AN EVALUATION OF THE MANAGEMENT OF PLACENTA PRAEVIA (1929–1961)

A 33-Year Survey

BY

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PLACENTA praevia and premature separation of a normally implanted placenta are the commonest causes of ante-partum haemorrhage—the latter being four to five times more common in this institution. The advent of antibiotics, establishment of blood transfusion service, improvements in anaesthesia and better understanding of obstetric problems have altered to a large extent the management of placenta praevia with the result that there has been a considerable reduction in maternal and perinatal mortality from this complication. Thanks to the writings of Macafee (1960), Johnson (1945) and others, the principles of treatment of placenta praevia have to a certain extent been standardized, and in the hands of obstetricians who have all facilities and deal only with "booked cases" the maternal mortality has been reduced to less than 1 per cent if not nil, and the perinatal mortality to less than 10 per cent.

The impact of these developments and teaching has been felt in this institution also. To what extent such an impact has been beneficial to mother and child requires critical assessment. The aim of this paper is to present a critical evaluation of the changing trends in the management of placenta praevia from 1929 through 1961 (a period of 33 years), to take stock of the present position and decide what should be the future. All available case records have been studied and only broad facts are presented which are relevant for the assessment.

These 33 years have been for purposes of this study divided into four periods. The first period extends from 1929–1940 (both years inclusive). During this period there was no blood transfusion service nor antibiotics, chemotherapy with sulphonamides became available from 1938, and in 1940 World War II was on. The second period extends from 1941–1947. This is actually the period of war and the immediate post-war period. The sulphonamides were available throughout the period. Towards its end penicillin became available in very restricted quantities and blood transfusion as a proper service was just beginning to be organized. The third period is from 1948–1953, wherein almost all the modern facilities were available to a limited extent only, for the aftermath of World War II was still in evidence. The fourth period extends from 1954–1961 when, in addition to the firm establishment of a well organized transfusion service, there became available much more potent broad spectrum antibiotics, and also there was the emergence by this time of the paediatrician as an integral part of a modern obstetric outfit. With improvements in paediatric service better results were obtained in perinatal mortality. It is because of these various developments at varying stages that these 33 years have been arbitrarily divided into four periods. The changing phases in these 33 years have had marked effect in the trends in management and hence they will be discussed under these periods.

During the years under review there were among 237,185 deliveries 1,157 cases of placenta praevia giving an incidence of 1 in 205. Only those cases wherein the placenta has been felt on vaginal examination are included in this series.

The average parity in this series of 1,157 cases was 4·6, the range being 1–16. Primigravidae accounted for 10·2 per cent of cases. Ten patients were 14-para and three were 16-para.

TABLE I

Term of Pregnancy and Bleeding

Duration of pregnancy	24–28 weeks	28–32 weeks	32–36 weeks	36–40 weeks
Percentage of cases ..	10·3	21·4	38·5	29·8

TIME OF ONSET OF BLEEDING

The earliest bleeding occurred at 24 weeks. Table I shows the incidence of the first bout of bleeding in relation to the period of pregnancy.

In 70·2 per cent the bleeding commenced when the pregnancy was of less than 36 weeks and in 31·7 per cent when it was of less than 32 weeks duration.

It is customary now to classify placenta praevia into types I, II, III and IV. In the first two periods the old classification of lateral, marginal and central was in vogue, while in the last two the current classification has been used. For all practical purposes a classification into incomplete and complete placenta praevia would suffice. Types I and II (or lateral and marginal) would then fall into the incomplete variety, and types III and IV (or central) would fall into the complete variety. In this series 66·6 per cent were of the incomplete and 33·4 per cent of the complete variety. It was observed that in the incomplete variety the first bout of bleeding occurred in 14 per cent of cases prior to 32 weeks of pregnancy, as against 26 per cent in the complete variety. With a complete placenta praevia in 63·2 per cent the first bleeding occurred when the foetus was less than 36 weeks maturity, and in the incomplete variety in 47·7 per cent. These indicate the necessity for and also the difficulties involved in the expectant line of management.

The presentation was vertex in 82 per cent, breech in 15·8 per cent, and shoulder in 2 per cent. There were 6 sets of twins. Pre-eclamptic toxaemia was met with in 11·2 per cent of cases.

