MORBID ADHERENCE OF THE PLACENTA

A CASE PRESENTING AN UNUSUAL PROBLEM AND A REVIEW OF THE LITERATURE

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Morbid or pathological adherence of the placenta is a rare, though important, complication of the third stage of labour. It can be sub-divided into:

(*a*) Placenta accreta, where the villi have penetrated the uterine muscle, but very superficially.

(*b*) Placenta increta, where deeper penetration of the muscle has occurred, but the serosa has not been reached.

(*c*) Placenta percreta, where the villi have penetrated the whole thickness of the uterine wall and have reached the serosal surface.

An unusual problem which presented early in pregnancy prompted our interest in this condition; this problem is fully described in the following case history:

Case Report

Mrs. J.M.O., 32 years old, White gravida 4, paragravida 3, was seen in February 1963 when she was 8 weeks pregnant.

Her past obstetrical history was of a normal pregnancy and labour in 1956, complicated by a retained placenta which required manual removal. In 1957 her second pregnancy was again normal and this time the placenta was delivered spontaneously, but it was apparently incomplete and a postpartum haemorrhage of about 30 ounces followed. On the twelfth postnatal day a considerable secondary postpartum haemorrhage occurred, for which she required a transfusion of 4 pints of blood before an evacuation of the uterus could be performed. At this operation a large quantity of placental remains was removed from the uterus. Her third pregnancy remains in 1959, and again the antenatal course was normal apart from a moderate degree of pre-eclamptic toxaemia. She was, however, allowed to go 7 weeks over her expected due date and, not surprisingly, after an hour of labour, severe foetal distress developed which necessitated an immediate caesarean section. At operation the placenta was found to be morbidly adherent, and considerable difficulty was experienced in removing the placenta. This was eventually accomplished, blood loss was excessive, and she required 4 pints of blood. The postoperative course was complicated by a paralytic ileus which responded to conservative treatment.

The only important and relevant fact which emerged from her past medical history was that after the second pregnancy she developed secondary amenorrhoea, which did not respond to cyclical hormone therapy. At that time she showed no other endocrinal abnormality. A diagnostic curettage was performed in June 1959 and the histological report was: 'The specimen consists of a few fragments of endometrial tissue in which the glands show evidence of oestrogenic activity'. In July 1959 the menstrual cycle once again re-established itself and was regular — of the 1-2/28 day type with a scanty flow.

On examination the patient was found to be 8 weeks pregnant. No other abnormality was detected. The blood pressure was 130/90 mm.Hg and the haemoglobin 75%.

The problem of advising treatment was difficult, but after much thought and debate a hysterectomy was suggested as the treatment of choice.

In March 1963 a total hysterectomy was performed. There were numerous adhesions between bowel, uterus, fallopian tubes and ovaries, and large tortuous vessels were present over the lower uterine segment and in the broad ligament. The placenta was found to be attached anteriorly and laterally in the lower uterine segment. Histological examination showed a placenta increta.

Incidence

The incidences quoted in the literature vary widely, e.g. 1 in 8,032,[2] 1 in 15,500,[3] 1 in 1,956,[4] 1 in 2,000,[5] 1 in 31,000[6] 1 in 5,332.[7]

It is probable that many minor instances of morbid placental adherence are missed, and Millar[7] found that in a 20-year period 1,245 manual removals of the placenta were performed, during the course of which 12 placentas were found to be morbidly adherent. This means that 1 in every 100 placentas are to some extent adherent at attempted manual removal.

AETIOLOGY

Many factors have been incriminated in the aetiology of this condition, but the most constant pathological feature in all reported cases is the absence or the very poor development of the decidua. Any factor would then predispose to this condition if it adversely affected the development of the decidua. Even possibly a factor which resulted in the degeneration of the decidua during the phase of implantation would be of aetiologic importance.

Age and parity. The placenta may be morbidly adherent at any stage during the reproductive period. High parity does not appear to be significant.[7]

Previous manual removal of the placenta. The high incidence of association is indeed striking, e.g. 22%[2] and 35%.[7] It would appear that retention of the placenta in a previous pregnancy is due to a decidual deficiency although of a lesser severity than that later associated with a placenta which is morbidly adherent. It is accepted that in some patients there is a tendency to retain the placenta habitually and for manual removal of the placenta to become increasingly difficult with increasing parity. This is probably due to small areas of placenta accreta which in subsequent pregnancies become more widespread but not complete, and it is only at attempted manual removal that the true state of affairs is discovered. This concept is supported by the observation made by Dyer *et al.*[2]—in 13 cases an incomplete manual removal of the placenta was followed by persistent bleeding, and in 10 hysterectomy was necessary. The presence of a partial placenta accreta was then confirmed histologically.

