OBSTETRICS IN GENERAL PRACTICE

The Third Stage of Labour

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The placenta separates from the body of the uterus within five minutes of the birth of the infant and even with conservative management is expelled within 15 minutes in the majority of patients (Fig. 1). If separation or expulsion is delayed the likelihood of post-partum haemorrhage increases in direct proportion to the period of delay (Fig. 2). It is therefore desirable to encourage early delivery of the placenta and to expedite this by augmenting the natural forces by mechanical and pharmacological means.

FIG. 1.—Duration of the third stage of labour.¹

FIG. 2.—Post-partum haemorrhage in relation to the duration of the third stage of labour.

It is over 2,000 years since Aristotle advised cord traction "to bring away the after-burden, for it can prove dangerous if it be not speedily done." It is over 80 years since the routine administration of oxytocics at the end of the second stage of labour was first advised. In spite of modern evidence of the value of both these procedures the reluctance to accept and to apply them, especially in domiciliary practice, has been remark-

able. This stems from past misfortunes associated, for instance, with cord traction performed under improper conditions, or other procedures often classified as "meddlesome midwifery." Many of the mishaps of the third stage ascribed to interference are the result of a tentative and tremulous approach, yet nowhere in practical obstetrics is it more important that every action should be definite and decisive.

Preparation for the Third Stage

Antenatal Care

The proper management of the third stage begins at the first antenatal visit. In over half the deaths from post-partum haemorrhage avoidable factors are present and often the improper selection of cases for domiciliary or nursing-home confinement is incriminated. This defect is also evident in a review of Obstetric Flying Squad calls in which it was observed that 30% of patients attended because third-stage complications had obvious predisposing factors which should have indicated the need for hospital confinement. It is important that detailed information of earlier confinements be obtained from previous obstetric attendants, since many patients are unaware of or do not confess to having had complications. The following factors which become evident during antenatal care predispose to third-stage complications:

- (a) Increasing parity, especially after the fourth pregnancy ;
- (b) Previous abnormalities of the third stage ;
- (c) Multiple pregnancy ;
- (d) Anaemia and poor nutritional status ;
- (e) Ante-partum haemorrhage ;
- (f) Structural uterine abnormalities.

Unfortunately many of the patients who are at greatest risk are reluctant to book for hospital confinement. This is especially the case with the grand multipara who has a misguided sense of duty to her family. Nevertheless, one should not succumb to her pleadings for home confinement. A united front by general practitioner, local authority clinic doctor, and midwife will usually be successful, especially if arrangements can be made for the patient to be discharged from hospital for home nursing early in the puerperium. If the patient can be persuaded to attend the hospital "just for a check-up," once she is there she can usually be persuaded to come in for her confinement.

However, labour is only normal in retrospect and obvious predisposing factors are present in only one-third of patients who subsequently have an abnormal third stage. It is therefore important that all women approach their confinement in an optimal state of health and nutrition in preparation for any unexpected additional strain such as excessive blood loss. In this connexion the diagnosis and treatment of antenatal anaemia cannot be overstressed. Frequent haemoglobin estimations

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should be carried out and no patient should reach term with a haemoglobin level below 70% Haldane (10.5 g. per 100 ml.). Any patient with a haemoglobin level below 80% (11.8 g. per 100 ml.) should be confined in hospital. The existence of anaemia in itself increases the puerperal morbidity rate fourfold. A moderate post-partum haemorrhage in an anaemic patient may be fatal.

First and Second Stages of Labour

The performance of the uterine musculature in the first and second stages of labour is often reflected in the third stage. Disordered or inefficient uterine action is commonly followed by third-stage complications.

The most important points of management during the first and second stages are:

- (a) Avoidance of exhaustion, dehydration, and ketosis by the proper and adequate administration of sedatives and intravenous fluids ;
- (b) Admission to hospital of any patient who shows adverse features, such as prolonged labour ;
- (c) Avoidance of general anaesthesia ;
- (d) Abolition of accouchement forcé and "heroic" vaginal deliveries with the attendant trauma, blood loss, and interference with normal uterine action.

Management of Third Stage

The "classical signs of placental separation"—a blood show, rising fundus, and lengthening cord—are signs not of separation but of descent of the already separated placenta into the lower uterine segment or vagina. These signs are unreliable and often pass unnoticed in the general activity associated with the delivery and attention to the baby. Retention of the placenta in the lower uterine segment or vagina tends to occur because of the poor expulsive potentialities of the lower genital tract. Methods of applying mechanical assistance are shown in Fig. 3.

Methods of Mechanical Assistance

Crédé's manœuvre is dangerous in any circumstances and is always contraindicated.

