An Address

ON

THE INSTRUCTION OF MIDWIVES IN THE SYMPTOMS AND SIGNS OF ABNORMAL LABOUR.*

DELIVERED AT GUY'S HOSPITAL.

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THE Midwives Act affects medical men in many ways, and one of the most important is the advice you will be expected to give the authorities under the Act concerning its provisions. In a case of abnormal labour the midwife must call in a doctor, and the medical profession is expected to teach midwives the symptoms and signs which indicate that labour is about to become, or has already become, abnormal. The subject is one of great moment, because, upon the early recognition by the midwife of unfavourable symptoms and signs, followed by the prompt calling in of a doctor, will depend the welfare, and in some cases the life, of the mother or of the child, or of both.

In teaching midwives on abnormal labour, you should begin by pointing out that when engaged to attend a woman in her confinement, or when called to a case already in labour, the midwife can at once observe whether the mother is well and properly developed. She should notice if she is narrow across the pelvis, and if there be any doubt, measure the distances between the crests of the ilia and between the anterior superior spines, which ought to be about 11 in. and 10 in. respectively. If both are below 10 and very nearly alike, she has a contracted flat pelvis, and trouble is likely to ensue. By constant observation and practice, it is possible at a glance, by placing the two thumbs on the anterior spines and the two forefingers on the most prominent parts of the crests of the ilia, to tell whether these diameters are good or not. These two diameters may be less than normal and yet not out of proportion. In this case there is probably a generally contracted pelvis. If the midwife detects rickets by curved tibiae or other signs, she must also measure the pelvis carefully. If in making a vaginal examination she can feel the promontory of the sacrum easily, the pelvis is contracted. With the naked eye she may also discover any well-marked obliquity of the pelvis. As soon as she discovers a narrow pelvis, let a doctor be consulted. If pregnancy be not far advanced, you will be able to decide as to the advisability of induction of labour, and if labour has already begun, as to the propriety of giving assistance by forceps, version, or Caesarean section. Your action will depend upon the degree of pelvic deformity. All the midwife has to do—but it is a great and important matter—is to detect that there is something abnormal.

Next you should teach midwives to observe whether there is any spinal curvature, either lateral or angular, any disease or deformity in one or other lower extremity, any peculiarity in the patient's gait such as would be caused by a congenital dislocation of both hips. Any obvious deviation from a state of health, such as great pallor of countenance, blueness of the face and lips (cyanosis), breathlessness, emaciation, severe cough, quick pulse, pyrexia, vomiting. Each of these conditions may exist without interfering materially with labour, but the midwife should advise a medical opinion in order to obtain the best advice in regard to the cause of the abnormal condition and its possible effect on labour. Any undue enlargement or prominence of the abdomen should be noted, such as would be caused by tumours with the pregnancy, pendulous abdomen from weakness of the abdominal walls, ascites, contracted pelvis, distended bladder, fetal conditions such as a big child, fetal tumours, fetal anasarca, twins, hydramnios, hydrocephalus, monsters. Abdominal palpation is very important, and by constant practice it is possible to distinguish head presentations from breech cases, and also to discover whether the child's abdomen is directed forwards or not. In vertex

cases with the back in front the occiput is anterior, with the limbs and abdomen in front it is posterior. If the child is transverse it is easily discovered by external palpation.

Any obliquity of the uterus to right or to left must be remedied, if possible, by posture and pillows. If the patient be a multipara, previous confinements should be inquired into. If all have been normal, probably also the next will be. If all have been abnormal—for example, if instruments have had to be used in every case, if the child has been dead in each case—no doubt there is some permanent condition which may or may not be insuperable. Such a case should be seen as soon as possible, without waiting until the difficulty has arisen; and, indeed, it is better if the patient can be seen before labour has started. In some cases there is a history of normal labours with living children, and also of one or more abnormal labours where, perhaps, instruments were used, or where the child was stillborn or the labour very prolonged.

Intelligent questions may elicit that such difficulties were accidental. For example, the membranes may have prematurely ruptured in the labour that was prolonged. Hence it need not be assumed that the coming labour will be difficult, for the fact can be relied on that most of her confinements were normal. Note any oedema about the lower extremities, observing especially and closely the ankles; also about the vulva, abdominal walls, eyelids, face or upper extremities, especially the backs of the hands. If any be present, suspect albuminuria. Indeed, in every case it is a good plan to test the urine by boiling a little, so as to find out if albuminuria be present. For this is always a grave sign and one which may result in eclampsia. Note any twitchings of the face or other muscles which frequently herald the approach of eclampsia. Oedema of the lower extremities alone may be due to varicose veins or to cardiac mischief or hepatic disease.

When called to a woman supposed to be in labour it is important that the midwife should know whether the pains are due to uterine contractions or to something unconnected with labour. I have known a woman seized with fearful pains due to a calculus passing down the ureter, and as she was approaching the full time of gestation she was thought to be in labour. The best plan to distinguish real labour pains from other pains is to place the hand on the abdomen and feel the uterus during, and between, the pains. If it gets harder, more spherical, with a more definite contour during each pain, softer, flatter, and less easily felt in between the pains, the uterus is contracting and relaxing alternately and labour has begun. If the pains have no effect upon the uterus they are not labour pains. When making a vaginal examination observe also the condition of the cervix uteri and the os externum. If the membranes can be felt it will be found that they become as tight as a drum during a pain if labour has begun. Whereas if the pain is due to renal, biliary, or intestinal colic, or to some cause other than uterine contractions, there is no such tightening of the membranes. They may become slightly more tense if the woman in her agony holds her breath and bears down, owing to the increase of the intra-abdominal pressure caused by the diaphragm and abdominal walls, which acts on the uterus. But such slight increase in the tenseness is readily distinguished from the drum-like tightness caused by a labour pain. If there has been a "show" this is confirmatory of the onset of labour. At this stage haemorrhage is abnormal. Of course, there is a tinge of blood in the "show," but real bleeding should not occur. Again, if the patient says she has had several attacks of bleeding, then suspect abnormal labour. If there is a history of a blow, a fall, or other injury preceding the haemorrhage, suspect accidental haemorrhage, that is, a partial separation of a normally-placed placenta. If there is no such history, and especially if the woman has had several attacks of haemorrhage, some perhaps coming on whilst she was asleep in bed, then placenta praevia must be suspected.

