Active Management of the Third Stage of Labour

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Prolongation of the third stage of labour is associated with an increased risk of post-partum haemorrhage (Hibbard, 1964). To minimize this risk the administration of oxytocic drugs before delivery of the placenta is now commonplace, but, largely because of fears of complications such as inversion of the uterus, the use of umbilical-cord traction has not been so widely adopted, particularly in domiciliary practice. Yet if the need to expedite the expulsion of the placenta is accepted both pharmacological and mechanical means of encouraging this should be used. The value of oxytocic drugs at the end of the second stage followed by controlled cord traction has been demonstrated by, among others, Kimbell (1958), Spencer (1962), and Bonham (1963).

The purpose of the investigation described here is to present the results of an active policy of third-stage management in hospital deliveries conducted principally by midwives, pupil midwives, and medical students and to assess the suitability of such a policy for use in domiciliary as well as in hospital practice.

Clinical Material

At Mill Road Maternity Hospital, Liverpool, during the decade 1953-62 the management of the third stage of labour followed traditional lines. The uterine fundus was "guarded" until signs of descent of the placenta into the lower uterine segment or vagina were recognized. Expression of the placenta by fundal pressure was then performed. During most of the period ergometrine, 0.5 mg., was given by intramuscular injection after delivery of the placenta, but latterly some patients received the injection at the time of delivery of the anterior shoulder. Medical aid was sought if the placenta was not delivered within one hour (30 minutes in 1962) or if the blood loss exceeded 20 oz. (570 ml.).

From April 1963 a more active policy was adopted and the third stage of labour was conducted by a technique described previously (Hibbard, 1964). Syntometrine, 1 ml. (0.5 mg. of ergometrine maleate and 5 units of synthetic oxytocin), was injected intramuscularly immediately after the delivery of the baby's head or as soon as practicable thereafter. After expulsion of the baby and as soon as firm uterine contraction occurred umbilical-cord traction was applied. If the placenta was not delivered within 15 minutes or if the blood loss exceeded 15 oz. (430 ml.) medical assistance was sought and preparations were made for manual removal. The general management of patients in the first and second stages of labour and the methods of assessing blood loss were similar throughout the periods of investigation. The recorded blood loss included that due to trauma, as well as bleeding from the placental site.

In the decade 1953-62 33,149 patients were delivered, and the results during this period of "traditional" conservative management are compared with those obtained with 10,082 patients delivered between April 1963 and December 1965. In addition, a detailed analysis was made of the third stage of labour in unassisted vaginal deliveries occurring during 1964, and these are compared with previous figures reported from

the same unit when traditional management of the third stage was practised (Hibbard, 1964).

Overall Incidence of Post-partum Haemorrhage and Manual Removal of the Placenta, 1953-65

In the years 1953-62 the post-partum haemorrhage rate for all hospital deliveries averaged 5%, with a range of 3.5-6.6% (Table I). During this period there was a slight downward trend due mainly to two factors—the introduction of local anaesthesia for operative vaginal deliveries and the routine use of ergometrine after delivery of the placenta. From April 1963, following the change to an active policy and the use of Syntometrine and cord traction in all cases, the post-partum haemorrhage rate fell dramatically and in that year reached 2.6%, the lowest level recorded up to that time. In 1964, the first complete year in which cord traction was used, the post-partum haemorrhage rate showed a further fall to 1.8%, and during 1965 a figure of 1.9% was recorded. The mean blood loss in a random sample of 1,500 patients who had unassisted vaginal deliveries was 4½ oz. (135 ml.).

TABLE I.—Overall Incidence of Primary Post-partum Haemorrhage, Mill Road Maternity Hospital, Liverpool (1953-65)

	1953-62	1963	1964	1965
Deliveries	33,149	3,538	3,698	3,677
Post-partum haemorrhage incidence ..	5.0%*	2.6%	1.8%	1.9%

* Range 3.5-6.6%

Following the adoption of cord traction manual removal of the placenta was carried out in 1.5% cases, compared with an average of 1.8% cases in the preceding decade. In the early years manual removal was resorted to only if, in the absence of major haemorrhage, the placenta had been retained for over one hour. In 1962, when a time limit of 30 minutes was set, the manual removal rate was 2.8%. Manual removal of the placenta was often carried out as an elective procedure after assisted delivery. If only those patients who had an unassisted vaginal delivery are considered the incidence of manual removal of the placenta with active third-stage management was 1.3%. A figure of this order might be expected in domiciliary practice.

