RETAINED PLACENTA AND POST-PARTUM HAEMORRHAGE

BY

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Though the complications during the third stage of labour and immediately after it are really the province of the obstetrician, it may perhaps be of interest to consider them from the somewhat different point of view of the pathologist. The following observations are based on a series of 98 patients with such complications who died and were studied at necropsy at Glasgow Royal Maternity Hospital. Sixty-six of these patients died as a direct result of haemorrhage and shock, nearly always within 12 hours after the delivery of the baby. The other 32 had similar haemorrhage and shock but recovered temporarily; they died later in the puerperium from other causes.

It will of course be clear that the relative frequency of the complications of the third stage in the present series of fatal cases is probably not the same as that in patients who do not die. It should also be remarked that the present data cannot be compared directly with those of Glass and Rosenthal (1948), as the cases have been classified on quite different lines.

Retained Placenta

For the present analysis the placenta has been considered as "retained" if there was delay or difficulty in its delivery, and also if severe haemorrhage occurred early in the third stage and necessitated emergency measures for the removal of the placenta. The cases have been divided into five groups according to the main factors causing the retention. These factors were determined from the necropsy findings when all or part of the placenta remained in the uterus at the time of death, and from the obstetrician's description of the details of removal when the placenta had been removed during life.

Constriction Ring (2 Cases).—In this type the placenta separates completely but is held in the uterus by a constriction ring (Fig. 1). This is only a rare cause of death. Both patients had manual removal, but died a few hours later.

Atonic Non-detachment (45 Cases).—This failure of separation of a normally attached placenta is a common cause of death. If the placenta is still in the uterus at necropsy the uterus does not appear well retracted; the upper three-quarters of the placenta is attached as it had been during the pregnancy, but its lower portion (about one-quarter) is usually separated. The placenta is not pathologically adherent anywhere, and can be peeled off quite easily from the opened uterus (Fig. 2). When the placenta has been removed before death the uterus appears quite normal at necropsy and is well retracted; it does not contain placental remains, though if the patient has lived for a few hours after

FIG. 1.—Constriction ring.

FIG. 2.—Attached non-adherent placenta.

the removal there is the usual small mass of clot attached to the placental site.

The haemorrhage that occurs in many of these cases is well accounted for by the separation of the lower edge of the placenta. The failure of separation of the whole placenta appears to be due to uterine atony during the third stage. The present series of cases give no clear information why this atony occurred. Throughout the second stage the uterus had functioned excellently; the labours were nearly always normal, though a few were unduly short, and only two of the patients had an anaesthetic for the delivery. During the third stage there is clear evidence of atony, and it might reasonably be expected that this atony would continue subsequently. However, as soon as the placenta is delivered the uterus appears to act normally: none of the patients in the present series had haemorrhage after the placenta was removed.

A study of the general data shows that a rather high proportion of the patients were advanced multiparae and that two of them had had a retained placenta at the last delivery: the evidence from the present series is insufficient to allow of valid conclusions on the significance of these factors.

Partial Adhesion (18 Cases).—This group of cases is characterized by an abnormality of attachment of the placenta at one part of the uterus, usually in its upper half. The placenta bulges out into a bay in the uterine wall so that the myometrium is thin, sometimes only 2–3 mm. The placenta can be removed from this site at necropsy only by tearing through the attachment, leaving small tags behind. The underlying myometrium is quite tough; in the present series the wall was never perforated in the course of manual removal during life or in tearing off the placenta at necropsy. Occasionally the whole placenta is found in the uterus at necropsy, but the commoner condition is that most of the placenta has been removed, leaving a mass adhering in its bay in the uterine wall (Fig. 3). If the placenta has been completely removed during life the only remaining evidence is the area of very thin uterine wall.

Complete Adhesion (6 Cases).—This is the condition known as placenta accreta. The adhesion is similar to that in the previous group, but is almost universal instead of being limited to only one or two areas. The uterine wall is scalloped out into a series of bays, each of which may be very extensive (Fig. 4). The adhesion is sometimes so complete that no separation occurs at all and there is thus no haemorrhage. Usually the patient dies with the placenta in the uterus, or she has a hysterectomy. However, in two of the present cases the condition happened to be met with in the course of a caesarean section, and the operator removed the placenta by blunt dissection.

The last two groups, the partial and the complete adhesions, appear pathologically to be merely different degrees of the same process. This seems to originate early in pregnancy, as it occurs in some abortions. It was associated with placenta praevia in eight of the present cases; the adhesion in these was commonly in both the upper and the lower segments. Previous retained placenta and previous puerperal

FIG. 3.—Partially adherent placenta.

FIG. 4.—Accrete placenta.

infections, do not appear to be important factors, as adhesion occurs in primiparae with the same relative frequency as in multiparae. The condition has no obvious effect on uterine function: many of the labours were short, and the average duration of the first and second stages together was 15 hours.

Intraperitoneal Rupture (2 Cases).—These were ruptures of the uterus with escape of the placenta into the peritoneal cavity so that it could not be delivered.

