POST-PARTUM HAEMORRHAGE

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Post-partum haemorrhage is defined as being "excessive bleeding from any part of the genital tract after the birth of a child." Some authorities make a hair-splitting definition and describe intra-partum haemorrhage when excessive bleeding occurs before the placenta has been delivered, and confine the term post-partum haemorrhage to excessive bleeding after the completion of the third stage of labour. As practically all serious cases occur before the placenta is delivered, the more commonly used definition will be used throughout this article.

The word "excessive" is subject to differences of opinion in its interpretation, many authorities state that a loss greater than 20 ozs. is excessive. It is exceedingly difficult to measure the loss with any accuracy. In some clinics special fitted trays have been used, draining direct into a bottle under the bed, in which it is hoped to collect all the blood; but even this method is not accurate, as frequently, especially in the more severe cases, some liquor amnii is retained in the uterus after the child is born, and is expelled with the blood, and so makes the reading inaccurate. Further, it is not very rare to express some urine from the bladder during manipulations designed to control the bleeding, which again will make the reading inaccurate.

In order to get over this difficulty, some authorities have suggested that the criterion of excessive haemorrhage should be when the woman shows signs and symptoms of loss of blood, but again we are faced with great difficulties, as the previous manipulations to effect delivery may have caused a rise in pulse rate, which is the main symptom to rely on to diagnose excessive bleeding.

In this article a rough estimate of an excess of 20 ozs. will be used as the definition, and it is suggested that it is unnecessary to try and be academically accurate.

The different varieties of haemorrhage:—

- (1) *Traumatic post-partum haemorrhage* due to the laceration involving an artery or arteries.
- (2) *Atonic post-partum haemorrhage*, due to insufficient contraction and retraction of the uterine muscle.

and these varieties may be further subdivided into:—

- (a) *Primary*, occurring within 24 hours of delivery.
- (b) *Secondary*, occurring any time up to three weeks after delivery.

The serious cases are all cases in Group 2a, and as this group of atonic bleeding is going to take up most of this article, we will deal shortly with the other two groups first, and so dismiss them.

Group 1. Traumatic post-partum haemorrhage.

During the course of delivery, the cervix is commonly lacerated, and if the laceration extends and tears a medium sized branch of the uterine artery, bleeding may persist as a slow trickle, and will continue when the uterus contracts, and after the placenta is expelled. More rarely, a laceration of the vaginal wall, involving a branch of the internal pudic artery, and still more rarely, there may be bleeding from a laceration of the perinaeum, or a ruptured varicose vein of the vulva. In a case of bleeding from the cervix or vaginal wall, the flow is a steady trickle of arterial blood, and this trickle continues irrespective of the condition of the uterus. The diagnosis is simple, and the treatment equally so. The treatment consists of examining with a speculum in a good light, when the spurting artery will be obvious. It is controlled either by a suture, or if it is not readily accessible, by ring forceps, which can be applied and left on the bleeding point for 24 hours, by which time blood will have clotted, and there will be no further bleeding. It may be feasible to insert a suture after the forceps are removed more easily than it was immediately after labour.

Group 2b. Secondary post-partum haemorrhage.

This condition very rarely occurs until ten days after the delivery, and is frequently quite alarming. It is always due to a gross piece of placental tissue that has been retained in the uterus, and is beginning to separate. Very commonly the retained portion of placenta is a

placenta succenturiata, and it is a very curious thing how in one odd case the careful obstetrician fails to examine the placenta after delivery, is the only case in his experience in which there is a placenta succenturiata! The diagnosis is again quite obvious, sudden profuse loss some days after delivery is secondary post-partum haemorrhage as soon as it becomes excessive. The treatment is, of course, to completely remove the retained bit of placenta. It is usual after having explored the uterus late in the puerperium to follow the exploration with a warm antiseptic douche, no other treatment is likely to be required, except perhaps a few days on an ecbollic mixture.

Group 2a. Atonic post-partum haemorrhage.

This group comprises practically all the serious cases, and certainly all the fatalities. The basic cause is failure of efficient contraction and retraction of the uterine muscle. A full description of this variety will be given.

Aetiology.

The normal mechanism for controlling bleeding is contraction and retraction of the uterine muscle. Owing to the disposition of the vessels in the uterine wall, muscle contractions tend not only to compress, but also to kink the vessels passing through it. It is easy to observe this phenomenon visually at a Caesarean section, when it can be seen that a flabby uterus is a deep plum colour, whereas when it is stimulated to contract and retract it becomes pale pink, and is obviously relatively avascular. This temporary occlusion of the blood vessels temporarily stops the flow of blood from the open mouths of the torn vessels and sinuses in the placental site, and during this temporary cessation of flow the blood clots. Clotting of blood and organisation of the blood clot is the only way in which bleeding can be permanently controlled. Temporary occlusion of the torn vessel, either by pressure or by a ligature, only acts by checking the flow, while clotting and organisation of the clot takes place.

