Accidental Haemorrhage and Fetal Prognosis

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SUMMARY

An analysis is given of some of the factors involved in perinatal mortality associated with accidental haemorrhage. The importance of clinical signs in determining fetal prognosis is discussed. A suggested clinical approach to cases of accidental haemorrhage, where on admission the fetus is found to be alive *in utero*, is given.

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This study was made in order to formulate a policy of management which would offer the best chance for perinatal survival in cases of accidental haemorrhage. The role that Caesarean section should play in the management of this condition has been the subject of controversy.[1-4] This study evaluates the role that clinical signs could play in deciding in which cases Caesarean section might decrease perinatal mortality.

CLINICAL MATERIAL

The survey covers the period from 1 January to 31 December 1972, during which 3 353 deliveries took place at the Groote Schuur Hospital Maternity Block. Accidental haemorrhage accounted for 79 of these admissions (an incidence of 2,4%). The high incidence of accidental haemorrhage in this sub-unit is due to the fact that most emergency cases are channelled there.

The diagnosis of accidental haemorrhage was made in patients who presented with antepartum haemorrhage, and where a retroplacental clot was found postpartum. Perinatal mortality was analysed with regard to the size of the retroplacental clot, birth mass and tenseness of the uterus on abdominal palpation.

Retroplacental clot size: The patients were divided into 5 groups on the basis of clot size. In group I the clot measured more than 1 000 ml; in group II 500 - 1 000 ml; in group III 150 - 500 ml; in group IV 50 - 150 ml; and in group V less than 50 ml.

Birth mass: The infants were divided into 4 groups on the basis of birth mass. In group I the mass ranged between 1 000 and 1 500 g; in group II, 1 501 - 2 000 g; in group III 2 001 - 2 500 g; in group IV the infants weighed more than 2 500 g at birth.

Tenseness of the uterus: Tenseness of the uterus as detected on abdominal palpation was analysed in relation to perinatal mortality and size of the retroplacental clot.

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RESULTS

Out of a total of 79 births there were 36 perinatal deaths, with 28 dead on admission. Of the 51 alive on admission, 43 survived and 8 died subsequently, with 2 neonatal deaths. This gives a perinatal mortality rate of 456 per 1 000 births as against a hospital rate of 60 per 1 000 births in 1972.

In more than a quarter of the cases, the baby was already dead *in utero* on admission, and in the remaining cases there was a further fetal wastage of 36,25%. Lunan,[4] in his series ranging over 5 years, showed that approximately 25% of his patients were admitted with an intra-uterine death.

Retroplacental Clot Size

Table I shows that a direct relationship exists between perinatal mortality and clot size. The perinatal mortality rises rapidly with the increase in size of the retroplacental clot.

Perinatal Loss and Birth Mass

Table II illustrates an inverse relationship between perinatal mortality and birth mass, while Table III shows that far more perinatal deaths occurred in babies weighing less than 2 000 g than in those weighing more than 2 000 g.

TABLE I. PERINATAL MORTALITY RELATED TO RETROPLACENTAL CLOT SIZE

	Retroplacental clot size				
	>1 000 ml (group I)	500-1 000 ml (group II)	150-500 ml (group III)	50-150 ml (group IV)	<50 ml (group V)
Number of perinatal deaths	8/12	12/20	11/24	3/9	2/14
Perinatal mortality per 1 000 births	660	600	458	333	143

TABLE II. PERINATAL DEATHS AND SURVIVALS RELATED TO BIRTH MASS

	Birth mass (g)			
	1 000-1 500	1 501-2 000	2 001-2 500	>2 500
Number of perinatal deaths	**7**	**8**	**13**	**8**
Number of survivals	**3**	**5**	**18**	**17**
Total	**10**	**13**	**31**	**25**
Perinatal mortality per 1 000 births	**700**	**615**	**419**	**320**

TABLE III. RELATIONSHIP BETWEEN BIRTH MASS AND PERINATAL MORTALITY*

Birth mass (g)	Perinatal deaths	Alive
1 000 - 2 000	**15**	**8**
>2 000	**21**	**35**

*$\chi^2 = 4,0$; $P < 0,05$, significant.

Tenseness of the Uterus

There was a direct relationship between the size of the retroplacental clot and tenseness of the uterus as detected on abdominal palpation. Of the 47 cases where the clot size was less than 500 ml, 21 were found to have tenseness of the uterus, as against 30 of the 32 cases where the clot size was more than 500 ml ($x^2 = 18$; $P<0,001$).

