

THE PREVENTION OF POSTPARTUM HAEMORRHAGE *

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Postpartum haemorrhage is still a dreaded complication of labour. We can seldom predict its onset, and when it does occur a physiological process is turned, within minutes, into a pathological process of such severity that the life of a mother is seriously endangered.

In the Department of Obstetrics and Gynaecology of the Karl Bremer Hospital, Bellville, we have been trying to reduce the incidence of postpartum haemorrhage. There

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was room for improvement in view of the fact that the incidence was 11.98% in 1956. In our struggle against postpartum haemorrhage (defined as a loss of 20 oz. or more of blood in the third stage of labour) our approach has gone through 3 phases, as follows:

1. *The First Phase*

The duration of this phase was 26 months (1 January 1957 - 28 February 1959), and our investigation included 2,836 consecutive vaginal deliveries. (For complete details see ¹.) In these cases we gave oxytocics prophylactically at the end of the second stage of labour. An intramuscular

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injection was preferred, since a doctor is not always available for an intravenous injection. Hyalase was added to hasten absorption.

During this phase we experimented with the timing of the injection. The oxytocic used was ergometrine in doses of 0.5 mg. During the first 13 months of the trial the oxytocic was given simultaneously with the birth of the anterior shoulder, and during the second 13 months of the trial it was given simultaneously with the crowning of the head. In those cases where the oxytocic was forgotten the injection was given only after the delivery of the placenta, and these cases were regarded as controls.

Our results showed that ergometrine and hyalase given with the crowning of the head produced the best results (4.83% incidence of postpartum haemorrhage).

The details of this phase are as follows:

In 1,346 deliveries where ergometrine and hyalase were given with the crowning of the head, there were 65 cases of postpartum haemorrhage — 4.83%. In 1,031 deliveries where ergometrine and hyalase were given with the birth of the anterior shoulder, there were 68 cases of postpartum haemorrhage — 6.59%.

Control. In 459 deliveries where ergometrine and hyalase were given after the delivery of the placenta, there were 55 cases of postpartum haemorrhage — 11.98%.

During this phase we believed that the longer the third stage lasted the more vaginal bleeding would be found. Therefore in our handling of the third stage we tried to deliver the placenta as soon as possible. As soon as the abdominal signs of separation of the placenta were visible, the uterus was rubbed up and the placenta delivered with combined fundal pressure and cord traction. If there was any doubt about placental separation a vaginal examination was performed, and if the placenta was partially separated the same procedure was adopted.

2. The Second Phase

This phase lasted for 16 months (1 March 1959 - 30 June 1960). During this period, in which 2,586 consecutive vaginal deliveries were performed, the incidence of postpartum haemorrhage dropped from 4.83% to 3.89%.

We changed our regime as follows:

1. 'Methergin', 0.4 mg., was used instead of ergometrine, 0.5 mg. Some workers have found methergin superior to ergometrine,² whereas others have found no difference between the two.³ In 2,052 cases where methergin and hyalase were given simultaneously with the crowning of the head, the incidence of postpartum haemorrhage was only 3.26%, whereas the average for all cases (2,586) was 3.89%.

Where the injection was given at other times the incidence of postpartum haemorrhage was as follows:

(a) With birth of the anterior shoulder, 4.95% (in 101 cases).

(b) Immediately after delivery of the placenta, 6.18% (in 291 cases).

(c) Immediately after delivery of the baby, 7.05% (in 142 cases).

2. We were now less hurried over the third stage and preferred, in the absence of bleeding, to wait for complete

separation of the placenta. Then the uterus was rubbed up and the placenta delivered by cord traction while the left hand pushed the uterus caudally.

3. In 43 cases where postpartum haemorrhage was anticipated, the methergin was given intravenously. In 3 cases (7%) there was a repetition of the postpartum haemorrhage. Table I gives an indication of the type of case in which methergin was given intravenously.

TABLE I. INTRAVENOUS METHERGIN WITH CROWNING OF HEAD*

Indication	Number	Repetition of PPH
Forceps delivery under general anaesthesia	15	0
Previous postpartum haemorrhage	12	2
Abruptio placentae	7	1
Twins	6	0
Prolonged labour	3	0
Total	43	3

* 1 March 1959 - 30 June 1960.