BLEEDING AND ADMISSION TO HOSPITAL

No definite reliable data were available with regard to the relationship between bleeding and admission to hospital in the first two periods. However such data were available in the third and fourth periods. Sixty-five per cent of patients came into hospital at the first bout—with bleeding sufficiently serious to make them seek admission. Twenty-five per cent came in at the second bout, 6 per cent at the third, while in 4 per cent there was intermittent bleeding almost daily for 4–5 days. This neglect on the part of the patients to report to hospital at the first bout, however slight, is again another factor which influences the ultimate prognosis.

Shock levels of blood pressure were observed in 58 per cent of cases on admission. (Here again as the records of the first two periods were unsatisfactory only the third and fourth periods have been taken into consideration.) In 8 per cent of the total of 1,157 cases the foetal heart had disappeared on admission.

THE DIAGNOSIS

In the first two periods, apart from the suggestive history, the diagnosis was always made only by routine vaginal examination. Such examination seems to have been the routine practice by the midwife or doctor, whoever saw the patient first, and was invariably repeated immediately after admission into hospital. In the last two periods contrast radiography and soft tissue radiography were employed—the latter exclusively in the last period. In all cases prior to termination of pregnancy a vaginal examination and confirmation of the diagnosis was standard procedure. In consonance with modern teaching once the patient was admitted into hospital vaginal examination was done only when it was decided to terminate pregnancy and never for diagnosis. This policy was enforced partially in the third and fully in the fourth period. During the first and second periods vaginal examinations by unqualified and qualified midwives and doctors, and often repeated, prior to admission to hospital were routine procedures. In the third period a considerable diminution in such examinations was noticeable, and in the last period as far as can be ascertained such examination prior to admission was seldom done. This indeed is a great improvement.

MANAGEMENT

It is now customary to talk of the management under two headings—the expectant line and

TABLE II

Expectant Management

Year	No. of Cases of Placenta Praevia	No. of Cases on Expectant Management	Incidence %
1929–1940 ..	319	Nil	—
1941–1947 ..	201	8	4
1948–1953 ..	227	32	14·1
1954–1961 ..	410	164	40

TABLE III

Duration of Expectant Management

	Duration in Weeks			
	Less Than 1 Week	1–2 Weeks	2–3 Weeks	4 Weeks and Over
No. of cases (164) ..	49	102	11	2
Percentage ..	30	62	7	1

active treatment. The expectant line of management so strongly advocated by Macafee, Johnson and others has considerably improved the foetal prognosis. The attitude towards this line of management and its evolution is shown above in Table II. The table is self-explanatory and clearly shows the trend in treatment and change in policy regarding management during the different periods.

To obtain the best results the expectant line of management should be continued provided there is no risk to the mother until the foetus reaches at least 38 weeks maturity if possible. Two important factors, apart from the facilities available, decide the issue—the period of pregnancy at the start of bleeding and the frequency and severity of the subsequent bouts of haemorrhage. If the bleeding starts early in the third trimester or earlier still and frequent bouts occur, even if mild, it would not often be possible to carry on with the expectant line without risk to mother and also to child. On the other hand, cases wherein the first bout of bleeding occurs near the last trimester would be most suited for such management as the duration of the expectant management need be only short. Johnson (1945) has stated that the first bout of bleeding is seldom fatal to the mother in placenta praevia. It may be true in a broad sense, but in countries where pregnancy is bedevilled with complications like malnutrition, anaemia, chronic diarrhoea, dysenteries, tuberculosis and the like, the first bout of haemorrhage from placenta praevia may be the final event in the tragic drama of life. Nine mothers have died in the series with the first bleeding and all died undelivered. Of these three deaths occurred in each of the first two periods, two in the third and one in the last period.

Since the expectant line of management only came into actual operation in the last period Table III shows the duration of such management in this period.

In 92 per cent of cases the pregnancy has been terminated within a fortnight of the commencement of the expectant line of treatment irrespective of the maturity of the foetus, the ostensible indication being frequent bleedings or severe haemorrhage. In this group of 164 cases under conservative management 50 per cent (82 patients) were between 28 and 34 weeks when bleeding commenced, and in 72 of these the pregnancy had to be terminated prior to 36 weeks. In the remaining 82 patients the pregnancy ranged from 34–38 weeks. Termination of pregnancy routinely after 38 weeks even in the absence of bleeding has been generally advocated. One of the main problems in this land which keeps up the high perinatal mortality is the prematurity rate. If a birth weight of less than 2,500 g. is taken as the definition of prematurity the general incidence of prematurity in this institution is 30 per cent. Even if all maternal and other factors associated with prematurity are excluded, there remains 35 per cent of unexplained premature births. This includes a number of babies which are born at term but are under weight. Such being the case, with added factors like placenta praevia if pregnancies are terminated as a routine at 38 weeks a significant number of premature infants would be born with increasing perinatal deaths. To add to the difficulties, a large percentage of the patients are quite uncertain of the dates of their last period. Hence in the absence of bleeding there has been a temptation to carry on pregnancy till the patient goes into spontaneous labour or another haemorrhage takes