In making a vaginal examination, if the method is followed which I have described in my address on the Midwifery of the Present Day,¹ inspection will show if there is anything wrong with the vulva which could in any way interfere with parturition. It is rare to find any disease of the vulva, and still rarer to discover anything

* A pendant to the Address on The Midwifery of the Present Day, BRITISH MEDICAL JOURNAL, March 10th, 1906.

at all likely to be in the way. But very particular attention should be given to the linen to see if there be any discharge of a purulent character. Indeed, the patient should be asked if she has any discharge, and the midwife should look at the linen herself and note the condition of the vaginal walls as she raises the right labium majus in order to introduce the finger into the vagina. The importance of knowing whether there is any vaginitis, particularly gonorrhoeal, is that steps should be taken to remedy it as far as possible before the parturition, and to prevent ophthalmia neonatorum by very active procedures.

I oppose strongly routine syringing of all parturient women, and the routine dropping into a newly-born child's eyes of any germicide whatever. But where there is vaginitis, and especially when that is gonorrhoeal, as is usually the case, then I advocate very thorough douching of the vagina before labour with black-wash or some similar germicidal solution, and a thorough system of syringing or packing after parturition. I will deal with the question of the child's eyes later.

The discharges from cancer of the cervix may be very foul, but if there is a yellow, green, red, or watery discharge, especially an offensive watery discharge, things are not as they should be, and it is best to submit the case to medical treatment before labour begins if possible.

As the finger passes along the vagina, any narrowing at any portion of that tube will be noticed and any abnormality of the pelvis, particularly any tumours in Douglas's pouch or in front or at sides. The chief object will be to note the condition of the os uteri, the cervix uteri, the membranes, and the presentation.

These four things are so important that they should be dealt with separately and the fullest information possible given.

1. THE OS UTERI.

The midwife should be reminded that there are two ora, or mouths, of the womb, one called the os externum and the other the os internum. The former is the one she feels with the finger, and it is very important to note its condition. Towards the end of pregnancy it is often patulous though not patent, that is, it is easy to pass the finger through it, although it does not stand open. In other words, the lips of the os are soft and easily dilatable.

In the early stage of labour the os uteri does stand open and it may be the size of a threepenny piece, and if the woman has a pain whilst being examined the tight membranes within the os can be felt; if felt, then labour is progressing, and it is known that the membranes are unruptured, which are two very important facts. If the os is larger still, say the size of half a crown, the membranes are felt quite easily both during and in between the pains. And when the os is fully dilated, say the size of a five-shilling piece or bigger, the membranes bulge during a pain so as to form a protrusion which is convex, something like the larger end of a hen's egg, and which is as tight as a drum during the height of the pain. If this protrusion be more elongated and more like the lower part of a sausage, there may be some abnormality, such as a transverse, brow or face presentation. When no membrane at all can be felt, or a membrane which is quite flaccid and does not become tight during a pain, then suspect premature rupture of the amnion. This would be confirmed by a watery discharge.

The condition of the margin of the os uteri should be noted. If it becomes thinner and tight as the bag of waters becomes tense, probably it is healthy; if it is thickened, enlarged, or nodular and unyielding, and particularly if it bleeds when touched, there is probably some disease such as cancer present, and as this is a serious complication of labour, medical help must be summoned at once.

In feeling the membranes midwives should be very gentle and take every care not to rupture them, as premature rupture is dangerous to both mother and child, especially to the latter.

2. THE CERVIX UTERI.

At the end of pregnancy the cervix uteri is very soft and apparently, but not really, shortened. Its softness may best be compared with that of the lips. In the non-pregnant state it is as hard as the nose. The softness extends throughout the cervix and the lower third of the body of the uterus. As labour advances the cervical canal is gradually opened by the amnion from above downwards.

Between the pains the finger can be passed along the cervical canal to find out whether it is expanded or not. If the finger can reach beyond the internal os the cavity will be found to sweep away from the margin; but as labour goes on this margin gets lower and lower, until before the end of the first stage of labour the os externum becomes the margin and the finger finds the cavity sweeps away at once all round this expanded ring. The cervical cavity is now completely opened up, and the os externum is the narrowest part of the uterine cavity.

During the examination of the cervix any growth or scar which may interfere with the normal expansion should be noted.

3. THE MEMBRANES.

The chief membrane is called the amnion and is a strong fibrous structure lined with epithelium. It is developed from the ovum. It is covered externally by the chorion, which, however, is atrophied into an unimportant thin structure where it covers the presenting part. Occasionally it persists as a membrane sufficiently strong to retain fluid secreted between it and the amnion, and hence when it ruptures and allows this fluid to escape it is easy to make the mistake of supposing the liquor amnii is escaping. When this not very common abnormality occurs, it will be found later on that the membranes still get tight during a pain, and so the first stage is not yet finished.

When the finger can be passed sufficiently far to feel the presenting part and the membranes do not become tight during a pain, it is, as a rule, because they are ruptured. I say "as a rule" because sometimes the presenting part acts like a ball valve and shuts off the bulk of the liquor amnii above, leaving a small quantity below which does not receive the increased pressure caused by the pain, and hence the membranes below the presenting part are not made tense. It is extremely important to discover premature rupture of the membranes. As a rule the rupture takes place at the lowest part, and so the finger can be passed through the rent and feel the presenting part of the child. At other times, but much less frequently, the rupture is further up inside the uterus, and so there is slack membrane between the finger and the presenting part. If there is liquor amnii draining away and the membranes never tighten during a pain, then it can be assumed that the membranes are ruptured, even though there is membrane over the presenting part. Of course where the presenting part can be felt uncovered by membrane then the latter is ruptured.

