THE CAUSES AND TREATMENT OF RETAINED PLACENTA*

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Retention of the placenta, with its common complication post-partum haemorrhage, is one of the disasters of child-bearing which even the most efficient ante-natal care cannot prevent. Before considering the causes of placental retention I would distinguish two entirely different conditions in which the placenta remains in the uterus: one is retained placenta, and the other is adherent placenta—much the more rare, having been reported in English journals on only two or three occasions.

Causes of Retention

Adherent placenta occurs when, for one reason or another, the spongy layer of the decidua is absent and the placenta finds direct attachment to the muscle wall (placenta accreta) or even invades the muscle wall (placenta increta). In neither of these instances will there be a line for cleavage, and so the placenta must adhere to the uterine wall. If this adhesion be complete there can be no danger of haemorrhage taking place, owing to the complete lack of placental separation. Repeated dilatation and curettage of the uterus and implantation over submucous fibroids have been suggested as predisposing causes, while incomplete adhesion may occur in the region of the uterine scars. The incidence of adherent placenta has been estimated to be from 1 in 6,000 to 1 in 40,000 births.

Retained placenta is a condition in which the placenta separates partially or completely, but because of some secondary complication (usually a mechanical one) is not expelled from the upper segment of the uterus. The commonest cause of placental retention is undoubtedly uterine inertia, and it is interesting to note that the use of forceps for delay in the second stage of labour often precedes a delay in the third stage. The presence of the placenta in the uterus is in itself a sufficient stimulus for the recurrence of pains in a short time after the delivery of the child. Weak pains are active enough to separate the placenta, but strong pains are necessary to strip off the adherent membranes and to push the placenta down the birth canal.

I believe that in most cases of delay in the third stage of labour the placenta is lying free in the uterine cavity suspended from the uterine wall by the membranes. This assertion is borne out at the operation of Caesarean section, when the placenta separates as soon as the child is delivered: on the other hand, its membranes are found to cling firmly to the uterine walls. This point requires emphasis, because it has an important bearing on the use of injection of the umbilical vein as a mode of treatment for retained placenta. Irregular contractions of the uterus (of which the best example is a contraction ring) may hold a placenta in the uterine cavity and act as another cause of delay in the third stage of labour. Such contractions follow interference—either internal interference during delivery, meddlesome interference with the fundus after the completion of the second stage, or, lastly, the injudicious use of pituitary extracts.

It was because the danger of over-zealous interference was realized that a rule for the conduct of the third stage of labour was introduced into the Leeds Maternity Hos-

pital some years ago which forbade the touching of the uterus for twenty minutes after delivery of the child unless a free loss of blood merited fundal massage. Like all rules this one was bound to fail; in 1932 a patient bled to death owing to the filling up of her atonic uterus with blood, while no obvious outward signs of loss of blood were noted by the nurse in charge.

Nowadays a hand is placed above the fundus, not for the purpose of controlling it but rather to appreciate any changes which may take place in it: should it soften and rise in the abdomen, then gentle massage is applied to it in order to excite contractions of the uterus; should it harden and rise in the abdomen, then tests for the freedom of the after-birth are made. The estimation of the general condition of a recently delivered woman is a matter of considerable difficulty, for the amount of blood that she can lose without being upset varies greatly. The pulse rate may show an alteration of only five beats per minute after a loss of 1,700 c.cm. of blood. The blood pressure and pulse volume are much safer indices: a systolic blood pressure below 100 mm. suggests the need of salines, and below 80 mm. the need of a blood transfusion.

Certain mechanical factors may also act as causes of retention of the placenta. In placenta praevia the attachment of the placenta to the relatively inert lower segment and its consequent partial and delayed separation leads to post-partum as well as to ante-partum haemorrhage. Similarly, in hydramnios—quite apart from the possibility of associated uterine inertia—the placenta may be thin and may cover a large area, thus acting as a poor stimulus for uterine contractions. A patient is quite commonly received into the wards with a retained placenta and no bleeding in whom, after examination, the placenta is considered to be free in the uterine cavity, but its passage is prevented by a full urinary bladder: after catheterization expression is an easy matter. The presence of fibroids is another not uncommon mechanical cause of retained placenta; the retention may be due to the associated uterine inertia or the placenta may rest in a pocket formed from the uterine cavity which has been distorted by the fibroid.

Dangerous Methods of Removal

A placenta was said to be retained if it had remained in the uterus for two hours after the delivery of the child. This definition is adequate only in the absence of bleeding, for when there is post-partum haemorrhage it is imperative that the placenta be removed as soon as possible. At present the methods for the removal of the retained placenta in general use are Credé's manœuvre (at first without an anaesthetic and then with an anaesthetic), and, should this fail, manual removal. For some reason or other both yield better results in the hands of general practitioners than in those of the staffs of lying-in hospitals; nevertheless I feel that they are dangerous methods, especially that of manual removal.

During the past six years I have seen serious cases of shock, one case of complete inversion, one of ruptured uterus, and many of partial delivery with rupture of the placenta, all follow Credé's manœuvre and render it necessary for them to be sent to hospital. Manual removal of the placenta is one of the most fatal of surgical procedures, and one in every four cases in which it is used shows signs of uterine infection—according to the B.M.A. standard. Of eighty-four cases of manual removal recorded in Leeds between 1924 and 1930 thirty-eight were morbid and thirteen ended in death. The dangers of the

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operation are many, and include sepsis, shock, haemorrhage, and rupture of the uterus.