Excessive bleeding can only occur from the placental site, when the greater part, if not the whole, of the placenta has separated, and excessive bleeding does not occur with an adherent placenta. It is especially important to realise this point, when we come to treatment, as treatment of post-partum haemorrhage is totally different from the treatment of a simple retained placenta.

Efficient contraction and retraction of the uterus can only take place when the uterus is empty. The presence of the placenta in the uterus prevents full retraction and will prevent a complete occlusion of the blood vessels coursing through the uterine muscle, especially in a uterus that is acting weakly.

Predisposing Factors.

The contractile power of the muscles may vary very greatly, and included in "muscles" is the muscle of the uterine wall, the uterine muscle may be inherently weak, contracting poorly throughout labour, and contracting poorly after the child is born.

The muscle may lose energy either by using up the available sugar in the patient's system, or possibly by exhausting the chemical bodies that are liberated at the nerve end plates among the muscle fibres, and the uterus may contract reasonably well during the labour, but fail to contract so well after the child has been expelled.

An unduly long labour may exhaust the supply of sugar, or the chemicals of the nerve endings in what was originally a normal active uterus.

Debilitating conditions such as ante-partum haemorrhage may lower the patient's reserve, and a further small loss may produce more marked effect.

Various drugs may weaken or inhibit the action of the muscle, and over-administration of analgesics may be a factor in producing an atonic uterus.

Prophylaxis.

It is difficult to guard against post-partum haemorrhage as the various factors that predispose to it are so often beyond our control. We cannot strengthen an inherently weak uterus, and we cannot always avoid an unduly long labour. Perhaps the most important prophylaxis is the care and supervision of the patient immediately after the child is born, and most of the

fatal cases occur when there is inadequate assistance at the delivery, such as occurs when a woman is confined in a cottage with perhaps one midwife alone in charge of the case, or if it is an instrumental delivery, with a doctor assisted by the one midwife. It is evident that the main prophylaxis that can be carried out amounts to little more than the ordinary antenatal supervision in an endeavour to have a healthy woman, to guard against minor disproportion in order to avoid undue delay and exhaustion in labour, and care in the actual delivery of the child, making sure that the uterus is contracting and that the fundus follows down with the child's body. Further, after delivery of the child, to "guard" the fundus to prevent the uterus becoming distended with blood even though it be atonic.

Treatment.

The really severe cases of excessive bleeding usually occur before the placenta has been expelled, and the first principle in treatment is to empty the uterus. In the case that occurs when there is inadequate assistance, it usually occurs because the mother has been of necessity neglected, while an asphyxiated child is revived, and it is only realised that bleeding is taking place when the clinical signs of haemorrhage begin to occur, by this time two or more pints may have accumulated in the uterus, and the flabby atonic uterus is distended almost to the size it was before the child was expelled. The first step in emptying the uterus is to define the fundus, which may be found almost at the ensiform cartilage. Having defined the fundus with the left hand, it is "gathered up" into the lower abdomen. This manoeuvre will express a great gush of blood clot, and in many cases the uterus will contract and retract, and the bleeding will be immediately under control. If the uterus does contract firmly, the placenta can usually be expressed by Credé's method. Credé's method consists of folding the abdominal wall behind the uterus with the fingers of the left hand, and placing the thumb of the left hand in front of the uterus, grasping the fundus between the fingers and thumbs; the fundus is then squeezed, and if the uterus is contracting firmly, this squeezing action will expel the placenta from the uterus into the vagina. The uterus will then retract and contract, the placenta can then be expressed from the vagina by using the contracted uterus as a battering ram to push it out.

