheumatoid arthritis with swollen fingers there was marked regression within five days of the administration of A.C.T.H.

The next case demonstrated was one of lupus erythematosus. This patient came under treatment when she was almost moribund. She received A.C.T.H. at once. Before treatment she had the butterfly rash on the face, high fever, and extremely rapid sedimentation rate. A.C.T.H. was given in divided doses several times a day. Within a few weeks the skin of the face was completely normal, the fever had subsided, and the sedimentation rate was normal. Unfortunately it was to be observed that the facial expression had changed. Cushing's disease, with the typical "moon face," made its appearance. The patient had exchanged a fatal lupus erythematosus for Cushing's disease with its vascular hypertension, hirsutism, adiposity, and osteoporosis. But he was happy to add that, the A.C.T.H. administration having been stopped a few days subsequent to the picture revealing the Cushing's syndrome, the unusual manifestations disappeared completely and the lupus did not recur. The patient was now

a lovely-looking girl in perfect health. Recurrence of the disease must, of course, always be feared, sometimes almost immediately following withdrawal of treatment, sometimes a few weeks later, but this was an exceptional case.

Psoriasis was another disease of adaptation. It fitted in very well with what was known about changes in the collagen. He showed illustrations of a very bad case of psoriasis, one of the worst he had ever seen, and drew attention to the intense scaling. A few days after treatment—in this instance with cortisone, though A.C.T.H. acted in exactly the same way—the granuloma became acellular and starlike, and eventually there was completely healing. There were, however, several cases of psoriasis which were very resistant, and the reason for their resistance was still unknown.

Other Diseases of the Group

Gout was another disease of this general group. It did not belong to the collagen diseases in the strict sense of the word, but before A.C.T.H. had ever been conceived the attention of the medical profession was drawn to the consideration that gout might be a disease of adaptation. A gout attack might be produced by certain forms of stress—surgical shock, exposure, infections, etc.—and, based upon that, it was demonstrated early in 1948 in people who suffered from gout but were not having a gout attack at the time that gout could be precipitated by A.C.T.H. In these cases of predisposition not only could an attack of gout be precipitated by A.C.T.H., but, if smaller doses were given and given more gradually, the effect was to deplete the body of the uric acid store and so prevent an attack. An attack of gout could be precipitated or prevented, according to circumstances, by A.C.T.H. The orator showed photographs of a typical case of gout and of the same case only a few days later after the tophi had liquidated and the patient was much relieved.

A case of pancarditis treated with cortisone was next demonstrated. This was in a young boy who came to hospital with severe rheumatic pancarditis, so severe that it might be said that he was moribund. He was given cortisone in large doses in view of his condition, and here again there was clearance. Until a water-soluble cortisone was available—as he thought it would be within the next year—it was well to remember that A.C.T.H. was the more rapidly acting drug.

At this point the orator mentioned certain of the important laboratory findings in cortisone treatment—the temperature, the erythrocyte sedimentation rate, the ketosteroid excretion rate, and finally the eosinophils. In the case of pancarditis just mentioned the temperature before treatment was 103° F.; it suddenly dropped to normal within a couple of days, and remained low during the whole of the treatment. The ketosteroids rose rapidly with cortisone administration and then fell equally rapidly. Eosinophilia went back rapidly under the influence of cortisone, returning when treatment was discontinued. It had been proved that the characteristic blood changes were not due to any metabolic alteration, but to cortisone given by itself or liberated by A.C.T.H. There were very few, if any, changes with A.C.T.H. which did not also occur with cortisone.

Ophthalmic Conditions

He turned next to eye conditions. Many of the acute inflammations of the eye had been repeatedly referred to as of the rheumatic type. The rheumatic and allergic types were from a morphological point of view difficult to separate, and it was amazing how many entirely different conditions could be dramatically improved and in some cases brilliantly cured by A.C.T.H. or cortisone therapy. His first example was a case of conjunctivitis vernalis which, within 48 hours of the administration of the therapy, was almost normal, and a few days later completely normal. Another was a case of herpes zoster of the eye in a woman aged 64, which cleared up within four days of cortisone administration. Another was a case of acute choroiditis. This was first treated with a hormone derivative which had a cortisone-like action. The pharmaceutical industry in Canada had paid attention to a number of steroid derivatives of cortisone, but although he had tried all these so-called cortisone substitutes he had never been able quite to convince