3. The Third Phase

The duration of this phase was 6 months (1 July 1960 - 31 December 1960). During this phase 1,023 consecutive deliveries were performed, and there was a further reduction in postpartum bleeding from 3.89% to 2.05%. There was no specific alteration of regime, and we attributed the reduction to the fact that the whole department was by now very alert to the possibility of postpartum haemorrhages, so that active treatment could always be instituted before a loss of 20 oz. of blood occurred.

During this phase a double-blind series was performed to enable us to make a further assessment of the relative value of ergometrine and hyalase, and methergin and hyalase. Sandoz Laboratories very kindly supplied us with identical ampoules lettered 'A' or 'B' containing either 0.5 mg. of ergometrine or 0.5 mg. of methergin. Only after the final analysis of the results was known to us was it revealed which ampoules contained methergin and which ergometrine. A small supply of S.E. 505 (now marketed as 'syntometrine') was also used in the trial. S.E. 505 contains 5 units of syntocinon, which has a rapid action, and 0.5 mg. of ergometrine which in comparison has a delayed action. The combined use of these substances when given intramuscularly obviates the use of hyalase, which is usually added to hasten the absorption of the oxytocic.

Only those cases (858) where the oxytocic had been injected intramuscularly with the crowning of the head, were used for the analysis. The results were as follows:

1. In 350 cases where ergometrine plus hyalase were given there were 6 cases of postpartum haemorrhage, i.e. 1.71%.

2. In 310 cases where methergin plus hyalase were given there were 6 cases of postpartum haemorrhage, i.e. 1.95%.

3. In 198 cases where syntometrine was given there were 4 cases of postpartum haemorrhage, i.e. 2.03%.

The difference between the results obtained by using these three substances is too small to be of any importance.

TABLE II. DURATION OF THIRD STAGE*

Duration 3rd stage (Minutes)	Methergin + hyalase (Numbers)	Ergometrine + hyalase (Numbers)	Syntometrine (Numbers)
0-5	190 (61%)	226 (65%)	126 (64%)
6-10	101 (33%)	84 (24%)	62 (31%)
11-15	11 (3.5%)	25 (7%)	6 (3%)
16-20	4 (1%)	2 (0.5%)	2 (1%)
21-30	2 (0.5%)	7 (2%)	1 (0.5%)
30+	2 (0.5%)	6 (1.71%)	1 (0.51%)
Total	310	350	198

* In all these cases the injection was given intramuscularly with the crowning of the head.

An analysis of the duration of the third stage (Table II) shows that with all 3 methods the third stage is completed in less than 5 minutes in at least 60% of cases. Retained placenta, however, was found in 1.71% of cases where ergometrine plus hyalase were used, compared to 0.5% of cases where either syntometrine or methergin plus hyalase were used.

Retained Placenta

We regard a placenta as being retained if it has not been delivered within 30 minutes of the birth of the baby. It appears that many colleagues are still under the impression that if an oxytocic is given at the end of the second stage of labour an alarmingly high incidence of retained placenta will result. We have found that there is such a slight increase in the incidence of retained placenta that it can be disregarded. This confirms the results published by Huntingford.⁴

Our findings regarding the incidence of retained placenta in the Karl Bremer Hospital for the whole of the period 1 January 1957 to 31 December 1960 can be summarized as follows:

1. Where no prophylactic oxytocic was given, the incidence of retained placenta was 0.87% (4 cases out of a total of 459).

2. Where ergometrine plus hyalase were injected intramuscularly at the end of the second stage (with the crowning of the head or the birth of the anterior shoulder), the incidence of retained placenta was 1.64% (39 cases out of a total of 2,377).

3. Where methergin plus hyalase were injected intramuscularly at the end of the second stage (with the crowning of the head), the incidence of retained placenta was 1.71% (44 cases out of a total of 2,586).

4. In our final series, where different oxytocics were injected at the end of the second stage (with the crowning of the head), the incidence of retained placenta was 1.17% (12 cases out of a total of 1,128).