Fundal pressure is undesirable, is rarely necessary, and has no useful effect if the placenta is still in the uterine cavity, whether it be separated or not. It is sometimes of value, the uterus being used as a piston, to aid the final expulsion of a placenta lying in the vagina.

Cord traction is the best mechanical method of assisting the delivery of the placenta and is safe so long as the uterus is

firmly contracted. Traction on the umbilical cord should be combined with support of the contracted uterus by upward suprapubic pressure.

Oxytocics for the Normal Third Stage

Ergometrine induces uterine spasm and consequent haemostasis at the placental site but may cause retention of the placenta if expulsion is not achieved with the onset of the contraction. Intramuscular injection of 0.5 mg. may take up to seven minutes to act, but if hyaluronidase is incorporated in the injection the interval is reduced to 4–5 minutes and the time of onset of contraction is more constant. This combination is useful if no assistant is available, but it is relatively expensive. The contents of two ampoules have to be mixed, but this can usually be done in advance. Ergometrine 0.5 mg. by intravenous injection acts in 40 to 60 seconds and this is probably the most effective way of expediting delivery of the placenta.

Practical difficulties are (a) judging the time to give it, (b) having someone available to give it, and (c) delivering the placenta before it is trapped by contraction of the lower segment. Ergometrine by intravenous injection should be given whenever the likelihood of post-partum haemorrhage is increased. While such patients should be delivered in hospital this cannot always be achieved in practice. It cannot be over-emphasized that ergometrine should be given intravenously to control post-partum haemorrhage whether the placenta is in the uterus or not. Oxytocics do not significantly hamper manual removal of the placenta.

Oxytocin "pitocin" (5 units) induces strong rhythmic uterine contractions and encourages separation of the placenta. It acts in about 2½ minutes when given by intramuscular injection. Although there are some advocates for the administration of pitocin during the third stage it is usually felt that because it does not induce sustained contraction it is not so effective as ergometrine in reducing the incidence of post-partum haemorrhage.

"Syntometrine," a combination of synthetic oxytocin (5 units) and ergometrine (0.5 mg.), is given by intramuscular injection. It encourages rhythmic uterine contractions initially, followed by sustained contraction after the expulsion of the placenta. Practical experience has shown the value of syntometrine in reducing the incidence of post-partum haemorrhage and it is the injection of choice in the routine management of the third stage of labour.

Technique for Delivery of the Placenta

1. Inject 1 ml. syntometrine intramuscularly after delivery of the baby's head, or as soon as practicable thereafter.
2. After delivery of the baby place a receiver at the vulva.

FIG. 3.—Expulsion of the placenta. (a) Crédé's manœuvre—never. (b) Fundal pressure—sometimes. (c) Cord traction—always.

3. If the bladder is full it should be emptied.
4. If the umbilical cord vessels are congested remove the clamp and let the blood drain out.
5. Wrap the cord round the right hand.

Place the left hand on the fundus of the uterus. As soon as the uterus contracts firmly press the fingers of the left hand backwards immediately above the symphysis pubis, thus supporting the uterus and tending to pull it upwards (Fig. 3c). At the same time apply steady cord traction. Practice will show how much traction is required. If the placenta is not expelled within 20 to 30 seconds by controlled cord traction, discontinue traction temporarily but repeat the manoeuvre at intervals of 2 to 3 minutes. If the placenta is not delivered within 15 minutes of the birth of the baby, and even if there is no third-stage bleeding, prepare for manual removal.

6. Examine the placenta on a flat surface as soon as possible. If there is any doubt of its completeness keep the placenta and consider exploration of the uterus or admission to hospital.

7. Keep the patient under close observation for at least one hour after delivery. Pay particular attention to:

- (a) Her general condition, pulse rate and blood-pressure ;
- (b) The state of the uterus ;
- (c) The amount of blood loss.

If there is excessive blood loss "rub up" a contraction, give ergometrine 0.5 mg. intravenously, and re-examine the placenta. If bleeding recurs or persists seek specialist advice.

The Abnormal Third Stage

Any case in which the third stage of labour lasts more than 15 minutes or in which the blood loss is 20 oz. (570 ml.) or more should be regarded as abnormal.

Retention of the placenta for more than 15 minutes occurs in only 6% of patients but post-partum haemorrhage occurs in 15% of these. If the placenta is still in the uterus 30 minutes after delivery of the baby excessive blood loss can be expected in one-third of patients and the likelihood of spontaneous expulsion of the placenta is negligible.