TABLE IV
Method of Termination

Period and Total No. of Cases in Series	Abdominal	Vaginal
1929–1940 (319) ..	33 (10·3%)	281 (89·7%)
1941–1947 (201) ..	32 (16%)	166 (84%)
1948–1953 (227) ..	87 (38·2%)	137 (61·8%)
1954–1961 (410) ..	226 (55·3%)	182 (44·7%)

place which would necessitate termination of pregnancy. However, cases are carefully examined routinely in suspected major degrees of placenta praevia after 38 weeks, and if the diagnosis is confirmed or bleeding occurs on examination the pregnancy is terminated. If neither occurs the patient is put back to bed to continue with pregnancy under careful supervision.

ACTIVE TREATMENT

Once a decision is made pregnancy is terminated either vaginally or abdominally. The changing trend in the 4 periods is shown in Table IV.

During the first and second periods even in complete placenta praevia Caesarean section was avoided if possible because of the high maternal mortality associated with it. Tearing through the placenta, and applying scalp traction forceps or bringing down a foot, either by bipolar or internal podalic version, were all accepted procedures during which the mothers bled profusely—all these to avoid Caesarean section. The foetus was not considered. In incomplete varieties, Caesarean section was seldom resorted to. The results of these procedures will be discussed later. As surgery grew safer with the advent of blood transfusion and antibiotics, and with the greater appreciation of the value of the expectant line of management, Caesarean section was frequently employed in the management of these cases in the interests of the child and mother.

This change in attitude, which started in the third period, is well demonstrated in the figures for the last period. In the last period the policy has been to resort to Caesarean section in all cases of complete placenta praevia irrespective of the state of the foetus—alive or dead—for the sake of the mother. Caesarean section was also widely employed in the interests of the foetus in the incomplete varieties on indication. The results have proved that in major degree of placenta praevia Caesarean section is safer for the mother.

VAGINAL DELIVERY

Of the 1,157 patients 13 died undelivered. Among the rest 766 were delivered vaginally. The common methods employed were amniotomy with or without pitocin stimulation, application of Willett's scalp traction forceps, bipolar or internal podalic version, and breech extraction. Packing the vagina was also employed in the first period. Outlet forceps and spontaneous deliveries have not been shown or discussed separately as they are not pertinent to the assessment. The incidence of the various methods in the different periods is shown in Table V below.

Until the last period pitocin was given by intramuscular injection in fractional doses. In the last period it was always given as an intra-

TABLE V
Cases Delivered Vaginally

Period and Total No. of Cases in Series	Artificial Rupture of the Membranes ± Pitocin	Willett's Forceps	Bipolar Version	Internal Podalic Version	Breech Extraction	Total
1929–1940 (319) ..	95	114	22	25	25	281
1941–1947 (201) ..	54	85	2	10	15	166
1948–1953 (227) ..	85	40	—	2	10	137
1954–1961 (410) ..	120	45	—	4	13	182

venous drip, 2·5 units in 500 ml. of 5 per cent glucose solution. It was employed when labour was not established within two to three hours of artificial rupture of the membranes or if the pains were weak. So far no case of rupture of the uterus due to pitocin being employed in cases of placenta praevia has occurred. Scalp traction forceps has been condemned by a vast majority of obstetricians. It has been frequently used in the first three periods but its use declined in the last period. Its use at times has helped to save the mother from Caesarean section. In the milder degrees of placenta praevia, where after amniotomy and pitocin drip the bleeding is not well controlled, Willett's forceps at times helps to control the haemorrhage and promote labour. It is true that the foetal mortality with its use is greater, but there is no aversion to its employment on a moribund or dead foetus, thus to avoid a Caesarean section. Not a single instance of *Cl. welchii* infection, or for that matter any serious infection, has been noted from its use. It has never been applied to a breech. Procedures like bipolar version and internal podalic version are now seldom employed. Internal podalic version is occasionally resorted to deliver a second twin, or in shoulder presentation with a mild degree of placenta praevia and a premature foetus.