Under all conditions where it is known or even suspected that the membranes are ruptured before the completion of the first stage of labour, by which I mean the complete dilatation of the cervical canal, including the os externum, the midwife should send for medical assistance immediately, because not only is premature rupture of the membranes a great danger to the life of the child, and some danger to that of the mother, but it is one of those accidents that can be remedied to a large extent by promptly replacing the natural bag of waters by an artificial one, such as Champetier de Ribes's bag. No doubt many such cases end happily for both mother and child even when no help is given, but in numerous instances the child dies through the draining away of the liquor amnii. The question of help must be left to the doctor's judgement, and no doubt he will be guided by the progress of the labour—namely, always to put in an artificial water dilator when the os is small, and to leave the case to Nature only when it is large and the pains are good and progress is being made.

4. THE PRESENTING PART.

The only normal presentation is that of the vertex of the child. The most frequent position is for the occiput to be in front and to the left (first position), but it need not be considered abnormal if the occiput is to the right in front (second position) or to the right behind (third position), or to the left and behind (fourth position). Each of these presentations end naturally in the majority of cases by the occiput rotating under the pubic arch as the head descends. It is a most excellent sign when the skin of the presenting part is felt to be thrown into folds; when it is tight over the skull there is often some obstruction. In the earliest stage of labour the anterior fontanelle is sometimes to be felt, especially in occipito-posterior cases, but as the head descends it becomes more

and more flexed, and so the anterior fontanelle ought not to be felt in the area of presentation. The posterior fontanelle is within this area, but is not easily made out, being obscured largely by the caput succedaneum.

A breech presentation is abnormal, but, owing to the shape which the child assumes in its attitude of flexion of all its parts, it can be delivered breech first. But the mortality in breech first cases is much greater than that of head first cases, because the cord is apt to get compressed between the head and some part of the parturient canal. If traction be made on the child, the head becomes extended, instead of remaining in a state of flexion, and the arms become extended above the head. If no traction be made, then the child may die, owing to the pressure on the cord, as already mentioned. If the circulation through the cord be completely stopped for three consecutive minutes, the child dies. Fortunately the compression does not, as a rule, last for three consecutive minutes. It lasts a shorter time than this, and, the pressure being removed, the circulation is re-established, and so the child lives. Nevertheless, the midwife should call in medical assistance in every breech case as soon as it is discovered.

Again, face presentations are abnormal, and yet most of them are delivered without assistance, and the proper treatment is to leave them alone. Still, they may require help, because it is essential that the chin should rotate forwards under the arch of the pubes for delivery to take place. This rotation forwards does not take place as a rule until the head is well down in the pelvis, and as help may be required, the midwife should call in a doctor as soon as she finds it is a face case.

Transverse presentations are discovered by inspection, by palpation of the abdomen, by the sausage-like shape of the bag of waters, and by making out the presenting part by vaginal examination. Transverse presentations rarely end normally. It is true that occasionally spontaneous rectification, spontaneous version, spontaneous evolution, and spontaneous delivery occur.

But the midwife should never wait for such terminations. As soon as a transverse presentation is recognized by feeling the hand or shoulder, as well as by the signs already indicated—and the sooner it is found out the better—the midwife must send at once for help, and say it is urgent. The doctor must decide whether to convert it into a head, a breech, a footling, or whether to decapitate, and his decision will depend on the mobility of the child *in utero*. Where it is very good he may do a cephalic version and bring the head down; where not so good he can convert it into a breech, or bring a foot down; and, where it is practically *nil* owing to tonic contraction of the uterus caused by all the liquor amnii having drained away, he will not attempt version at all for fear of rupturing the uterus, but will decapitate the child, which, under such circumstances, is already dead.

If the umbilical cord can be felt through the unruptured membranes, it is called prolapse of the cord. If it comes through the rent after the membranes are ruptured, it is called presentation of the cord. In either, the midwife should be instructed to send for a doctor at once; the midwife should notice if there be any pulsation in the cord when she first feels it, and whether the pulsations are slow or quick. Other malpresentations, such as hand with head, one foot and one hand, hands and feet, foot with head, etc., all require skilled medical assistance.

Sometimes a soft substance can be felt presenting, and if it breaks away easily it is probably clot, which can be seen by pulling it out with the finger. If it is not easily friable, it is probably placenta *prævia*, and in that case there will be bleeding, and medical assistance must be immediately summoned by the midwife.

There are other forms of abnormal presentation which are comparatively rare. These are "arm with head," "foot with head," "hands and feet." Also there are puzzling presentations afterwards found to have been due to some fetal monstrosity, such as anencephalus, conjoined twins, encephalocele, extroversion of viscera, spina bifida, abdominal enlargement from any cause.

BLEEDING.

Allusion has been already made to accidental and unavoidable hæmorrhage. During the first and second stages of labour there ought not to be much bleeding. There is a little blood in the show at the onset of labour,

and there may be a little bleeding from small vessels as the cervical canal gets opened up, but it should not amount to more than a few drachms. If it is more than this, and particularly if there are gushes of blood, the midwife must send for help.

Meconium in the liquor amnii, when the waters are green in colour, means, as a rule, that the child is dead. But it may not be quite dead, and it is important that it should be speedily delivered if it is to have a chance. Therefore, when the liquor amnii is green, the doctor should be sent for.

In breech cases, relaxation of the sphincter ani of the child, with escape of meconium, is a grave sign, meaning death of the child, or its near approach.

THE PULSE.

One of the earliest things the midwife should do on being called to a woman in labour is to feel the pulse. In the first stage it ought not to be more than 80 to 90, in the second stage 90 to 100, and in the third stage again 80 to 90. A pulse of 80 to begin with, rising to 120 at any stage, means danger often very grave. In some women the pulse is normally very frequent. In some it is easily made frequent without its meaning anything serious. But it should never be treated lightly; when it remains strong, full and below 90, the midwife can assume that there is no excessive bleeding inside or out. The pulse becomes slow during the first part of the puerperium.

TEMPERATURE.

The temperature should always be taken with a thermometer, even though the midwife may think the patient feels cool and the skin is moist; it is much better to make sure by means of a reliable instrument. In normal labour the temperature is normal throughout. In abnormal labour it may rise, but it may be high owing to some condition which has nothing to do with the parturition. For instance, a woman might have influenza, or she might be in the incubating stage of some fever whilst labour is in progress. The taking of the temperature at once when the midwife first sees the case may be of great value in diagnosis and treatment later on.