Retained Placenta

Apart from those cases where the placenta is lying in the vagina, failure of expulsion may occur in three circumstances:

1. The placenta may separate completely from the uterine wall, but be retained by constriction of the lower uterine segment. There is rarely significant haemorrhage in these cases.
2. True morbid adherence (placenta accreta), in which no cleavage plane can be detected, occurs in less than 1 in 4,000 deliveries, but there are intermediate states which frequently contribute to placental retention. If the placenta is entirely adherent bleeding will not occur.
3. Partial separation is usually due to a combination of factors—poor uterine action, especially in association with operative delivery, tentative and ineffective manipulation of the uterus after delivery of the infant, and partial morbid adherence, particularly to caesarean or myomectomy scars. In such cases haemorrhage invariably occurs and is often severe.

Post-partum Haemorrhage

Post-partum haemorrhage occurs in about 4% of patients. At least 20 women in the British Isles die from post-partum haemorrhage each year and a high proportion of these deaths occur in domiciliary practice.

In the majority of cases post-partum haemorrhage is due to uterine atony, with consequent failure of occlusion of the blood sinuses of the placental bed. This atonic haemorrhage implies at least partial separation of the placenta. Such haemorrhage can almost always be controlled temporarily by massage of the uterus and oxytocic drugs, unless the patient is severely shocked. If the placenta has already been delivered the possibility of a retained segment should be entertained.

If bleeding continues even when the uterus is firmly contracted, trauma can usually be incriminated. Commonly in such cases the injury is in the lower birth canal and the blood loss is insidious. Blood loss from an episiotomy or perineal laceration is often greater than that from the placental site. The extent of the loss may not be realized until the patient's condition deteriorates.

Bleeding from trauma to the uterus or cervix is not common. Cervical lacerations occur frequently, yet severe haemorrhage from these is rare. Usually the bleeding is a protracted ooze from ruptured veins. Severe traumatic haemorrhage results from lacerations of the cervix which may extend to involve the main uterine vessels, or from rupture of the uterus. In these circumstances, in addition to the revealed haemorrhage, there is also bleeding into the parametrium and/or into the peritoneal cavity. In consequence the degree of shock is usually disproportionate to the apparent blood loss. Apparently disproportionate shock also occurs in association with inversion of the uterus, and this should be suspected if the fundus of the uterus is depressed or not easily palpated.

Shock

In the majority of cases shock is due solely to oligæmia resulting from blood loss, unlike most other situations such as road accidents, where there is considerable tissue damage. Healthy women can usually tolerate a blood loss of 20 oz. (570 ml.) with little systemic disturbance. A loss of 20 to 40 oz. (570 to 1,140 ml.) is followed by an obvious reaction. Peripheral vasoconstriction occurs and the patient becomes pale, with perhaps some shivering and a little cyanosis and sweating. Blood is being diverted from the peripheral and splanchnic vessels to supply the vital centres. Some overcompensation usually occurs, and in spite of the appearance it is found that the pulse is often slow, full, and bounding and the blood-pressure is above the normal level. These signs should be regarded as a warning—the compensatory mechanism is stretched to its limits and will fail with little more haemorrhage. Profound shock will then follow, and the patient's life is in immediate danger.

Unfortunately the transition to this state of profound shock is often the result of misguided attempts to comfort the patient by responding to her demands for warmth. Applied heat defeats the vasoconstrictor mechanism and must not be used. A degree of shock out of proportion to the apparent blood loss should be regarded as due to oligæmia until proved otherwise. Pre-existing anaemia, ante-partum haemorrhage, or dehydration may have reduced the patient's reserves. If such causes are not in evidence the likelihood of concealed blood loss should be considered. The uterus and vagina become atonic in a shocked patient and a considerable amount of blood concealed therein may not be recognized. Significant bleeding into the parametrium is suggested by fullness and tenderness low in the iliac fossae. Intra-peritoneal bleeding, if considerable, may be detected as free fluid, but this is uncommon. The other signs of intra-peritoneal bleeding—rigidity and marked rebound tenderness—are rarely present in the early post-partum period. The most useful and constant sign is shoulder pain or hiccups which occur when the foot of the bed is elevated. This results from irritation by blood tracking under the diaphragm.

Only when the above conditions have been excluded should other possible causes of shock be considered. A particularly

confusing condition is adrenal insufficiency due to corticosteroid therapy which may have been stopped several months prior to labour. Severe infections such as virus pneumonia may also result in adrenal failure and produce a similar picture. Other rarer causes of post-partum collapse include air embolus, amniotic fluid embolus, pulmonary embolus, cerebral vascular accidents, coronary artery occlusion, spontaneous pneumothorax, inhalation of vomit, acute abdominal emergencies, and phaeochromocytoma.

Management of the Abnormal Third Stage

Excessive bleeding and retention of the placenta are so often associated that their management will be considered together.