Duration of Third Stage and Post-partum Haemorrhage

In the investigation reported previously (Hibbard, 1964) it was shown that with traditional conservative third-stage management the placenta was delivered within five minutes in 61% cases (Table II). With active management and the use of Syntometrine and cord traction, 87% placentae were delivered

TABLE II.—Duration of the Third Stage of Labour After Unassisted Vaginal Delivery

	No. of Deliveries	Duration of Third Stage (minutes)			
		Up to 5	Over 5	Over 15	Over 30
"Traditional" management	3,522	61%	39.2%	6.1%	1.3%
Syntometrine and cord traction	2,802	87%	13.1%	3.4%	2.4%

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within five minutes. The placenta was retained for 15 minutes or more in 6.1% cases in the first series but in only 3.4% cases in the second series.

The incidence of post-partum haemorrhage increases with the duration of the third stage (see Fig.), and, with traditional management, if the duration was over 30 minutes haemorrhage of 20 oz. (570 ml.) or more occurred in 30% cases. In the active management series this trend was not so marked, with the result that haemorrhage of 20 oz. (570 ml.) or more occurred in only 9% of cases where the placenta was retained for more than 30 minutes.

Incidence of post-partum haemorrhage in relation to duration of the third stage of labour. Unassisted vaginal deliveries only.

Other Complications

In the 10,082 patients delivered since the adoption of active management neither inversion nor other trauma of the uterus was encountered. Retention of cotyledons or membranes rarely occurred, and subsequent exploration of the uterus because of this or because of excessive bleeding during the puerperium was required in only 0.5% cases. This is the same as the average figure of 0.5% obtaining in previous years.

On one occasion Syntometrine was given to a woman in premature labour at 33 weeks' gestation before the delivery of a second, undiagnosed, twin. As soon as the situation was recognized general anaesthesia was induced and the infant, weighing 3 lb. 8 oz. (1,590 g.), was delivered by breech extraction 20 minutes after the injection of Syntometrine. His condition at birth was poor and death from atelectasis occurred 36 hours later.

Discussion

The purpose of this trial was to assess the general application of a clearly defined and co-ordinated scheme of third-stage management in which the natural expulsive forces were doubly aided, rather than to make isolated comparisons of the effectiveness of drugs or of mechanical aids to delivery of the placenta. The results confirm that such a scheme of management causes a reduction in the duration of the third stage of labour. This in itself is not necessarily a virtue unless it leads to more efficient uterine contraction and retraction and consequent reduction in blood loss, as was the case in the present series. Fears of complications induced by intervention proved to be unfounded except for the occasion when Syntometrine was given to a patient who delivered prematurely and had an undiagnosed second twin. The need for manual removal of the placenta

was not increased in spite of a more liberal approach to this operation. Perhaps of more importance is the dramatic reduction in the incidence of haemorrhage in those few cases where the placenta is retained for more than 30 minutes—9% as compared with 30% in the previous series with traditional management. For haemorrhage to occur from the placental site both uterine relaxation and partial separation of the placenta must be present. Syntometrine induces uterine contraction and retraction, and this is normally maintained while preparations are made for operative intervention. It is probable that the majority of retained placentae with this scheme of management are completely adherent. If placental separation is partial, expulsion by the action of oxytocin and cord traction is likely to occur more often than when conservative measures are adopted. Reduced manipulation and trauma to the uterus resulting from a more disciplined approach may also play a part.

The method described is of particular value for domiciliary midwifery, for the incidence of haemorrhage is reduced without any increase in the need for operative intervention. When the placenta is retained some delay in obtaining the services of an obstetric flying squad is inevitable. It is imperative that blood loss should be minimized during the interim, for manual removal of the placenta is a relatively safe procedure in the absence of haemorrhage but it is hazardous if the patient's general condition is poor.

From the point of view of training undergraduates and pupil midwives decisive action is more easily presented and more readily accepted than tentative inaction, with its associated temptations. The popularity of cord traction with the midwifery staff indicates the attractions which the method holds. Avulsion of the cord sometimes occurs, and is seen more often when new students are conducting their first deliveries. No harm results from this, and the degree of traction which is permissible is soon learnt.

It is concluded that active management of the third stage of labour by the use of Syntometrine and umbilical-cord traction, with proper precautions, is a safe and desirable procedure and should be encouraged in domiciliary practice as well as in hospital. It offers a further advance towards the ideal management of the third stage of labour—to achieve delivery of the placenta with the least possible physical disturbance to the mother and minimal blood loss. The technique is easily taught and deserves a place in the curriculum of any midwife and undergraduate training programme.

Summary

An active policy of management for the third stage of labour, combining the administration of Syntometrine and umbilical-cord traction, was used in 10,082 patients.

When compared with the results in previous years, during which traditional conservative methods were practised, a reduction in post-partum haemorrhage rate from an average of 5% to less than 2% is shown. There was no increase in the need for manual removal of the placenta or in the incidence of retained cotyledons or membranes.

The technique is easily taught, is readily accepted, and is recommended for both hospital and domiciliary use.

REFERENCES

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