When the child is born the midwife should look to see if there is any undue hæmorrhage. In ordinary labours there is always a certain amount of bleeding. It is impossible to say how much is natural or physiological and how much is unnatural or pathological, because women differ so widely in this respect. But a few ounces of blood, say three or four, coming away immediately after the child would not be excessive. After this there is a trickle of blood over the woman's left thigh. But although one cannot state precisely the amount of blood a woman ought to lose in normal labour, still there is always a most excellent guide in the pulse. If the pulse is over 100 and rising, it may be concluded that the bleeding is excessive. The visible hæmorrhage may not appear more than usual, but probably the uterus and vagina are filling with blood. Hence if there is excessive visible hæmorrhage, or if without this the pulse rises, the midwife must act at once by grasping and kneading the uterus, and if this does not stop it, express the placenta. The midwife must of course send some one for a doctor at once, but hæmorrhage is too serious and urgent a thing to permit delay. Hence, whilst the doctor is being fetched, the midwife must do the best she can, and if unable to express the placenta and the bleeding is excessive, she must pass her hand, after careful sterilization, into the uterine cavity as far as is needed in order to complete the separation of the placenta, for it is partial separation of this body which in the majority of cases causes the bleeding. When it is completely detached she can easily express it from above with the external hand, which is much better than drawing it out with the internal hand. As a rule this stops the bleeding. If it still continues and the doctor has not arrived, the midwife should inject 4 or 5 pints of very hot water, say 120° F., into the cavity of the uterus.

Whilst the doctor is being fetched the midwife can also give ergot. Some medical practitioners still give ergot as soon as the placenta is born as a routine measure, with the idea that it prevents *post-partum* hæmorrhage. It is, however, quite unnecessary, and the midwife need never give it except in cases of hæmorrhage, which in these days are happily rare. It might be justifiable to give it even before hæmorrhage

sets in in certain women who are known to be bleeders, but midwives should be advised to let a doctor attend such women.

If there is no bleeding at all after the birth of the child, suspect an adherent placenta. If the midwife leaves the third stage of labour to Nature and the placenta is adherent all over its surface, so that there is no bleeding, there is no danger. But she must be on the *qui vive* and she must feel the pulse often; if it remains slow all is well. Should the placenta not be delivered within the hour, and particularly if the patient has had pains, and if the midwife cannot then express it, the reason will probably be that it is pathologically adherent, and a doctor must be summoned.

DELAY IN THE THREE STAGES OF LABOUR.

First Stage.

So long as the membranes are unruptured there is little or no danger in delay during this stage; because the child is receiving all it requires from the mother and the uterus is unable to contract down upon the child, which is protected by the liquor amnii. The duration of the first stage varies widely. It is naturally longer in a primipara than in a multipara. Roughly speaking, anything within twenty-four hours would be normal in a primipara and within twelve hours in a multipara. But I have known the first stage last a fortnight without any ill result. It is most trying to the patient, to the relatives, and to the friends, so that frequently pressure is brought to bear upon the attendant that something should be done. As a rule, the pains are neither frequent nor strong when there is delay. In other words, primary inertia of the uterus is the most frequent cause. If the woman is quite well, with a normal pulse and temperature, there is no necessity to hurry matters. But if she is getting restless and irritable, or if the pulse or temperature rises, the midwife must call in medical assistance. Mention has already been made of premature rupture of the membranes, and therefore particular attention must be paid to the evidences of this. The woman may tell you that the waters are coming away. On examination it is found that it is only urine. If there is a watery discharge and the midwife is not sure if it be liquor amnii, she must make an examination to find out if the membranes get tight during a pain.

The delay in the completion of the first stage may be due to rigidity of the cervix, and this may be from spasmodic action of its muscular fibres, or from some organic cause, such as scar tissue, new growths, cancer, fibroids. It takes longer to complete the first stage when the presentation is abnormal. An elongated cervix takes longer to dilate. If the part of the cervix which can be felt in the vagina be elongated, it is, as a rule, a congenital condition. Elongation of that part of the cervix which is above the vagina and which cannot be felt in the vagina is the effect of prolapse, more especially of that degree of prolapse where the cervix uteri protrudes through the vaginal orifice. These cases may require medical help in the way of artificial dilatation. In some instances after complete dilatation the membranes remain unruptured. Speaking generally, the membranes ought never to be ruptured artificially in normal cases before complete dilatation has been effected. But as soon as this is accomplished, the sooner they are ruptured the better. Instances are on record where a child has been born with the membranes intact, and in such cases, if the placenta gets separated from its attachment to the wall of the uterus, the child speedily dies unless it be let out from its watery prison. Less rarely the membranes can be felt unruptured, bulging nearly to, or even beyond, the vaginal orifice.

Second Stage.

Delay in this stage is much more dangerous; because now the head of the child descends into the pelvis, and the cervical canal and the vagina are enormously distended, whilst the surrounding parts are greatly compressed. Like the first stage, the second stage varies considerably in different cases, but in a primipara it ought not to last longer than two to three hours, and in a multipara not longer than one to two hours. As in the first stage, the commonest cause of delay is feeble pains or primary inertia, and this may or may not be accompanied by general weakness or exhaustion on the part of the mother. The midwife should observe whether the woman

be strong and robust or the reverse. In the latter case medical help may be required, though it is often astonishing how strong the uterine pains are in a woman who is excessively weak physically. Involuntary muscular fibres are not necessarily weak when the voluntary fibres are. Sometimes the pains are frequent and strong, and yet there is little or no advance. This may be due to a big child, or to the head being large as in hydrocephalus, to a contracted pelvis, to a persistent occipito-posterior presentation, or to some other cause for which medical help is required.