1. A rapid assessment of the situation must be undertaken while instituting treatment. Consider first the general condition of the patient, her appearance, pulse, and blood-pressure. Next assess the amount of blood lost and the site and cause of the bleeding. If blood loss is continuing give ergometrine 0.5 mg. intravenously irrespective of the situation of the placenta and massage the uterus until it contracts. Finally, determine the situation of the placenta if it is not already expelled. The size and configuration of the uterus may indicate whether the placenta is still in the body of the uterus or the lower segment, and controlled cord traction following the intravenous ergometrine will effect delivery if the placenta is not trapped by the cervix. If in doubt, a vaginal examination may reveal the placenta protruding through the contracted lower uterine segment. If the bladder is full it should be emptied.

2. On the basis of these findings decide whether or not there is need for specialist aid or the Emergency Obstetric Service (Flying Squad). Allow for the possible delay in obtaining these services, especially if a significant journey is involved. For example, with continuing haemorrhage it is better to send for aid while the patient's condition is still reasonably good rather than wait until there is obvious shock. On arrival the Flying Squad may find that the bleeding has stopped in the interim and the patient's general condition is satisfactory. Although no treatment may be required, such a call would not be regarded as unnecessary.

3. If blood loss continues, repeat the dose of ergometrine. Pitocin, 5 units, injected directly into the uterine muscle, is sometimes effective when intravenous ergometrine has failed, or a continuous intravenous infusion of pitocin (10 to 20 U/litre) aids contraction if the uterus tends to relax. Drugs given by intramuscular or subcutaneous injection are not absorbed if the patient is shocked, and their administration under such circumstances is therefore useless.

Rarely, bimanual compression of the uterus is required if the usual methods fail to cause contraction. Uterine packing and douching are ineffective and potentially dangerous procedures.

If bleeding continues it is probably the result of trauma. Exploration and inspection of the genital tract should be undertaken, but only with adequate facilities and after resuscitation. The Flying Squad should therefore be summoned.

4. If shock is marked endeavour to maintain adequate oxygenation of the brain and cardiac muscle. If the blood-pressure is below 100 mm. Hg systolic, if there is a low pulse pressure or the pulse rate is over 100/minute, urgent resuscitative measures are required, and unless these danger signs are transient the Flying Squad should be summoned. The longer shock is allowed to persist the greater are the problems of resuscitation

and the risk of immediate or subsequent fatality. The quickest way of getting extra blood to the brain is to drain it from the legs and splanchnic vessels by raising the foot of the bed at least 12 inches. This also reduces blood loss from venous sinuses. Tight bandaging of the legs from the feet upwards is a lengthy and disturbing procedure and is rarely necessary. Oxygen should be administered if it is available and there is "air hunger." In the restless patient oxygen needs can be reduced by suitable sedation, which must be given by intravenous injection to be effective.

5. Restore the blood volume. Ideally, the loss of whole blood should be combated by replacement with whole blood. In the absence of blood, plasma is preferable to other substitutes such as dextran. There is no reason why every general-practitioner obstetrician should not have a transfusion set and plasma in his obstetric kit. Failing this, saline or dextrose solution increases the plasma volume temporarily, but the fluid is rapidly lost to the tissue spaces and the effect is transient. If transfusion is required the first half-pint at least should be given as rapidly as possible. A relatively small amount given quickly is far more effective in raising the blood-pressure than a large volume given slowly. Increasing the rate of flow with a pump or Higginson's syringe should only be adopted if it is really vital and should be carried out with extreme caution. Oral fluids are useless to a shocked patient and are a hazard if the administration of a general anaesthetic is likely.

Pharmacological methods of raising the blood-pressure, such as administration of methedrine, noradrenaline, or "aramine" (metaraminol acid tartrate), are indicated only in extreme circumstances—e.g., if there has been inadequate response to transfusion, if further infusion fluids are not readily available, or if there is specific indication, such as collapse which is non-oligaemic in origin.

6. Remove the placenta, if this has not been achieved initially, only after adequate resuscitation. A placenta trapped in the cervix can often be released by inhalation of amyl nitrite, 5 minims. The effect is transient, but can be dangerous if blood loss has been excessive.

Manual removal of the placenta is required in 1 to 2% of patients. Hence the average general practitioner will encounter only about one case per year. Success in performing the operation depends on practice and manual dexterity. The facility with which the placenta can be removed and the likely blood loss are unpredictable. For these reasons it is desirable to summon the aid of the Flying Squad so that adequate facilities and donor blood are readily available if necessary. In any case it is wise to institute an intravenous infusion before removing the placenta, even in the absence of blood loss. The sooner after delivery of the infant manual removal of the placenta is performed the easier it is. Following operative delivery early "elective" manual removal is indicated if cord traction fails. Within a few minutes of delivery manual removal can usually be performed without general anaesthesia. Pain and discomfort result from stretching the perineum and the peritoneum. The former can be combated by pudendal nerve block and the latter by proper technique.

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