Fig. 1 shows tenseness of the uterus to be associated with a high perinatal mortality rate.

Cases Admitted with a Detectable Fetal Heart (Fig 1)

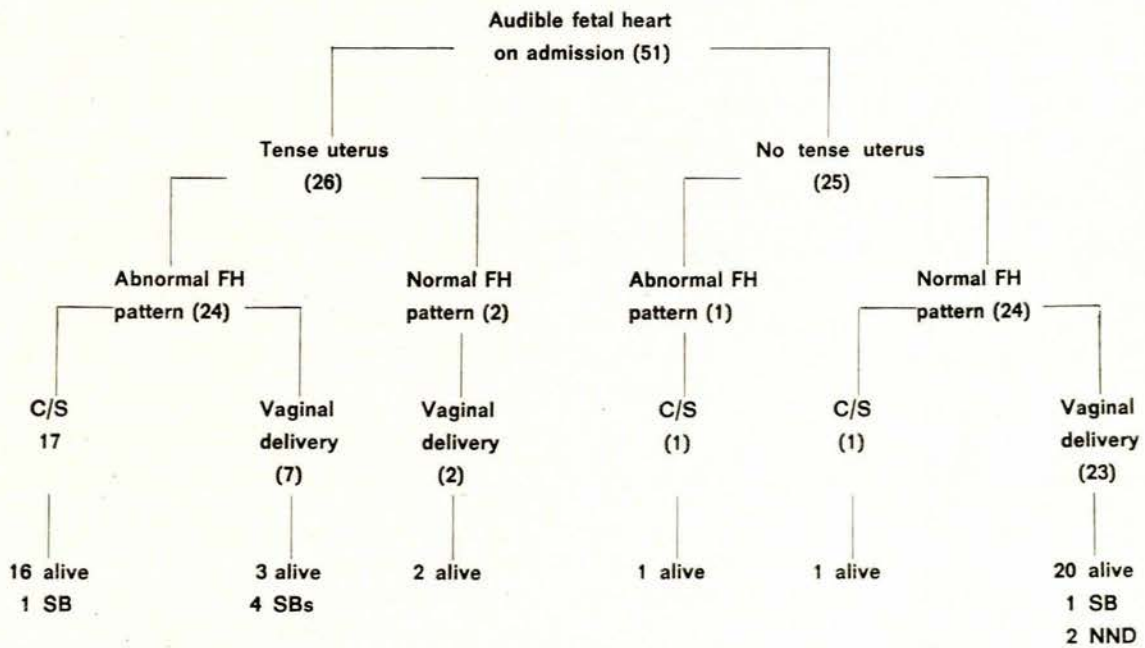
The fetal heart was auscultated with a mono-aural stethoscope, and was regarded as being normal when the rate ranged between 120 and 160 beats per minute and showed no abnormal response to contractions.

Of the 51 patients admitted with accidental haemorrhage and a detectable fetal heart, 26 had a palpably tense uterus on abdominal examination. An abnormal fetal heart pattern was detected in 24 of them and Caesarean section was performed for fetal distress in 17 instances.

The outcome of the Caesarean sections were live infants, well on discharge, in all but 1 of these 17 cases. The 1 perinatal death was a fresh stillbirth, death occurring during the time lapse before operation.

In the 9 cases with tenseness of the uterus and where the outcome was vaginal delivery, an abnormal fetal heart pattern was recorded in 7 instances. There were 4 fresh stillbirths in this group. Three of the intra-uterine deaths occurred while preparations were being made for Caesarean section. The remaining stillbirth occurred in a case where gross fetal immaturity precluded an abdominal delivery.

Of the 51 patients who were admitted with live babies *in utero* 25 cases did not have tense uteri on palpation. Caesarean section was performed twice in this group. In 1 case the indication was prolapse of the umbilical cord



Alive = infant discharged well; C/S = Caesarean section; FH = fetal heart; SB = stillbirth; NND = neonatal death.

Fig. 1. Outcome in those cases admitted with audible fetal heart.

and in the other, fetal distress. One stillbirth and 2 neonatal deaths occurred in this group. The stillbirth was a case of anencephaly, with associated meningomyelocele and the 2 neonatal deaths were due to hyaline membrane disease. The remarkably low neonatal death rate could be attributed to the widespread use of beta adrenergic agents in the treatment of premature labour in our unit,[6] the possible coexistence of dysmaturity in many cases,[5] or a combination of both factors.