Time of development of morbid placental adherence. Cases have been reported at 10 weeks,[2] 12 weeks,[8] and 16 weeks.[4] These reports are highly significant and indicate that a morbid adherence of the placenta is present before the definitive pla-

centa has completely formed, probably as a result of primary decidual deficiency, and that this condition does not arise in the latter months of pregnancy as a result of secondary disappearance or absorption of the decidua.

There are probably many unrecognized instances of morbid adherence of the placenta associated with early incomplete abortions, particularly where there is difficulty in removing chorionic remnants at evacuation of the uterus. This may possibly be a factor in some cases of missed abortion where evacuation of the uterus may be very difficult and associated with much haemorrhage.

Previous Endometrial Trauma

(*a*) *Caesarean section.* The morbidly adherent placenta is described as being attached beneath a caesarean section scar in 5 out of 9 cases in one reported series[9] and in 1 out of 3 in another reported series.[7]

(*b*) *Cornual resection of the uterus* has been described[10] as an aetiological factor where the placenta has become attached beneath this scar and resulted in a rupture of the uterus.

(*c*) *Previous curettage.* Novak and Novak[1] state that it is probable that severe curettage, among other factors, plays an aetiologically significant role in this condition. However, in the 14 patients studied by Millar[7] only 4 had had previous D & Cs of which 3 were for abortion. It seems likely that, with the large number of evacuations of the uterus performed, if a curettage was of importance, there would be more instances of placenta accreta. A more likely hypothesis seems that the evacuation of the uterus was necessary in the first instance because of partial adherence of the placenta, possibly from a decidual deficiency.

(*d*) *Extensive myomectomy.* Where the incisions have been made to the cavity of the uterus this operation has also been incriminated as a predisposing factor.

Previous Endometrial Infection

Chronic infection of the endometrial cavity is also quoted as being of importance in the aetiology of this condition.[1] However, this view is not supported by other workers, and Millar[7] goes so far as to state that 'Infection can be ruled out as a cause of a defective decidual'.

Other Placental Abnormalities

(*a*) *Placenta membranacea.* In itself this is a very rare condition, but it does appear to occur more frequently in association with morbid adherence of the placenta than with a normal placenta. The incidences quoted are 7%[4] and 21·4%.[7] The aetiology of this condition is not known, but it is suggested by Beck[11] that it is due to a defective decidua basalis with a poor blood supply to the villi in the area of the chorion frondosum. This influences the villi of the chorion laeva, which do not atrophy but rather remain permanently as a compensatory mechanism for the poor blood supply. Theoretically, therefore, the conditions are present which would favour a morbidly adherent placenta, i.e. a deficient decidua.

(*b*) *Placenta praevia.* While the average incidence of placenta praevia is 1 in 200,[12] the incidence in association with placenta accreta is 15%,[4] 50%,[5] and 21·4%;[7] and numerous single cases of placenta praevia-accreta have been reported.[13-19] In all reported cases of placenta accreta the incidence is approximately 20%. It is generally accepted that the decidual formation in the lower uterine segment is not of the same standard as in the upper uterine segment, and if some degree of decidual deficiency did occur, it would be more marked in the lower than in the upper segment. The high incidence of placenta praevia-accreta therefore lends support to the theory that the basic cause of placenta accreta is a primary decidual deficiency, and 2 cases have actually been reported[2] where the placenta accreta was partial and occurred only in those parts of the placenta attached to the lower uterine segment.

CLINICAL CONSIDERATIONS

Diagnosis

(*a*) *Antenatally.* Only in very rare circumstances, as in the case described, could this condition be suspected and possibly even diagnosed with certainty before delivery. The antenatal period and the progress of labour are not affected.

(*b*) *Following vaginal delivery.* Postpartum haemorrhage is usually the first indication that all is not well, although the placenta may be retained *in utero* without severe bleeding. The incidence of postpartum haemorrhage is quoted as 66·7% in 3 separate series.[2,4,7] The diagnosis is substantiated at manual removal of the placenta, where difficulty is experienced in defining a plane of cleavage between the uterus and the placenta and the removal of the placenta is only possible in a piecemeal fashion and with the use of excessive force.

(*c*) *During caesarean section.* The diagnosis under these circumstances is obvious and the problem that arises is one of definitive treatment.

Prognosis

Foetal prognosis. This is not affected; the perinatal mortality is not increased and the child's development is not influenced.

