

## ACCELERATION OF THIRD STAGE OF LABOUR BY OXYTOCIN INSTILLATION IN THE UMBILICAL VEIN

DIPIKA CHOWDHURY • RAMA KANTA DAS • ALAKA GOSWAMI

### SUMMARY

A 'new method' of injecting diluted oxytocin solution through the umbilical vein to facilitate early expulsion of the placenta during the third stage of labour, originally devised by Golan in 1983 and based on the Mojon Gabastou (1923,1928) principle of the 'Hydraulic Method' of delivery of the placenta is reported. 150 cases, out of which 5 were cases of retained placenta, were treated with dilute oxytocin solution during the third stage of labour. The duration of third stage and amount of blood lost during the same were compared with 50 control cases. A significant reduction in the duration of third stage and the amount of blood lost was noted with a considerable lowering of the incidence of post partum complications. It was found to be highly beneficial for patients with cardiovascular diseases where ergometrine could be avoided totally. The method can well be recommended for the routine use in the peripheral health units, thereby minimising the rate of casualties referred to well equipped centres.

### INTRODUCTION

Great strides have been made in the process of improving obstetric practice with a concomitant decrease in maternal and perinatal mortality rates. However, a critical analysis of the expected behaviour of the third stage of labour is a valuable factor in all labouring women in order to prevent its complications particularly haemorrhage. Not much of the progress has been gained

*Dept of Obst. and Gyn, Gauhati Medical College, Gauhati.*

in this respect, ever since Spencer in 1962 modified the Brandt (1933) Andrew's (1940) method of delivery of the placenta by controlled cord traction. Ergometrine is but relatively contraindicated in certain medical maternal conditions such as hypertensive states and cardiovascular diseases. On the other hand, both conditions might predispose to third stage haemorrhages with disastrous consequences to the mother. Therefore, the idea of injecting a relatively safer oxytocic substance directly into the utero-placen-

tal bed in a higher concentration was devised by Golan and his associates reported in 1983. Based on the original principles of Mojon (1928) Gabastou's (1928) 'Hydraulic Method' and pioneered by Asdrubali (1923, 1928) of Rome, as quoted by Jarcho (1928) the method of injecting an oxytocin-saline solution into the umbilical vein in the third stage of labour was carried out on 150 patients delivered vaginally at the Obstetrics and Gynaecology Department of Gauhati Medical College Hospital. The results have been compared with 50 control cases.

#### **MATERIALS AND METHODS**

200 selected cases admitted into the labour ward of the Department were studied. Out of these 150 cases were studied as 'treated cases' with oxytocin solution instilled into the umbilical vein during the third stage and 50 cases were studied as untreated controls. The age of these parturients ranged from 15 to 40 yrs. and their parity ranged 0 to 7. Duration of pregnancy ranged from 32+ weeks to 44+ weeks. The treated group also included 5 cases of retained placenta of 20 minutes to 30 minutes duration. The cases were divided into groups depending on their age and parity respectively. Cases with a history of a previous elective or emergency caesarean section who also had one or more vaginal deliveries of previous mature babies were also included.

#### **PROCEDURE**

A solution of 5 units of oxytocin diluted in 10 ml of Normal Saline or distilled water for the cases without retained placenta and a solution of 10 units of oxytocin diluted in 20 ml of the diluent for cases with retained placenta was injected with mild force into the umbilical vein, about 2 inches away from the vulva, proximally, the time being noted immediately. Signs of placental separation were then awaited and the time interval and blood loss being recorded. In cases of non-separation upto 5 minutes, a second injection was made and awaited for further 5 minutes. In failure to

separate 5 minutes after the second injection the procedure was abandoned and placenta removed manually under anaesthesia. The blood loss was measured in a graduated container.