It is the fear of these complications that has encouraged the staffs of hospitals to avoid manual removal if possible, and it is to this delay that the high mortality rate from this procedure is attributable. Of thirteen deaths recorded in Leeds eleven occurred at or within a few hours of the operation and only two subsequently from sepsis. These figures suggest that the operation was delayed until it became an urgent necessity and the patients were *in extremis*. The frequent manual removals carried out by general practitioners without death supervening may be explained by the suggestion that they are done mainly soon after the delivery of the child (possibly in cases which hardly merit such intervention) and that they too are successful in avoiding the introduction of sepsis. In spite of this, however, two or three patients are admitted to hospital each year after manual removal has been performed, and death follows from one of the complications already mentioned.

Treatment by Injection

It is this difficulty of not knowing when the placenta should be removed manually that has made the introduction of the method of injecting the umbilical vein so welcome. This method was used in 1826 by Mojon, who employed cold acidulated water and thought that his results were obtained on account of the low temperature. Jarcho in 1928 described two cases in which, after the injection of 250 c.cm. of saline into the umbilical vein, the placenta was expelled. He surmised that a retroplacental hydroma was formed which separated the placenta. It was this memorandum that suggested our starting work on the injection method, the technique of which may be outlined as follows.

The umbilical cord is cleansed with spirit, the trocar and cannula is inserted into the umbilical vein about eight inches from the vulva, and held in place with a cord ligature; 450 c.cm. of sterile saline at blood heat are then injected as rapidly as possible by means of a Higginson's syringe. The uterus rises in the abdomen, contractions occur, and the placenta is separated; in many cases it is expelled spontaneously. I injected a hundred freshly

delivered placentae with saline and found that they could accommodate 500 c.cm. of fluid before they begin to leak. This finding invalidates Jarcho's theory of the formation of a retroplacental hydroma. Doubtless the true explanation lies in the fact that on injection the placenta increases until it is nearly twice its original bulk, packs the uterus, stops the bleeding, and in most cases elicits contractions forcible enough to push the placenta into the vagina and to strip off the membranes from the wall of the uterus.

After the completion of the injection tests are made for the freedom of the placenta. If these tests show that the placenta is in the lower uterine segment or in the vaginal vault the fundus is massaged and the placenta is expressed. If, on the other hand, the tests show that

the placenta is still in the upper part of the uterine cavity the patient must not be disturbed. The uterus has been packed by the distended placenta and bleeding ceases; further solution may be injected if bleeding recurs, and eventually, as the patient's condition improves, the uterus will regain its tone and the placenta can be expressed.

Advantages of the Method

The injection method has the advantage of simplicity in that it requires little surgical technique. Moreover, the umbilical vein is the largest vessel in the cord and the needle can be easily introduced. Water which has been recently boiled may be employed, and after the injection has been completed the cannula may be plugged by reinserting the trocar. It is advisable to insert the cannula into the vein as far away from the vulva as possible in order to preserve a long length of cord lest further injections be found necessary.

Surprise may be felt that such a convenient way of releasing the placenta fell into disuse. Its disrepute resulted from the use of non-sterile acidulated water, causing some patients to become septic; from the statement made by a well-known obstetric surgeon in Germany (Koerting, 1925), where the method was commonly employed, that it was of no value in cases of haemorrhage; and from the fact that unless the fluid is injected quickly no rapid change in the bulk of the uterine content is obtained and the resultant uterine contractions are weak. Consequently the use of glycerin as the injection fluid is not likely to yield good results, because such a viscid fluid cannot be injected quickly.

After the introduction of the injection treatment of retained placenta the need for manual removal immediately fell from twenty-five to one or two a year, and that method was used in cases where the cord was macerated or absent. In the Leeds records up to the end of the year 1935 the umbilical cord had been injected on 186 occasions, mainly for retained placenta, with or without post-partum haemorrhage; of these only two cases ended fatally and eight were reported morbid. One of the deaths occurred after admission in a moribund condition, and the other was that of a patient with advanced heart disease. The septic cases all followed instrumental delivery. In comparing these figures with those of manual removal we find that the death rate is 1.6 per cent. against 15.4 per cent., and the morbidity rate 8 per cent. against 45.2 per cent.

Additional uses to which the injection of the umbilical vein can be put include prophylaxis against post-partum haemorrhage (it is our custom to inject the vein if the patient has lost 600 c.cm. of blood without delivery of the placenta) as a precaution in cases of placenta praevia immediately after the delivery of the child, and as a means of clearing the field before suturing episiotomy wounds or tears accompanying a difficult instrumental delivery.

REFERENCES

- Jarcho, J. (1928). *Surg. Gynec. Obstet.*, **46**, 265.
Koerting, W. (1925). *Arch. Gynäk.*, **124**, 525.

R. Drenkhahn (*Med. Welt*, March 20, 1937, p. 394), on purely theoretical grounds, arrives at the conclusion that atropine in small doses causes a relaxation of the sphincter of the portio vaginalis of the uterus, while it has no effect, or possibly a slight stimulating effect, on the muscles of the body of the uterus. It should be useful in over-activity and tetanus of the uterus, but it is relatively useless in normal labour, in which the hypophyseal extracts are far more effective.