In some cases the uterus does not contract after it has been "gathered up" into the lower abdomen, it remains flabby and bleeding continues. In such a case no attempt should be made to express the placenta; it will not be successful so long as the uterus is flabby, and will only cause further bleeding and waste time. The placenta, which is practically completely separated, must be got out without delay, and if the uterus will not contract firmly the only method is manual removal of the placenta. To carry out this manoeuvre, the right hand must be rinsed in the nearest bowl of a clean antiseptic solution that is available, and inserted into the vagina. The cord is followed up into the uterus, and it is a very useful guide as to the exact situation of the placenta, and by moving the fingers away from the insertion of the cord the free edge of the placenta is easily felt. The fingers are then inserted between the placenta and the uterine wall, guided by the left hand, which is still kept on the abdominal wall guarding the fundus. With a sawing motion with the tips of the fingers, any undetached portion of the placenta is easily separated, and the whole placenta is grasped by the right hand. The right hand, holding the placenta, is slowly withdrawn from the uterus, the fundus being carefully guarded and controlled by the left hand, keeping the uterus in contact with the right hand, so that no dead space is left that would fill up with blood. The uterus will usually contract and retract well, now that it is empty; but in some rare cases the atonic condition may be so marked that it still fails to contract and still bleeds. When it does, the only way to control the bleeding is by direct pressure on the bleeding surface, by bi-manual compression. To carry out this manoeuvre, the left hand is still guarding the fundus, the right hand is again rinsed and inserted into the vagina, and made into a fist. The fist is pushed into the anterior fornix and pushed forwards above the symphysis pubis, so that the fundus can be folded over it by the left hand, and the whole uterus is compressed by pressing the two hands strongly together.

In practice it will be found that with an ordinary bed, the operator can keep up this pressure for a much longer period if he kneels on the floor and rests the right elbow on the bed. Pressure must be kept up continuously for about ten minutes, during which time the uterus will be felt to harden between the two hands as it regains its tone. Further, during this interval, there is a chance that the blood will clot in the open mouths of the torn sinuses. The pressure can now be released, and the right hand slowly withdrawn, the left hand still guarding the fundus.

One great principle of the treatment of post-partum haemorrhage is that the left hand must never leave the fundus until all danger of bleeding has passed, and the uterus is contracting and retracting firmly and well.

Steps can now be taken to maintain contraction and retraction of the uterus. A hypodermic injection of ergometrine or pitocin is an excellent aid. If intra-uterine manipulations have been carried out, either manual removal or bi-manual compression, an intra-uterine douche of weak antiseptic at a temperature of 118° F. is valuable as a prophylactic against sepsis, as a stimulus to uterine contraction, and as an aid to the clotting of blood.

After-treatment.

If a large amount of blood has been lost, the obviously ideal treatment is to replace it immediately by a blood transfusion; but a blood transfusion can only be carried out when there is adequate assistance and facilities available. Less assistance is needed for a saline infusion, but usually in the circumstances of domiciliary practice this method is also not possible. However inadequate assistance and facilities are, it is always possible to insert fluid into the rectum and ten ounces of water from the pump in the garden, with half teaspoonful of salt from the kitchen dresser is a perfectly satisfactory rectal saline, and may be repeated two-hourly, and will do much to replace the lost fluid.

In all cases of haemorrhage, it is important to maintain the body temperature, and warm blankets, hot bottles, and a warm room can always be provided.

When there has been a serious depletion of the total volume of blood, it is important that as good a supply as possible be maintained to the vital centres in the medulla, and if the foot of the bed be raised on chairs, so that the head is lower than the abdomen, the blood that is available has more chance of going to the brain than if the patient is flat.

The available blood in the body can be concentrated in the more important situations by firm bandaging of the limbs, starting at the extremities, and bandaging the whole limb firmly enough to exsanguinate the limb. Subsequent treatment will consist of continuing the ecbolics.

OVARIAN DYSFUNCTION

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In the last quarter of a century no branch of medicine has received more intensive study than that concerned with the sex hormones; and although considerable knowledge has been acquired, a great deal remains to be clarified. Before discussing the disorders of ovarian function, it is worth while considering briefly the known facts regarding the physiology of the ovary.

Hormones of the Ovary.

There are two hormones produced by the ovary, one called **oestradiol**, the other **progesterone**. Oestradiol (often termed "Oestrin," or the "Oestrogenic hormone") is produced in both the Graafian follicle of the ovary and in the corpus luteum. Prior to puberty, the follicles enlarge, but not to full maturity; little hormone is produced, but sufficient to aid in the development of the secondary sex characteristics. From puberty to the menopause the monthly maturation of the follicles is accompanied by the regular production of oestradiol. This hormone exerts an important trophic influence on all the genital tissues leading to full development of the organs; it stimulates the pelvic blood circulation, and activates the endometrium and muscle of the uterus. Under this oestrogenic influence the quiescent endometrium thickens, and the glands proliferate during the first half of the menstrual cycle. In the middle of the cycle, the mature Graafian follicle ruptures and allows the ovum to escape; that is to say, ovulation occurs. The follicle is then rapidly transformed into the corpus luteum, which not only continues to produce oestradiol, but also to produce the hormone, progesterone. The latter converts the endometrium of the proliferative phase into the secretory phase, for the corpus luteum hormone alone can stimulate the glands to full secretory activity. The pre-menstrual state of the uterine mucosa is brought about by the combined action of the two ovarian hormones,