Maternal prognosis. The maternal mortality quoted for treatment by manual removal of the placenta only is 64·5%[4] and 25%.[2] The mortality rate quoted for manual removal followed by hysterectomy is 56·4%.[4] For immediate hysterectomy, as soon as the diagnosis is made, the mortality rate quoted is 7·1%[2] and 0%.[4] However, in 2 more recently reported series[20,21] the maternal mortality, where the placenta was left *in situ* without interference as soon as the diagnosis was made, not a single mother was lost. Where the diagnosis is made at caesarean section the mortality rate quoted is 0%.[7]

TREATMENT

Based on the above considerations, it would seem that the treatment of choice in most circumstances is an immediate hysterectomy. The alternative type of treatment, which presents itself in a favourable light, is leaving the placenta *in situ*. If, however, the latter course is adopted, it must be with the full realization of the dangers involved. Millar[7] suggests conservative treatment if:

(*a*) The placenta is completely or almost completely adherent.

(*b*) There is no spontaneous postpartum haemorrhage.

(*c*) The diagnosis is established before a vigorous attempt at manual removal of the placenta has been made.

(*d*) Where scanty or no bleeding follows an attempt to separate the placenta.

Conservative treatment, depending upon the circumstances, consists of:

1. An intravenous infusion with compatible blood immediately available.
2. Intra-uterine packing.
3. The addition of pitocin, 5 or 10 units, to the intravenous fluids being given.
4. A constant awareness that a massive secondary postpartum haemorrhage may occur and, therefore, careful observation of the amount of vaginal bleeding, the pulse rate, and the blood pressure of the patient.
5. Facilities for an emergency hysterectomy should be immediately available.

COMPLICATIONS

(*a*) *Inversion of the uterus.* The incidence of this complication varies from 4·1%[20] to 43%.[7] Morbid adherence of the placenta should figure prominently in the aetiology of this condition, but in published reviews,[22,23] where a

total of 467 cases were analyzed, not one instance of a morbidly adherent placenta was found.

(*b*) *Spontaneous rupture of the uterus.* The incidence of this complication is quoted variously as 7·1%[7] and 15·1%,[20] and in the latter series, rupture of the uterus also occurred during attempted manual removal of the placenta in 7·1% of cases. The rupture comes about through perforation of the uterus by the chorionic villi, and the principal features are those of intraperitoneal haemorrhage with its attendant abdominal pain and shock, occurring suddenly and inexplicably.

DISCUSSION

It would seem not unreasonable to conclude from the above evidence that decidual deficiency is the most important, if not the only, predisposing factor to morbid placental adherence. This decidual deficiency may either be primary, or it may be due to secondary absorption of the decidua by excessive trophoblastic activity. The former hypothesis is favoured because of the following:

(*a*) The trophoblastic tissues appear completely normal on histological examination of these sections.

(*b*) Placenta accreta has been described as early as the tenth week of pregnancy.

(*c*) The fact that in these cases it has been found that in areas other than the site of placental implantation there is a decidual deficiency.

(*d*) The common denominator, a deficiency of decidua, accounting for the high incidence of placenta membranacia in association with this condition.

(*e*) The high incidence of associated placenta praevia, particularly those instances where the abnormal adherence affects only the parts of the placenta in the lower segment, with its decidua which normally is thin and poorly developed.

One can only speculate about the cause of this primary decidual deficiency; it seems likely to have a hormonal basis. This theory is certainly supported by the case described here. Moreover, often in the routine investigation of gynaecological cases, the endometrium at curettage is scanty, even if the D & C is done in the premenstrual phase. That an ovum can implant and survive without an endometrium is supported by the occurrence of primary abdominal pregnancies, and, moreover, it is noteworthy that in this condition the placenta is extremely adherent and is best left *in situ*.

Histological studies show an absence of decidua without any excessive fibrin deposition as a protective layer between the chorionic villi and muscle to compensate for this deficiency. Nitabuchs and Rohrs striae apparently persist,[7] usually fusing together. The chorionic plate is not usually seen, but even in normal placentas it degenerates after the 36th week; this is therefore not surprising. The superficial muscle layers show various degrees of hyalinization, more marked where the placenta penetrates deeply. These hyaline changes may be due to the digestive activities of the trophoblastic enzymes.

Infection, endometrial trauma and a scar on the uterus have all been mentioned as possible aetiological factors, but on analysis these claims are not in any way convincing.

SUMMARY

1. An unusual problem arising because of repeated morbid adherence of the placenta is described.

2. The relevant literature is reviewed.

3. The most important, if not the only, aetiological factor is thought to be a primary decidual deficiency, probably arising on a hormonal basis.

4. The treatment of choice is by hysterectomy. Occasionally a complete placenta accreta may be left *in situ*.

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