#### **RESULTS AND DISCUSSION**

Out of the 150 treated cases, 145 cases were normal deliveries and 5 cases were ones with retained placenta of 15-30 minutes duration. Golan (1983) states that if a placenta fails to separate by 15 minutes, it can be considered as retained. Of the 145 cases mentioned, a total of 142 cases (94.6%) responded with 138 cases (92%) responding to the first injection and 4 cases (2.67%) responding after the second injection. The range of duration of third stage and associated blood loss is shown in table I which is comparable to the studies of Jain et al (1986) with 100 cases.

It can be seen that the duration of third stage and its associated blood loss was definitely lower compared to the control group. No ergometrine supplementation was required in any of these cases and this proved to be advantageous to three hypertensive patients. Their puerperium was uneventful. Besides, comparative study made amongst the different parity groups and age groups showed that the method proved to be greatly helpful to the higher parity groups and higher age group patients who generally prove to be relatively risky third stage performers. Their results also were statistically highly significant. The three unsuccessful cases required manual exploration under anaesthesia.

Out of the 5 cases with retained placenta, three cases responded with 1 case responding to the first injection and 2 cases responding with the second injection. Two failed cases required subsequent exploration of the uterine cavity under anaesthesia, of which one proved to be an hour glass contraction of the uterus with an already separated placenta, the corrected incidence being 4(80%) cases successful. The results of the present study are compared to those of other workers in table II.

TABLE I

Group	No. of cases	%	Range of duration of 3rd st. in min:sec	Mean of in mins.	S.D. duration in	Range of blood loss in ml.	Mean blood loss in ml.	S.D.
Control	50		01:40-20:10	6.41	+3.92	20-65	44.20	+10.99
Total successful cases	142	94.6	00:30-07:35	1.45	+1.24	8-50	16.49	+7.21 0.01
Success with 1st injection	137	94.4	00:30-05:30	1.31	+0.92	8-50	10.09	+17
Success with 2nd injection	2	1.3	05:40-07:35	6.40	+0.89	20-36	30.50	+6.54
Jain's study (1986) 1st injection.	92	92	00:32-02:00	1.77		10-60	30.00	
Jain's study 2nd inj.	6	6	07:00-08:00	7.5			40	

TABLE II

Study group	No. of cases studied	No. of successful cases	%	Duration of placental retention	Range of inj. interval	Mean expulsion in min:sec	Range of interval loss in ml	Mean blood loss in ml	Incidence of blood exploration of uterus
Golan et al (1983)	10	10	100	30 min	2 min-5 min	3:40	-	-	2 cases (20%)
Hauksson (1986)	48	22	45.8	60 min	9 min-1 hr.30 min.	19:00	-	-	26 cases (54%)
Jain et al (1986)	30	28	93.8	30 min-20 hrs.	1-5 min	3:00	20-150	-	2 cases (6.6%)
Present study	5	3	60	20-30 min	5 min. 30 sec.-7 min. 35 sec.	6:35	26-36	30.69	2 cases (40%)

The incidence of post partum complications was also significantly reduced. There was no incidence of post partum haemorrhage in any of these five cases and their puerperium was

uneventful. Even a case of eclampsia responded well to the method without any ill effect.

This goes to prove that the oxytocin-saline infiltration method is of great use in day to day

obstetric practice, being simple and effective, requiring no extra effort or cost. All the high risk obstetric cases can benefit by this method without the bad effects of ergometrine or prostaglandins. The systemic side effects of oxytocin were not encountered with the mentioned dose of oxytocin used. However, it would be of further help if serum oxytocin concentrations could also be estimated with the concomitant use of gradually increasing doses of oxytocin in effecting early separation of the placenta. This will also reveal any chance incidence of systemic effect due to oxytocin, which will otherwise act locally at the site of placental attachment in high concentrations (Golan et al, 1983).

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SUMMARY

The author has reported the use of oxytocin in the umbilical vein post partum period in the treatment of postpartum hemorrhage. The results of the study are discussed. The author concludes that the use of oxytocin in the umbilical vein post partum period is a simple and effective method of treating postpartum hemorrhage. The author also discusses the systemic side effects of oxytocin and the need for further research in this area.

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