

A PRELIMINARY RESUME ON THE USE OF OXYTOCICS IN THE SECOND STAGE OF LABOUR

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About 15 to 20% of all maternal deaths may be ascribed to the direct or indirect effects of post-partum haemorrhage. The important complications of labour which commonly give rise to these accidents are (i) atony of uterus with or without retention of placenta, (ii) retained placenta due to other causes, and (iii) trauma and lacerations.

The use of oxytocics in the second and the third stages of labour has been advocated in American literature and text books for well over 20 years, but the opinion with regard to its advantages and dangers has not been unanimous. Davis (quoted by Shaw, 1949) is generally claimed to have been the first to use ergometrine in 1934 in the second stage of labour. Since then numerous reports have appeared in the literature. The general impression from the study of these papers appears that the results are satisfactory.

It is because of these reasons that a planned investigation to study the effects of ergometrine, pitocin and methyl ergometrine was undertaken in Eden Hospital in order to find out whether (a) these reduce the post-

partum blood-loss, (b) they cause any alteration in the duration of the third stage and (c) they have any effect on retention of placenta. One of the objects has been to determine if these drugs could be safely recommended for use in the second stage of labour to the general practitioners who are responsible for the largest number of confinements in this country. The oxytocics were administered during the second stage of delivery immediately after the release of anterior shoulder. The time of separation and expulsion of the placenta was carefully observed and the duration of the third stage noted. The total blood loss was collected in a receptacle placed under the buttocks of the patient. It has not been found possible to separate the blood-loss from episiotomies and genital tract lacerations from that derived from the placental site. However, this has not biased the results in any way as the incidence of episiotomies in both the control and experimental series has been almost identical. Non-expulsion of the placenta requiring subsequent manual removal was also noted. For the purpose of the present communication, cases requiring instrumental delivery and delivery under general anaesthesia have been excluded in order to obtain an un-

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disturbed picture of the value of oxytocics in the second stage of labour.

Control consisted of 500 normal confinements. Of these, 13 had antepartum haemorrhage and 92 were cases of hypertensive toxæmia of pregnancy with/without oedema or albuminuria. Ergometrine intravenous, 0.125 mg., was used in 320 cases. 100 cases were administered 0.25 mg. of ergometrine by the intramuscular route in combination with hyalase. 50 Bengel units of hyalase were used with the hope that it will hasten absorption of ergometrine and produce as quick an effect as the intravenous injection. In 50 cases each, pitocin 2 units, methyl ergometrine 0.2 mg. with 50 units of hyalase intramuscularly and methyl ergometrine 0.1 mg. intravenously were used.

On scrutinising the data it was found that neither antepartum haemorrhage nor toxæmia of pregnancy significantly altered the results of oxytocics, so these are not presented separately.

Post-partum Blood-loss

In this communication total blood-loss indicates the amount of haemorrhage from the time of birth of the baby until the patient was draped and sent to her bed. In 500 control cases average blood-loss was 6.01 oz. With every oxytocic drug there was reduction of this blood-loss. With intravenous ergometrine this was 2.71 oz., with intravenous methergin (methyl ergometrine) 4.04 oz., with pitocin, ergometrine and methergin intramuscularly 3.92, 3.63 and 4.66 oz. respectively. So the results demonstrate that with regard to post-partum blood-loss ergometrine intra-

venous produces the most satisfactory result and this indicates statistical significance at 1 per cent level with not only control cases but also with pitocin, intramuscular ergometrine and methergin given both intramuscularly and intravenously. It should be noted also that between the results of intramuscular pitocin and methergin there is no statistical significance. The comparative high values for blood-loss obtained with pitocin may be explained due to the fourth stage haemorrhage, frequently occurring half an hour after the expulsion of the placenta. This could be easily avoided with ergometrine given after the placenta was expelled.