The midwife will be able, perhaps, to find out the cause of the delay, but it is of more importance that she should detect that there is delay. This is evidenced not merely by time, but by the pains having little or no effect in expelling the child, and by the patient becoming restless and the pulse rising in frequency. Her aspect becomes more distressed; vomiting may set in, and the temperature may rise. If the pains are feeble, naturally the child does not descend much, if at all; and yet the liquor amnii is draining away, and so medical help should be given. If the pains are strong and there is little or no descent, there is a reason for this, and again medical help is required. The pains, after being strong, may cease altogether from exhaustion of the uterus. This is called secondary inertia, and is a very dangerous condition. Sometimes, when the head is bulging the perineum, each pain causes a considerable bulge, but in between the pains the head recedes to the position it was in before. In such cases suspect that the cord is round the neck. Medical help is required at once in order to save the child. When the pains are infrequent, or feeble, or ineffective, this can sometimes be remedied by emptying the bladder with a catheter.

It is difficult to give a rule which would be applicable to every case, but if the midwife sends for help if the second stage is not over in three to four hours in the case of a primipara, or in two to three hours in that of a multipara, she will do well. If there should be a quick pulse in addition, the midwife should send sooner.

A pain accompanied by a shriek, and followed by collapse with a thready pulse, indicates rupture of the uterus, and the midwife must at once send for the doctor. If she examines, she will find that the presenting part has receded considerably, or may have disappeared altogether or it is easily pushed back. Sometimes the pain which expels the child also ruptures the uterus. I have known several cases of this where the rupture was not discovered, with the result that the intestines protruded through the rent into the vagina; but it is very rare for a rupture to take place without a great and often profound effect upon the pulse, which becomes thready or imperceptible. The patient, too, is often blanched, the pallor being due partly to collapse and partly to haemorrhage. Therefore, it is very important for the midwife to note the condition of the pulse and the appearance of the patient. She should always send at once for a doctor when she notices these effects, which are not at all normal, whether they be due to rupture or not.

Third Stage.

Delay in this stage is, again, most frequently caused by uterine inertia. This is practically always secondary—that is, the uterus is tired after hard work. It is of the very highest importance that the midwife should know when to let the patient alone and when to help or to send for help. Therefore, the midwife must remember that when all is well there is no excessive visible haemorrhage, the pulse is below 100, often only 80 or between 80 and 90, and in every case less than it was before the end of the second stage, the patient is not excessively pale, she lies still and feels very comfortable. On the other hand, if there is excessive visible haemorrhage, if the pulse rises above 100, if the patient is pale, restless or in pain, there is something wrong, which requires speedy medical help, and the midwife must set to work to obtain uterine contraction and expulsion or extraction of the placenta, and the arrest of haemorrhage whilst a doctor is being fetched.

If the patient is all right, the midwife may wait an hour for the placenta. Probably in anything from a few minutes to thirty or forty minutes the mother will begin to have pains, and the placenta will be expelled. But if it be not expelled in an hour it may be considered abnormal. Where there is no bleeding at all, it is because the placenta is adherent all over its attached surface. In

other cases its retention within the uterus is due to so-called hourglass contraction. When due to inertia, stimulation by rubbing and kneading the uterus is all that is required, though this should never be done until after giving the uterus a good rest, unless there be haemorrhage. A woman's life may be so dependent upon skilled and speedy medical help in this stage that I would strongly advise you to instruct midwives to send for a doctor whenever they detect any danger, even if at times it should prove to be a false alarm.

THE PERINEUM.

The midwife should always examine to find out how far the perineum is torn. In a primipara it is quite the usual thing, and may be looked upon as normal, to find the posterior fourchette and the anterior portion of the perineum torn. No treatment is required. In multiparae there may be no fresh tear or there may be a little tear of the anterior part of the perineum, again requiring no treatment. When, however, either in a primipara or a multipara the tear is severe, going right into or through the sphincter ani, the midwife should summon a medical man in order that suitable stitches may be put in at once. Sometimes the perineum is severely damaged, although to all appearances the outside skin appears all right. It is necessary to feel with the finger (rendered aseptic) just within the vagina in order to detect this form of rupture.

THE CHILD.

As a rule the child makes an inspiratory effort as soon as it is born. This is due chiefly to the stimulus to the respiratory centre in the medulla oblongata caused by the want of oxygen in the blood, and to the exposure of the skin to the air, the comparative coldness of which acts upon the sensory nerves. The very first expiratory effort may be a cry, and in most cases the child will after a few breaths set up a cry. This has a most beneficial effect upon the mother. She knows it is alive. She knows that she has brought a living human being into the world, and it has often seemed to me that this first cry of her child has brought a divine light into the mother's eyes. The movements of the child's limbs are also felt by the mother as the child lies against her thigh, and they produce a thrill of pleasure in her. The child's cry and the perception of its movements have a beneficial physiological effect, promoting uterine contractions. When there is no cry and no movement, as when the child is stillborn, there is greater risk of *post-partum* haemorrhage. Many doctors to avoid this extra risk will not let the mother know for some time that the child is dead. But she is often very suspicious when the child is silent and motionless. At all events, when the child is born all the midwife need do is to see that it lies in such a position that it can breathe. In most cases it breathes and cries and moves, and it can be left just where it lies against the mother's thigh for about five minutes. This gives the child several ounces more blood than if the cord is tied immediately.

After five minutes the cord should be tied and the child removed. If the child makes no effort to breathe when it is born, it may be due to asphyxia. There are two forms of asphyxia, sometimes popularly called blue or white.

Blue asphyxia is when the child is cyanosed, that is, it is bluish in colour all over, the lips being nearly black. Such a condition nearly always ends favourably. The blueness is caused by the circulation in the cord having been retarded or stopped before the termination of the second stage of labour. Hence, the supply of oxygen being cut off, the child's blood becomes venous. But this want of oxygen causes the child to make inspiratory efforts, and sometimes mucus and blood, and watery fluids, are sucked into the lungs. On this account it is a good thing always to wipe away anything that may be in the mouth, and also in a few cases to suspend the child upside down in order that some, at all events, of the inspired fluids may run out.