Factors Leading to Death from Retained Placenta

Most of the patients die within eight hours after the birth of the baby; the particular manner of death appears to be a combination of shock and haemorrhage in varying proportions. There are three factors to be considered in this connexion: blood loss, traumatic shock due to the manner of removing the placenta, and the length of the third stage of labour.

Blood Loss

Some patients have brisk haemorrhage; others have a gradual but continued blood loss which may be much greater than is appreciated. These patients may die from haemorrhage unless treated early by adequate blood transfusion. But many patients have relatively little blood loss, and death in these cases seems to be due essentially to shock.

Trauma of Interference

Every obstetrician has seen patients who collapsed shortly after forcible expression of the placenta or after manual removal. This has led to the widespread condemnation of both these procedures: it is usually maintained that manipulations such as these are of their very nature almost bound to lead to shock. On the other hand, the trauma involved cannot be compared with that which occurs in the ordinary process of delivery of the baby, and this does not cause shock. The present series of cases happens to give some information on the problem of whether these methods of removing the placenta are in themselves productive of serious shock.

In the hospital where these necropsies were performed there were three obstetric units, each of about the same size and with the same intake of patients, so that their results may fairly be compared. The chief obstetrician of one of these units held very strong views on "mismanagement of the third stage." His guiding principle was to leave the placenta to separate naturally even if this took a long time. He made strict rules in his unit that there should be no interference with the uterus. Control of the fundus was allowed, sufficient to prevent bleeding, and gentle expression was permitted when the placenta was obviously lying free in the lower segment or vagina. Apart from this, there was a clearly stated policy against expression, Credé's manœuvre, or manual removal. On the other hand, in the other two units the staff was allowed considerable freedom in attempts to get the placenta away. Expression of various types was attempted, probably in many cases with ascending grades of force, and, if this was unsuccessful, manual removal was performed. (Intravenous ergometrine had not become a recognized treatment at the time these cases occurred.) The Table shows the number of deaths in the three units.

Results of Treatment of Retained Placenta

	Interference Unit 1	Interference Unit 2	Non-interference Unit
Deaths within 12 hours:			
Placenta delivered	9	9	5
Placenta <i>in utero</i>	4	2	11
Deaths after 12 hours:			
Placenta delivered	6	12	7
Placenta <i>in utero</i>	0	0	4

The 16 early deaths in the unit where non-interference was the rule are not significantly different from the 13 and 11 early deaths in the other two units (which are termed, purely for contrast, "interference units"). The only obvious effect of the policy of non-interference was a tendency for the patients in that unit to die with the placenta still *in utero*. So far as these figures go, they suggest that, though forcible expression and manual removal may not be ideal procedures, their omission in cases of retained placenta is at any rate just as harmful to the patient as their performance. It does not appear that progress in the treatment of retained placenta will be achieved along this particular line of non-interference.

Duration of Third Stage

The most striking point in the present series of necropsies is that, with certain special exceptions which are discussed below, the third stage of labour had been allowed to continue for three hours or more. This is shown in Fig. 5,

which deals only with the patients who died of haemorrhage or shock. The clear parts of the columns indicate the time of removal of the placenta; the patients lived, on the average, about two hours longer. The black parts of the columns

FIG. 5.—Duration of third stage of labour. Clear parts of column = time of removal of placenta; black parts = patients who died with placenta still *in utero*.

represent patients who died with the placenta still *in utero*.

The six deaths following immediate removal of the placenta form a special group—three cases of caesarean section in which the placenta was found to be grossly adherent, and three cases of enormous haemorrhage which necessitated immediate manual removal but which was followed by rapid death, purely from blood loss. There were no deaths of patients who had the placenta removed between a half and two hours after the delivery of the baby. Most of the deaths occurred in cases in which the placenta had been left *in utero* for three to seven hours. The particular kind of treatment, whether removal of the placenta or leaving it in the uterus, did not seem to be a significant factor at this stage.

A great variety of interpretations can be placed on the significance of this prolonged third stage, but they are all speculative. The important question is whether the mortality would be reduced if the third stage was always completed in less than one hour—by oxytocic drugs or by expression or by manual removal. Unfortunately this question cannot be answered, as there does not seem to be an adequately controlled investigation of the matter.

Post-partum Haemorrhage

In the series there were 25 cases of severe haemorrhage following delivery of the placenta: 16 of these patients died within seven hours after delivery; the other nine recovered temporarily but died later in the puerperium. These fall into two groups.

Rupture of Uterus (6 Cases).—In these patients the cause of the bleeding was found at necropsy to be rupture of the uterus or significant cervical tears; the amount of the haemorrhage varied.

Atonic Post-partum Haemorrhage (19 Cases).—In these cases there was atony of the uterus and gross haemorrhage after the delivery of the placenta. At necropsy the uterus was large and poorly retracted. In every case of this group the placenta had been delivered easily, always within an hour and usually within a few minutes. However, the confinement had often been complicated: accidental haemorrhage in four cases, dystocia and forceps delivery under general anaesthesia in seven, and section under general anaesthesia in one. There were also two interesting cases in which a sudden severe haemorrhage about two hours after a normal third stage was the first warning of a post-partum eclampsia.