The post-partum blood-loss has also been studied in relation to parity. As intravenous ergometrine was found to be superior to other drugs used, its results are compared with those in the control group. In all cases, irrespective of parity, intravenous ergometrine reduces the post-partum blood-loss. In primigravidae, however, the difference of 6.14 oz. in control and 4.18 oz. with ergometrine is not statistically significant. Between para 1 and 4, the difference of 6.89 oz. in control and 3.5 oz. with ergometrine is significant at 1 per cent level. In grande multiparae the difference of 8.73 oz. in control and 2.97 oz. with intravenous ergometrine is of high degree of significance.

The longer the duration of the third stage of labour, the greater is the danger of post-partum haemorrhage. In the control cases the above statement holds good. With intravenous ergometrine the net blood-loss is significantly less as long as the third stage is less than half an hour.

But when the placenta is not expelled for more than half-an-hour ergometrine does not influence the postpartum haemorrhage compared with the control group. In the comparatively small number of cases where pitocin and methergin were used, the time relation with haemorrhage could not be effectively studied.

Duration of Third Stage of Labour

In the control series the third stage was 11.08 minutes. With oxytocics, viz. ergometrine, pitocin and methergin, both intravenous and intramuscular, the duration of the third stage was reduced. At a glance, intravenous methergin seems to shorten the third stage most—4.18 minutes. Between pitocin and intramuscular ergometrine, viz. 5.48 minutes in the former and 6.27 minutes in the latter, there is no appreciable difference. The timings with intravenous ergometrine 5.6 minutes, intramuscular pitocin 5.48 minutes, and intramuscular methergin 5.02 minutes show no significant difference on statistical analysis. Between intravenous ergometrine and intravenous methergin, however, the superiority of methergin is statistically significant at 1 per cent level. This was noted by Rioridan and co-workers in 1950. This is apparent because methergin is one and a half to two times stronger in its oxytocic effect than ergometrine as shown by Gill in 1947. It causes a quick and forcible retraction hastening placental separation but without causing an equal effect on the separation of the membranes. As a result, bits of membranes are sometimes torn and left behind. This explains the slightly increased blood-loss in spite of a shortening of the

third stage of labour with intravenous methergin.

Ergometrine shortens the third stage of labour irrespective of parity. The results in primigravidae are statistically significant. This is remarkable in grande multiparae, but the effect is only just above border-line between the second and the fourth para.

It has been stated that oxytocics in the second stage might increase the chance of retention of placenta. A period of 30 minutes has been taken as the time-limit of the third stage. In ergometrine treated cases, in only 2.5 per cent the placenta was retained for more than 30 minutes as against 5 per cent in the control series. In these patients blood-loss with ergometrine was 19.5 oz. as compared with 17.6 oz. in control series. It is interesting to note that the incidence of placental adhesions in both series is somewhat similar (11 in control and 3 in treated cases). In two, i.e. 25 per cent treated with ergometrine, some degree of cervical spasm was present but not severe enough to cause difficulty in manual removal of the placenta. In 4 out of 25 cases of retained placenta in the control group, severe degree of shock developed after manual removal, compared to only one case of moderate shock in the series treated with ergometrine. Intravenous ergometrine was employed in a small series of cases, when placenta was already retained. In 12, active bleeding was present and in 5 slight occasional trickle. In all of them placenta was retained for more than half an hour. In 8 out of 12 cases where Crede's expression failed, the placenta was

spontaneously expelled with intravenous ergometrine. Where active bleeding was present, the amount of blood-loss was appreciably decreased after the injection in all cases. Of the 5 cases where trickling of blood was present, in 2 active haemorrhage was precipitated by the injection of ergometrine, so that immediate manual removal became necessary, but no difficulty was experienced in performing the operation.

Conclusion

(i) Oxytocics in the anterior shoulder stage of labour reduced post-partum blood-loss and shortened the third stage of labour without materially increasing the danger of retention of placenta. Intravenous ergometrine gives the most satisfactory result with regard to blood-loss and intravenous methergin with regard to the duration of the placental stage.

(ii) Ergometrine given for retained placenta reduces the post-partum haemorrhage caused by the retention of placenta and increases the chance

of spontaneous expulsion. When manual removal of placenta becomes necessary the operation is not rendered difficult by the use of ergometrine.

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