Caesarean Section

A scrutiny of Table IV shows in unmistakable terms the inroads Caesarean section has made in the management of placenta praevia. The changing trends and the extension of the indications for its use in the last period have already been discussed. Seventy-five per cent of the sections have been of the lower segment type. It remains now to assess the results as a whole for this series of cases, for vaginal and abdominal deliveries separately.

Maternal Mortality

Of 1,157 cases 13 died undelivered. Among the rest 88 mothers died, i.e., a total of 101 among 1,157, giving a gross mortality of 8·7 per cent. The mortality for each period is shown in Table VI. In the last period the maternal mortality has dropped to an eighth of what it was in the first period.

Table VI

Maternal Mortality

Period	No. of Cases of Placenta Praevia	No. of Maternal Deaths	Mortality %
1929–1940 ..	319	53	16·6
1941–1947 ..	201	24	11·9
1948–1953 ..	227	15	6·6
1954–1961 ..	410	9	2·2

Maternal Mortality and Caesarean Section

Table VII below shows the mortality rate in Caesarean section for placenta praevia. The overall mortality in 378 Caesarean sections was 5·8 per cent.

The increase in the Caesarean section rate, and the considerable diminution from 21·2 per cent to 1·7 per cent in maternal mortality, is striking. It is needless to add that it has been mainly due to the advantages of blood transfusion and antibiotics, which were not available in the first and second periods.

Maternal Mortality in Vaginal Delivery

Of 766 mothers delivered vaginally 66 mothers died, giving a mortality rate of 8·6 per cent. The incidence with the different lines of treatment is shown in Table VIII.

The considerable improvement in the maternal mortality rate seen after Caesarean section as one approached the fourth period is very much in evidence in the results from vaginal delivery also. In the last period among 182 patients delivered vaginally only 3 were lost. The benefits of blood transfusion and antibiotics are fully

Table VII

Maternal Mortality After Caesarean Section

Period	No. of Cases of Placenta Praevia	No. of Cases of Caesarean Section	Maternal Deaths	Mortality Rate %
1929–1940	319	33	7	21·2
1941–1947	201	32	7	21·8
1948–1953	227	87	4	4·6
1954–1961	410	226	4	1·7

TABLE VIII

Maternal Mortality in Vaginal Delivery

(Figures in brackets indicate the numbers of patients who died)

Period	Artificial Rupture of the Membrane ±Pitocin	Willett's Forceps	Others
1929–1940 ..	95 (8)	114 (13)	72 (20)
1941–1947 ..	54 (2)	85 (4)	27 (6)
1948–1953 ..	85 (3)	40 (3)	12 (3)
1954–1961 ..	120 (–)	45 (1)	17 (2)

seen in these cases also. Table IX shows the comparative mortality figures for vaginal and abdominal deliveries.

The marked improvement in the last period is due to advantages of blood transfusion and antibiotics and careful selection of cases for vaginal delivery or Caesarean section. To a certain extent it is also due to the patients coming into hospital early, with no vaginal examinations causing exsanguination as in the past.

BLOOD TRANSFUSION

In the first period not a single case had a blood transfusion. In the second period of 201 cases, only two had a blood transfusion. In the third period 32·6 per cent of cases were transfused; while in the fourth period 86 per cent of cases had blood transfusion, the quantity of blood given ranging from a 350 ml. to 2,100 ml.

PERINATAL MORTALITY

Perhaps the greatest advance in the treatment of placenta praevia, apart from improvement in

TABLE IX

Comparative Mortality

Period	Caesarean Section Mortality %	Vaginal Delivery Mortality %
1929–1940	21·8	14·5
1941–1947	21·8	7·2
1948–1953	3·6	6·5
1954–1961	1·7	1·6

TABLE X

Perinatal Mortality

Period	No. of Cases	Perinatal Deaths		Prematurity Rate %
		No.	%	
1929–1940 ..	319	198	62·2	71
1941–1947 ..	201	108	53·7	62
1948–1953 ..	227	110	48·4	56
1954–1961 ..	410	145	35·3	47

maternal mortality, is in the reduction of perinatal deaths brought about by a combination of the expectant line of management and Caesarean section. How far such a policy has improved the situation is demonstrated in Table X.

Even in the last period the perinatal death rate is 35·3 per cent, though this is a significant reduction from 62·2 per cent in the first period. The main reason for this still persistently high rate is the very high incidence of prematurity. There has also been a significant reduction of the prematurity rate during the last period, and this is to a significant extent due to the expectant line of management adopted in the third and fourth periods. Further, in the last period the paediatrician also has come to play a limited role, which has helped to improve the perinatal mortality.