Very likely as soon as the child is born the pressure on the cord which causes the obstruction is removed, and so the child begins to receive oxygen again through the placenta. Feel the cord at once and see if there be any pulsation. At first there may be a very slow pulsation, and if that begins to get quicker, there need be no fear even though the child has made no effort at breathing.

After a time the child will make an inspiratory effort, and it is very important that there should be absolutely no hindrance to this, and that nothing but air shall be sucked in. Besides feeling the pulsations in the cord, the beatings of the heart under the left breast can often be seen, and sometimes these beatings can be seen when no pulse can be felt in the cord.

When there is no effort at inspiration for two or three minutes, even though the heart is beating and the cord pulsating, especially when the pulsations begin to get slower, the cord should be tied at once and the child separated. The child must be made to breathe by artificial respiration, by dipping it alternately into hot and cold water, or by smacking the skin. Some advocate cutting the cord and allowing a little blood to escape so as to relieve the over-distended heart.

Fortunately in most cases of blue asphyxia the child ultimately breathes, and it is marvellous the way in which the blueness gives way to the rosy pink of arterial oxygenized blood.

In the white or pale variety of asphyxia the chances of the child are practically *nil*. There is no pulsation in the cord and no beating of the heart. The child is dead already. The least flicker of a pulse or a heart beat may give hope, and, in any case, all measures must be tried to stimulate the child to breathe. In most of these pale cases failure occurs, because the child is beyond hope before it was born.

The Child's Eyes.

In nearly all cases it is not necessary for anything to be done to the eyes. When the cord has been tied and the child separated, wrap it up in a warm covering, such as a blanket, and place it in a warm place and in such a position that nothing will get over the mouth and prevent the free ingress and egress of air. Later on, when the child is washed, extreme care must be taken that nothing gets between the eyelids and into the eye that might be injurious. The eyelids must be wiped carefully with some aseptic material, such as sterilized gauze. There is no objection to wiping them with swabs of cotton-wool wrung out in warm boric acid lotion or salt and water, 3ij ad Oj. But no germicide, such as perchloride of mercury solution or nitrate of silver lotion, should be dropped into the child's eyes as a matter of routine. I know this has been taught and that there are good authorities to support it, with the idea of preventing inflammation or ophthalmia neonatorum. I wish to say, however, that it is a bad practice, for in the first place the child's eyes are perfectly healthy and require no such treatment in more than nine cases out of ten, and, what is more, if the eyes have already become contaminated by some virulent poison, such as gonorrhoea, the routine method advocated will not save them from ophthalmia. What should be done is to find out if the mother has any yellow or green discharge from the vagina, or if she has had such a discharge recently, whether her water scalds her, whether the skin about the vulva and neighbouring parts of the thighs is reddened, particularly whether any pus can be squeezed from the urethra. If none of these things are found, then it is to be assumed that the mother is healthy and the child's eyes are to be left alone accordingly. But if there is gonorrhoea, or a vaginitis, or a purulent discharge, or a well-grounded suspicion of these things, then a very active treatment to try and save the child from ophthalmia must be adopted.

Under such circumstances, as soon as possible drop one drop of a 2 per cent. solution of silver nitrate into each eye, carefully wiping away all secretion from about the eyelids, eyelashes, and corners of the eye. A good plan is to wash away the secretions thoroughly by a stream of warm salt and water (3ij ad Oj). The silver nitrate solution should be dropped into each eye every eight hours at least. I believe that this is a more effective agent than a solution of mercury perchloride, of which several drops, 5 or 6, of a strength of 1 in 4,000, are dropped into each eye, and repeated two or three times a day.

Some authorities believe in using both these germicidal solutions, using the silver nitrate and the mercury perchloride alternately. At all events, let me emphasize this, that where there is gonorrhoea in the mother, a single application of a germicidal solution used as a routine measure will not prevent ophthalmia; indeed, the active treatment above described will not assuredly prevent it, but it is at all events very much more likely to succeed.

Examine the child all over to see if it is normally developed: look for cleft palate, hare-lip, supernumerary or deficient fingers or toes, imperforate anus, defects about the genitals, naevi, etc. If no urine or no meconium comes away within twenty-four hours the midwife must call in a doctor.

The midwife should note position and size of the caput succedaneum, and any effusion of blood under the scalp (haematoma), or any protrusion of cranial contents (encephalocele), or any tumours along the spine (spina bifida).

THE PUERPERIUM.

The calm which follows normal labour is very grateful to the mother. As a rule she lies quiet, and very often goes to sleep; and this should be encouraged. When she wakes up her pulse will be slow and full, and very often it is only 70 or from that to 80. The temperature is normal, and the lochia are free and red in colour. If the pulse begins to increase in frequency, if the temperature begins to rise, or if the lochia begin to be offensive or to get scanty or profuse, the midwife should call in a doctor.

The third day of the puerperium is the one which all accoucheurs are glad to see pass without trouble, for the incubation of the poison which causes the most dreaded form of puerperal septicaemia takes two to three days. Hence a shivering fit or rigor on the third day is an event of evil omen, and the midwife should send at once for a doctor. Possibly the rigor may be due to cold, or some less fatal cause than puerperal septicaemia. The midwife should not hesitate, but send at once for a doctor, and in the meantime take the patient's pulse and temperature, both of which will in most cases be considerably raised.

Again, if the lochia become excessive, if the patient begins to pass large clots or to bleed, there is a case of secondary haemorrhage to deal with, and a doctor must be sent for. A piece of placenta or an extra bit of placenta (placenta succenturiata) may be in the uterus.

If the patient says that she can feel something coming out, a careful examination must be made with all necessary care regarding aseptics, and if anything abnormal is found, the midwife should send for a doctor. The case, for instance, might be one of those rare instances of inverted uterus, which should always be diagnosed early in order that it may be restored.