It is just as difficult to find a really adequate explanation for atonic post-partum haemorrhage as it is for atonic non-detachment of the placenta. It would in theory be quite reasonable for the uterus to be so "worn out" by a difficult second stage that it could not retract adequately either in the third stage or subsequently. In fact this type of atony is not common. Instead there are two different conditions: (1) The attached non-adherent placenta: the uterus has functioned well and easily in the first and second stages of labour, is atonic in the third stage of labour, but retracts excellently as soon as the placenta is out. (2) Post-partum haemorrhage: the uterus has often had difficulty in the first and second stages of labour, retracts excellently in the third stage and expels the placenta easily, but becomes atonic after the placenta is out. The present study does not help in the elucidation of this paradox.

REFERENCE

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TYPHOID TREATED WITH CHLOROMYCETIN

BY

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In view of the present outbreak of typhoid fever at Crowthorne (*Journal*, May 7, p. 827) it is of topical interest to submit a preliminary and admittedly incomplete and imperfect record of treatment with chloromycetin of another case of typhoid fever recently seen in the Hospital for Tropical Diseases.

Case Report

This patient, a European aged 55, arrived by air at Southampton on April 5, 1949, three days after leaving Pakistan, where he had been on a short business trip. On his homeward flight and for the next ten days he did not feel fit, but was not ill enough to consult a doctor. On April 15 he had some shivering, sweating, and generalized aching, but continued his normal activities until April 20, on which day he himself drove 200 miles by car, finally calling at the Hospital for Tropical Diseases, where he complained of feeling feverish. Examination then revealed: temperature 103° F. (39.4° C.), but no focal signs of infection; haemoglobin 90% (Haldane), erythrocytes 4,430,000 per c.mm., leucocytes 5,300 per c.mm. (neutrophils 66%, lymphocytes 31%, monocytes 3%); no malaria parasites; slight albuminuria. He was admitted to hospital.

From April 21 to 26 he had a remittent fever (101–103° F. = 38.3–39.4° C.); he developed severe toxæmia, delirium, some cyanosis, a distended abdomen, and two crops of rose-coloured spots on his trunk. Relevant laboratory findings were as follows:—April 21: Blood agglutinin titre, T O negative, T H 1 in 250 (he had not been inoculated). April 22: Blood culture, *Salmonella typhi*; faeces negative. April 25: Blood agglutinin titre, T O 1 in 250, T H 1 in 1,000, T Vi 1 in 10. (The Vi agglutination was kindly done by Dr. Felix, who

at the same time found somewhat higher titres for T O and T H than those quoted; the lower figures are given, however, as they form part of the comparative series obtained at 50° C., whereas Dr. Felix did not heat the serum beyond 37° C.)

From April 26 to May 2 the patient was given chloromycetin (chloramphenicol, Parke Davis) orally. The initial dose was 4 g., and this was followed by 0.25 g. two-hourly, a total of 22.75 g. being given. During the first 24 hours of treatment his temperature fell to normal; thereafter it rose again and then subsided steadily during the next three days (see Chart). In the first 24 hours the patient's general condition

became markedly worse, and then gradually improved. Twenty-five days after the onset of the disease we now have another negative culture of faeces. On the evening of the twenty-fifth day the temperature was 97.6° F. (36.4° C.) and on the morning of the twenty-sixth day it was 98° F. (36.7° C.).

Discussion

In view of his history of indefinite but possibly prodromal symptoms during the fortnight preceding April 15 it is impossible to be sure of the exact duration of the illness before treatment, and it might be argued theoretically that the fever terminated naturally. It seems reasonable, however, to suggest that the first definite febrile manifestation was on April 15, when he had shivering, sweating, generalized aching, and malaise, and consequently that the illness was of about five or six days' duration when he was admitted to hospital. Such a duration is compatible with his initially mild toxæmia, the very slight anaemia, the white cell count, the impalpable spleen, the positive blood culture, the negative faecal culture, and the low agglutination titre found on admission to hospital; and with the appearance of the rash, the rapid development of severe toxæmia, and the rise in agglutination titre soon after admission. Alternatively, if the illness was of longer duration, then it certainly became exacerbated about the time of admission to hospital. In either event it seems unlikely that the patient would have improved without treatment as rapidly as he did after he was given chloromycetin: certainly his clinical condition just before treatment gave rise to considerable anxiety.

Finally, the improvement with chloromycetin was what was anticipated from previous observations on typhoid fever treated with the drug (Woodward *et al.*, 1948).

Chloromycetin originally isolated from cultures of *Streptomyces venezuelae* has now been synthesized (Ehrlich *et al.*, 1947, 1948; *B.M.J.*, 1949). It is 1-ψ-1 p-nitrophenyl-2-dichloroacetamidopropane-1:3-diol, a white crystalline substance with bitter taste. It has considerable antibiotic activity against a wide variety of patho-