In 60 per cent of cases the bleeding has started when foetal maturity was 34 weeks or less (last period only) and it has been very difficult to push the expectant management to its logical conclusion for the sake of the child, lest the mother be lost from repeated haemorrhages—most of the mothers are undernourished and suffering from anaemia or some other complications. This factor is operative to a great extent in the under-developed areas.

Finally, Table XI shows a comparative statement of maternal and foetal loss in the different periods as a result of increased expectant management and Caesarean section.

Macafee, Stallworthy and others have achieved excellent results. Their figures for comparison are given in Table XII.

The still high perinatal and maternal mortality is obvious on comparison and requires a critical study as it is the result of a careful application

TABLE XI

Maternal and Perinatal Mortality

Period	No. of Cases	Expectant Management %	Caesarean Section Rate %	Maternal Mortality Rate %	Perinatal Death Rate %
1929–1940	319	—	10·3	16·6	60
1941–1947	201	4	16	11·9	54
1948–1953	227	14·1	38·2	6·6	48·3
1954–1961	410	40	55·3	2·2	35·3

of the modern management. There are certain extenuating factors which help only in keeping the mortality high. For one, "booking" for delivery as practised in the west is still not common. Even today in this institution the "booked cases" account only for 25 per cent of all deliveries (13,900 in 1961). The rest are all emergency admissions or those who have been attending the antenatal clinic very irregularly. Secondly, many a patient is unable to stay long in hospital because of socio-economic factors such as children at home with no one to look after them and as the patients are mostly of the labouring class there is also the loss of income. Hence some go home once the bleeding is controlled. Thirdly, most of the mothers suffer from malnutrition, anaemia and other associated diseases complicating pregnancy, which make it rather risky to persist with the expectant line even with repeated blood transfusions. Under such circumstances the expectant line of treatment has to be terminated in spite of the fact that the foetus is still very premature. Fourthly, there is the problem of prematurity. Adopting international standards, the overall incidence of prematurity in this hospital is 30 per cent. In 35 per cent of these premature births no maternal complications are evident, and at term the average birth weight of babies in the low socio-economic class is only 2,736 g. It needs no explanation why the perinatal death rate is so high.

With all these contrary factors operating there has been adverse comment on the extension of expectant management and Caesarean section in cases of placenta praevia in the under-developed areas of the world. The objection to the expectant line has been the unwillingness of patients to stay in hospital, with the real risk of a collapse with subsequent haemorrhage at home. The objection to the extension of Caesarean section has been mainly the risk of rupture of the scar in a succeeding pregnancy among the class of patients who are not likely to have proper anteuatal care. To a certain extent this criticism may be appropriate. But it may be pointed out that the majority of cases of placenta praevia

TABLE XII

Series	Perinatal Deaths %	Maternal Mortality %	Caesarean Section Rate %
Belfast (Macafee):			
1937–1945	22	0·52	41·3
1948–1953	11·9	—	76
Oxford (Stallworthy):			
1954–1958	12·5	1·5	67·7
Last 217 cases	9·7	—	66
Women and Children's Hospital:			
1948–1953	48·3	6·6	38·2
1954–1961	35·3	2·2	55·3

(60 per cent) are in-patients with three or four children and are routinely sterilized at the time of section except when there are objections to it. And to minimize the incidence of rupture wherever it is possible without risk to the mother the lower segment operation is performed. The cases for expectant management also are carefully selected. If in a multigravida with a sufficient number of children the first bleeding occurs in the second or early third trimester experience has shown that seldom has it been possible to continue with the pregnancy until 36 to 38 weeks. Repeated bouts of bleeding often have forced one's hand, and in such cases a less rigid application of the expectant line is made and pregnancy terminated. From experience gained it is believed that even from the point of view of maternal prognosis, the increase in Caesarean section has played a vital role in the reduction of maternal mortality.

Conditions are improving steadily though slowly. Patients are becoming more and more hospital minded. General practitioners and midwives have realized the dangers and futility of vaginal examination in ante-partum haemorrhage, and the necessity for immediate hospitalization. Hospitals also are now far better equipped with facilities for blood transfusions and other requirements. Patients once admitted are more amenable now to advice and are willing to stay longer. With such improvements taking place, along with improvements in socio-economic and nutritional standards, the expectant line of management and extended use of Caesarean section in placenta praevia would firmly establish itself as the best method for mother and child.

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