DISCUSSION

It seems, therefore, that the routine prophylactic use of an oxytocic increases the incidence of retained placenta from 0.87% to 1.17%, but at the same time the incidence of postpartum haemorrhage is reduced from 11.98% to 2.05%. In round figures this means that with the adoption of the routine use of an oxytocic at the end of the second stage

TABLE III. POSSIBLE PREDISPOSING CAUSES IN 126 CASES

Condition	Number in PPH series (Total 288)	Number in whole series (Total 5,422)	Incidence of PPH in pre- disposing con- dition
Retained placenta	29	87	33.3%
Abruptio placentae	25	143	17.6%
Multiple pregnancy	14	114	12.3%
Prolonged labour	16	157	10.2%
Trauma	22		
Retained cotyledons	10		
Clotting defect	3		
Fibroids	3		
Varicose veins, vulva	2		
Full bladder	2		

of labour in 1,000 cases we find 99 less cases of postpartum haemorrhage and 3 additional cases of retained placenta. The advantage of the former, to our mind, outweighs the danger of the latter.

We have found that the best time to give the oxytocic is simultaneously with crowning of the head. In the choice of oxytocic there seems to be no difference between ergometrine plus hyalase, methergin plus hyalase, and syntometrine. We have given the injections intramuscularly because a doctor is not always available to give an intravenous injection. Hyalase was thus added to hasten absorption. In the case of syntometrine it is not necessary to add hyalase, since the syntocinon acts rapidly when given intramuscularly. In the final choice of an oxytocic it is therefore its price which will be the decisive factor.

When a postpartum haemorrhage is expected it is probably safer to give the oxytocic intravenously with the birth of the shoulder. In order to be able to select the type of case in which this might be necessary, we analysed 288 cases of postpartum haemorrhage which occurred in spite of the fact that the patients had had prophylactic oxytocics injected intramuscularly. In 162 of these 288 cases (85 with an atonic uterus and 77 with no atonic uterus) no cause for the postpartum haemorrhage was found. The possible predisposing causes in the rest (126 cases) are analysed in Table III. In order of importance the predisposing causes were: retained placenta, abruptio placentae, trauma with and without general anaesthesia, prolonged labour, multiple pregnancy, and retained portion of placenta. It is therefore suggested that in patients with a previous history of postpartum haemorrhage and/or abruptio placentae, vaginal delivery under general anaesthesia, prolonged labour, and birth of the last baby in multiple pregnancy, an oxytocic should be given intravenously with the birth of the anterior shoulder.

SUMMARY

1. Over a 4-year period the overall incidence of postpartum haemorrhage was reduced from 11.98% to 2.05%, and in an isolated series to 1.71%, by the routine use of oxytocics by intramuscular injection at the end of the second stage of labour (Fig. 1).

2. The concomitant rise in incidence of retained placenta was 0.3% and therefore negligible.

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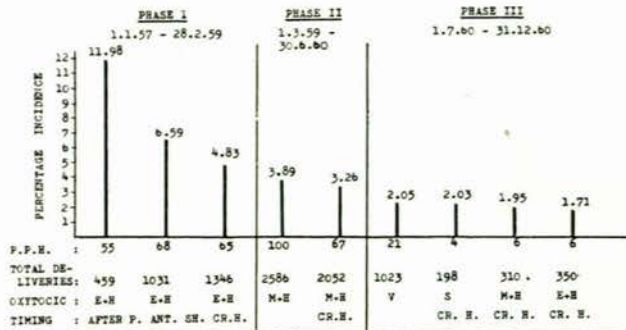


Fig. 1. Incidence of PPH in the Karl Bremer Hospital during the period 1 January 1957-31 December 1960. E = ergometrine. H = hyalase. M = methergin. V = various. S = syntometrine. P = placenta. Sh = shoulder. Cr = crowning. H = head.

3. It was found that the best time to administer the oxytocic is with the crowning of the head.

4. The results were more or less the same with ergometrine plus hyalase, methergin plus hyalase, and syntometrine, when they were given intramuscularly with the crowning of the head.

Sandoz Pharmaceutical Products very kindly supplied us with the necessary ampoules of ergometrine and methergin for a double-blind experiment, as well as the ampoules of S.E. 505 (syntometrine).

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