Inability to pass urine—or, at all events, to empty the bladder—is not uncommon after labour. When it cannot be passed at all, a catheter must be used until the patient can do without it. But trouble is more likely to occur when the patient passes some urine, but not all. The midwife frequently in such cases makes a mistake in thinking that there is no retention. She fails to discover that the amount passed is not sufficient, and hence the bladder gets more and more distended. I have been called in to more than one such case where the patient has had a rigor, and where, owing to her anxious countenance and distended abdomen, the doctor had thought he was dealing with puerperal fever. After drawing off six or eight pints of urine such patients are immediately relieved. The doctor is apt to blame the attendant for telling him that the patient was passing her water all right. The midwife will do well, therefore, to tell the doctor, when he asks her, that, so far as she can judge, the patient is passing urine in sufficient quantity. It is the duty of the medical man to discover if the bladder is distended, and, if he is wise, he will pass a catheter in order to make sure. If the midwife has already done this, she should inform him of the fact.

Lactation.

Probably it will be known if the breasts are normal. The nipples may be retracted or sore. The milk may be poor or scanty. It will be soon detected whether it is secreted in normal quantity, and whether it agrees with the child, and the midwife will, of course, call in a doctor whenever the quantity or quality is abnormal. The first secretion, or colostrum, acts as a purge to the child, though as a rule the meconium, or first motion of the child, comes away before it has had any milk.

Severe pain in the calf of the leg, or in the popliteal space, or in Scarpa's triangle, coming on during the third week after labour, often means the onset of white leg or phlegmasia dolens. The midwife must observe closely to see if the limb begins to swell. It is hardly necessary to say that midwives must be instructed to call in a doctor to such cases, and also to any case in which the patient

shows alarming symptoms such as are caused by embolism and by thrombosis. Happily, sudden death from such causes is rare. There is time to get medical aid in the great majority of such cases.

Fetal Movements.

The movements of the fetus are generally perceived by the mother, and in the first stage especially they can be felt through the abdominal wall. One of the stages of asphyxia is convulsions, and therefore it is generally a bad sign when the fetal movements become very violent and then cease altogether. In breech cases with the child partly born this convulsive stage of asphyxia can sometimes be seen, and unless speedy delivery be effected the moribund child will soon pass beyond recovery. If the cord can be reached high up in the pelvis and moved to one or other side of the sacral promontory, it may possibly release the compressed portion and so permit the circulation to go on, thus supplying the child with oxygen through the blood. Whilst the midwife is doing this a doctor must be sent for. The fetal blood gets oxygen from the mother's blood in the placenta, and whenever this supply is cut off the child makes an attempt to breathe. In the second stage of labour the fetal movements are not so easily felt by the mother, or so easily palpable. This is because the liquor amnii has partially escaped, because the uterine walls are thicker from retraction, and because there is less room for the movements.

Fetal Heart.

This is heard better during the second than during the first stage. But it is not often necessary to try and hear it. Still, if it be suspected that the child is already dead, and no fetal movements can be felt, listen below and to the left of the umbilicus, and if not heard there, then below and to the right of the navel. If heard (and care must be taken not to confuse the sound with the beating of the observer's own arteries), then the fetal heart should be counted during and between the pains. Rapidity of the fetal pulse is, as a rule, much less grave than abnormal slowness of the pulse. If it is impossible to hear a fetal heart at all, it by no means follows that the child is dead.

Of course, if the cord can be reached, the presence or absence of pulsations in that gives just the same information in regard to the fetal heart, and there is, moreover, much less liability to mistake. If there is no pulsation at all in the cord the child is dead.

Precipitate Labour.

Rapid expulsion of the child may be due to very strong and abnormally frequent uterine contractions, or to diminution in the resistance to descent in the parturient canal, or to both these causes combined.

As a rule, no harm is done. But the birth of the child coming so unexpectedly may occur whilst the patient is walking about the room, or during micturition or defaecation. The child may be injured by a fall, the cord may be torn across partially or completely, and may require immediate attention. There would be in such a case more likelihood of haemorrhage from a partial tearing away of the placenta from its site. The perineum may be badly torn and require stitching. Laceration of the vaginal wall or of the cervix uteri may be caused, but serious rupture of the uterus is not common in precipitate labour.

When the contractions are very strong and painful and come in quick succession, the mother is sometimes frenzied and may try to do herself or the child harm. Hence, when a woman has a history of precipitate labours in the past, or where it is suspected that she is going to have one, a doctor's aid should be called in.

Obstructed Labour: Tonic Uterine Contraction: Ring of Bandl.

Where there is some obstruction to the descent of the child during the second stage of labour, as, for example, where there is disproportion between the child and the canal, as in a large child or a small pelvis, or where there is a transverse presentation, the uterus may contract well and powerfully, and yet be unable to expel the child. Under such circumstances, unless timely help is given, the liquor amnii is gradually expelled or drains away, until the uterine walls come into close contact with the child. Moreover, they are then frequently in a state of

rigidity which is known as tonic uterine contraction. Such a condition is very serious, and it called to a case the midwife can readily discover it by the condition of the patient, whose pulse will be quick, face anxious, tongue dry, temperature probably raised, uterus continuously hard, and at its lower third there will be felt a groove running transversely. This groove corresponds with a ridge on the inner side, and it is known as the ring of Bandl. Most authorities believe that this ring marks the division between the contracting expelling fibres above and the relaxing passive fibres below. Be that as it may, whenever felt it shows that there is a case of obstructed labour. Of course the midwife ought never to let a woman get into this condition, because she ought to recognize long before that the case will develop into tonic contraction unless medical help is given. The midwife may not be sent for until it has arisen, but the moment she diagnoses the condition a doctor must be called.

Locked Twins.

Sometimes when a child is born breech first no progress is made after the lower extremities and a portion of the body have passed the vaginal outlet. This may be due to extension of the head and of the arms above the head, a condition which requires medical help. But it may be due to locking of twins, the head of the second child entering the pelvis before the head of the one already partially born. A careful vaginal examination under strict asepsis ought to enable this condition to be detected.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, March 10th, 1906.

ACUTE STREPTOCOCCAL SEPTICAEMIA OCCURRING AT THE MENSTRUAL PERIOD.

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THE *post-mortem* examination on the following case was made at the request of Professor Greenfield, and is of some interest in helping to clear up the diagnosis of an otherwise somewhat obscure and difficult case.

HISTORY.