Coagulation Disorders

There were 4 cases of accidental haemorrhage with associated consumption coagulopathy and fibrinolyses. In 3 of these cases Caesarean section was performed because of uterine inertia which failed to respond to artificial rupture of membranes and oxytocin infusion. This was done in spite of intra-uterine death in all 3 cases. In the fourth case a vaginal delivery was achieved. This patient was admitted in a state of deep coma after repeated eclamptic convulsions. Delivery was followed by progressive improvement and a regaining of consciousness, but she died during the puerperium as a result of a repeat massive intracranial haemorrhage. In all 4 cases the patients were delivered of fresh stillborn infants.

DISCUSSION

Accidental haemorrhage rarely results in severe maternal problems. In most cases delivery is expedited and postpartum complications are uncommon.[3]

In contrast to the relative infrequency of maternal complications, the danger to the fetus is alarmingly great. It is here that the obstetrician is faced with the often difficult task of deciding exactly when and by which route to deliver the fetus. Sudden further separation of the placenta to a degree which is incompatible with fetal survival occurs far too commonly to permit complacency.

This study shows a direct relationship between the size of the retroplacental clot and tenseness of the uterus. It also suggests that the danger to the fetus is greatest once the uterus is found to be tense on abdominal examination. This tenseness could be explained on the basis of severe placental separation to an extent where the uterus is released from the progesterone block. This contention seems to be borne out by studies on the effect of progesterone on uterine contractility.[7]

It seems likely that a perpetual state of myometrial systole impairs choriodecidual blood flow and thereby endangers fetal survival. It could also potentiate a sudden extension of placental separation with rapidly ensuing fetal distress or death.

Our investigation also found a direct relationship between fetal mass and perinatal survival, in that babies weighing more than 2 000 g at birth stand a far greater chance of surviving both the initial episode of placental abruption and the subsequent course. This confirms similar findings by Lunan[4] and also the direct correlation between the size of the retroplacental clot and perinatal mortality he reported.

SUGGESTED CLINICAL APPROACH

Based on our findings, we suggest that in cases of accidental haemorrhage, the following clinical approach will, under circumstances such as exist in our unit, offer the best chance for fetal survival.

Where expected birth mass is more than 2 000 g: Immediate delivery, by whichever route is the quickest, is indicated in cases of antepartum haemorrhage with tenseness of the uterus and a live fetus *in utero*, or when there is fetal distress or other obstetric factors.

Where expected birth mass is less than 2 000 g: Unfortunately in these cases no definite policy can be planned on the basis of our findings in this series. This is owing to the wide variations in practice in the group studied, and the inclusion of a potentially high incidence of dysmaturity.

The stress that placental insufficiency exerts on the dysmature fetus is thought to hasten the formation of pulmonary surfactant and thereby protect the baby against the development of hyaline membrane disease.[8] This would improve the chance of neonatal survival in dysmature babies who are commonly light for gestational age and may easily fall into the group weighing less than 2 000 g.

On the other hand, the premature infant is in grave danger of developing hyaline membrane disease.[5,6] The indiscriminate use of Caesarean section in cases of anticipated prematurity could, while preventing a stillbirth, raise the neonatal death rate. For this reason, the decision to perform Caesarean section should not be taken lightly. It is suggested, therefore, that when signs of fetal distress or of a tense abdomen appear in cases where the fetal mass *in utero* is estimated as being less than 2 000 g, and it is felt that Caesarean section offers the only chance of a live baby, the following factors should be considered: age and parity; past obstetric history; the presence of a history or clinical findings suggestive of placental insufficiency (i.e. dysmaturity); evidence of fetal pulmonary maturity, such as might be obtained by estimating the liquor amnii lecithin/sphingomyelin ratio or by performing the bubble test on a sample of liquor amnii.[9]

In cases of accidental haemorrhage where the uterus is not tense and the fetus not distressed, the diagnosis of abruptio placentae will be a retrospective one. In such cases vaginal delivery can be planned, provided that facilities are available for intensive monitoring of the fetus during labour, and for immediate Caesarean section should the need arise. The use of beta adrenergic agents for the treatment of premature labour could lower the incidence of prematurity in this group.[5] Such treatment can be used provided that severe haemorrhage does not warrant immediate delivery in the interest of the mother.

The management in cases of accidental haemorrhage with coagulopathy is based on adequate transfusion with fresh whole blood and the judicious use of fibrinogen, heparin and antifibrinolytic agents. In certain cases Caesarean section might be indicated in the face of a known intra-uterine death.

All babies were examined neurologically before leaving hospital, but none demonstrated any overt defects. However, only after long-term follow-up can the ultimate mental state of these babies be assessed, and such a study is in progress.

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