The patient was a school girl, aged 18, under the care of the late Dr. Sym, who kindly supplied me with the following synopsis of the clinical history. She was born and brought up in British Guiana, and had come to Edinburgh for her education. There was an indefinite history of some old rheumatic condition; she had never suffered from malaria, and the only other point of importance in the previous history was the occurrence of a discharge from the ears in childhood.

Her illness commenced on October 23rd, 1904, as a slight tonsillitis and sore throat, the temperature being at that time 98° F. The patient was menstruating, her appetite was completely gone, but, except for the sore throat, she did not complain of any pain. Next day severe diarrhoea and some vomiting supervened, and the temperature went up to 102° F. The heart's action was rapid and irregular, and there was a systolic murmur present at the apex. A tense, diffuse swelling was found in the region of the left parotid, extending half way down the neck, and very tender on pressure. The temperature remained up, and the patient gradually got worse, and died on the evening of October 27th, 1904, the provisional diagnosis being acute septicaemia arising from the local inflammatory condition in the region of the left parotid gland.

NECROPSY.

The *post-mortem* examination was performed early on the following morning.

The body was that of a somewhat slightly built and rather emaciated girl. It was still warm; *post-mortem* rigidity was well marked in the limbs and in the muscles of the jaw, but absent in those of the neck; there was well marked *post-mortem* lividity of the back, together with some slight mottling over the front of the limbs and trunk. The subcutaneous veins were very distinctly outlined, suggesting some septic condition, and there were scattered here and there over the body several bruise-like marks ranging from about the size of a shilling to that of a penny in diameter, evidently *ante-mortem* haemorrhages; there were also a few smaller and brighter subcutaneous haemorrhages, 1 to 2 mm. in diameter, over the limbs, and a large subconjunctival haemorrhage with its base towards the cornea in the right eye.

In the region of the left parotid, beneath the pinna and behind the angle of the jaw, there was a firm, tense, non-fluctuating swelling, somewhat diffuse, and passing half way down the neck, and also slightly over the ramus of the lower jaw on to the face. The cervical glands were distinctly enlarged all the way down to the clavicle. On incising the swelling it was found to consist for the most part of hard, firm parotid gland tissue, pale white in colour, and with no sign of softening or suppuration. Around the gland there was considerable inflammatory oedema and matting of the tissues, in which were embedded numerous enlarged lymphatic glands, some dark red and soft on section, others white and firm, and others, again, showing a mixture of both conditions. These were specially marked just behind the angle of the jaw, and were in close connexion with the left tonsil, which was slightly enlarged, and congested, the crypts being very well marked but not containing any purulent material; there was no abscess formation. The right tonsil was also slightly enlarged, and on section showed a greenish-grey colour, with some softening, the neighbouring lymphatic glands being somewhat enlarged. There was no ulceration of the tonsils, fauces, or pharynx.

Thorax.—There were no pleural adhesions or pleurisy. The lungs showed very acute congestion and oedema of their lower lobes, and the bronchi were acutely congested. There was no pneumonic consolidation nor any sign of tuberculosis, and there were several small recent pulmonary infarctions. The pericardium contained 2 oz. of clear straw-coloured fluid, but there was no pericarditis nor petechial haemorrhages. The heart was very small and flabby, and showed marked diffuse red staining of the endocardium of all its cavities, and of the aortic and pulmonary valves, which otherwise showed no special changes. The tricuspid, in addition to the red staining, presented some oedematous swelling of the free margins of the cusps; and the mitral showed similar changes, together with some irregular thickening of its attached margins.

Abdomen.—The peritoneal cavity contained no fluid, and there was no peritonitis present. The liver showed intense cloudy swelling, together with considerable fatty change. The spleen was much enlarged, and very soft, a condition of acute congestion. The kidneys also showed intense cloudy swelling. The stomach was considerably distended with gas, and contained a small amount of black, blood-stained mucus; over the entire mucous membrane there being scattered innumerable bright red petechial haemorrhages closely crowded together. There was no ulceration, and the pylorus was somewhat firmly contracted. The duodenum and upper part of the jejunum were extremely congested, and showed great oedema of the mucous membrane, especially over the valvulae conniventes, and the solitary lymphoid follicles were somewhat swollen. The caecum was very congested, and contained a considerable quantity of black altered blood, a condition which was also found in the ascending colon, the lymphatic glands in the neighbourhood of these being enlarged and congested. The mesenteric and retroperitoneal glands and the glands at the brim of the pelvis were also considerably larger than normal, and showed no signs of tuberculosis.

Pelvis.—The uterus was of normal size; it was very soft, and the os very patent, the interior containing a small, well-marked blood-clot, and the mucous membrane was intensely congested. The Fallopian tubes were longer than normal, and very red in colour. They were soft, and contained a quantity of light creamy red, thin, purulent material which distended them, especially towards their upper ends. The ovaries were very soft, and both contained numerous small cysts full of fluid. The bladder was contracted and empty, and its mucous membrane appeared to be normal.

Bone Marrow.—That of the ribs was absolutely fluid and presented the appearance of pale watery red blood; the marrow of the femur was like black currant jelly in colour and consistency, the tissue throughout the entire shaft being affected and suggesting the presence of intense and diffuse haemorrhages into it.

Cultures were made from:

1. Parotid gland.
2. Cervical gland.
3. Left tonsil.
4. Fallopian tubes (both).
5. Spleen.
6. Heart muscle.
7. Bone marrow (femur).

In every case pure cultures of *B. coli* were obtained, except in the case of the bone marrow, from which a growth of streptococci was also got.

Microscopic Examination.

The parotid showed very intense cloudy swelling of the glandular cells, some catarrhal changes in the ducts, and considerable infiltration of the fibrous tissue, with mononuclear cells and a few polymorphonuclear cells, more especially around the ducts of the gland. The axillary glands were much congested, and showed considerable proliferation of the endothelial cells lining the sinuses, the cervical glands showing similar changes, with, in addition, a large amount of blood pigment in the actively phagocytic endothelial cells. The left tonsil was intensely congested, and contained areas of haemorrhage and necrosis, the latter being at parts crowded with Gram-negative