

ACTIVE MANAGEMENT OF THIRD STAGE OF LABOUR BY INTRA-UMBILICAL VEIN INJECTION OF OXYTOCIN

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ABSTRACT

Objectives: to evaluate the efficacy of intraumbilical vein oxytocin for active management of third stage of labor

Materials & Method: Study group and control group each had 100 parturients (spontaneous term singleton vaginal delivery with cephalic presentation without any complication). Just after delivery of the fetus study group received 20 units of oxytocin mixed with 20 ml of normal saline through intraumbilical vein. Control group received oxytocin intravenous infusion (20 units oxytocin mixed with 500ml of ringer lactate and transfusion started @ 16 drops/min). Placenta was delivered by modified Brandt-Andrew technique once the sign of placental separation became evident. Baby delivery to placental delivery time interval and blood loss were noted.

Results: In study group, 69% cases placenta & membranes were delivered within 3 minutes and in 59% cases average blood loss was within 200ml.

Conclusions: Intra-umbilical vein injection of oxytocin in the management of third stage of labor is simple, safe and better method.

KEYWORDS: AMTSL, Intraumbilical, Oxytocin

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INTRODUCTION

A prolonged third stage of labour is often associated with increased risk of maternal morbidity and mortality due to post-partum haemorrhage. In India where the incidence of anaemia during pregnancy is high, even a small amount of blood loss may be of great clinical significance. Reducing the time of delivery of placenta through active management of third stage can prevent uterine atony and PPH. Oxytocin administration immediately after childbirth is probably the single most important intervention used to prevent PPH. Women receiving oxytocin lose less blood and deliver placenta faster, resulting in a reduced incidence of postpartum haemorrhage and manual removal of placenta.¹ Local administration of oxytocin through umbilical vein could be very good alternative in active management of third stage of labour (AMTSL). The present study aims at evaluating the effect of intraumbilical vein oxytocin in AMTSL.

MATERIAL AND METHODS

A total number of 100 parturient were taken as 'study group' and another 100 parturient were taken as 'control group'. Inclusion criteria were spontaneous term singleton vaginal delivery with cephalic presentation without any

complication. Exclusion criteria were anaemia, preterm delivery, post-caesarean pregnancy, multiple pregnancies, malpresentations, PIH, APH, hydramnios, congenital anomalies of the uterus, extremes of ages (teenage pregnancy i.e. < 19 years, elderly primigravida i.e. \geq 35 years), grand multipara, Rh-negative mother, macrosomia, intrauterine fetal death, drugs used during labor which may cause PPH, cesarean section, instrumental delivery etc. Informed consent was obtained. For optimum effect, rapid injection immediately after clamping of the cord is essential. Hence patients requiring cord blood collection, cord segment for blood gas analysis etc. that involved a time lapse, were not included in the study.

Umbilical cord was clamped immediately after delivery of the baby. In the 'study group' 20 units of oxytocin mixed with 20 ml of normal saline was injected in the umbilical vein. In 'control group' 20 units of oxytocin was mixed with 500 ml of ringer lactate intravenous infusion and started immediately after clamping of the cord @ 16 drops per minute. Placenta was delivered by modified Brandt-Andrew technique once the sign of placental separation became evident. Time interval from delivery of the baby to the delivery of the placenta & membranes were noted. Exact blood loss could not be measured. Approximate value was measured by collecting the blood in a kidney tray placed close to the vulva. If episiotomy was given, then that area was packed with gauze and kidney tray was placed over it, so that uterine blood did not get mixed with the episiotomy blood. While suturing episiotomy vagina was packed with a pad. After finishing episiotomy suturing this pad is removed and vulval/sanitary pad was kept over the vaginal introitus. At the end of 1 hour this sanitary/vulval pad(s) and vaginal pad (which was kept during episiotomy suturing) were weighed. All the pads were weighed before application. Now the difference in weights was calculated and approximate blood loss was measured by following formula² – Blood loss (ml) = Weights of the used pads – Weights of the unused pads/ 1.05. Now this figure and amount of blood loss in the kidney tray were combined together to get the final volume of blood loss.

RESULT

Most of the patients were in between 20-30 years (study group 85, control group 89) and primipara was higher (study group 76, control group 73). (Table 1)

Duration of third stage of labor revealed that in study group, in 69% cases, placenta & membranes were delivered within 3 minutes, whereas in control group, only 33% cases had placenta & membranes delivered within 3 minutes ($p < 0.001$). There was 1 case of retained placenta in control group which necessitates manual removal and bleeding was more than 1000ml. No case of retained placenta in study group.

In 'study group' approximate blood loss within 200 ml was in 59% cases and it was 33% in control group ($p < 0.001$). (Table 2)

DISCUSSIONS

Active management of the third stage of labour (AMTSL) reduces the risk of PPH and should be offered and recommended to all women.³ The use of intraumbilical vein oxytocin for the management of third stage of labour was first described by Neri A et al.⁴ The injection of intra- umbilical oxytocin leads to a high concentration of oxytocin at the uterine wall and may be the cause of the rapid placental expulsion.⁵ Intraumbilical vein oxytocin reaches the placental bed in high concentration that stimulates the uterine contractions, thus decreasing the placental attachment site. The resulting tension causes the decidua spongiosa to give way with the formation of a hematoma, which then accelerates the process of placental separation.¹

Parturient who received intraumbilical vein oxytocin (10 Units) had a shorter third stage of labor in compare to the placebo group (4.24 ± 3.27 min vs. 10.66 ± 7.41) ($p < 0.001$) and there was less need for manual removal of placenta in the study group (1.1% vs. 5.1%) ($p = 0.024$).⁶ Gungördük K et al² also found that third stage of labor is shorter in study group ($p < 0.001$).

Average blood loss was 195.3 ± 81.0 ml in study group compared to 288.3 ± 134.1 ml in control group ($p < 0.001$).² In another study intraumbilical vein oxytocin group lost 234.03 ml of blood while the control group lost 276.51 ml ($p = 0.001$).¹

In search of the most effective dose of intraumbilical oxytocin the parturient were injected 10, 20 & 30 units oxytocin mixed with 50 ml of normal saline intraumbilically and it was found that 30 units oxytocin solution group had quickest placental expulsion time and least blood loss.⁷

Intra-umbilical oxytocin is a useful alternative in patients where intravenous fluids need to be restricted.⁸

In present study 20 units oxytocin with 20ml normal saline was injected intraumbilically and resulted in quicker expulsion of placenta & membranes with less blood loss.

CONCLUSIONS

The use of intra-umbilical vein injection of oxytocin in the management of third stage of labour is found to be simple, safe and effective method.

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APPENDICES**ABBREVIATIONS**

PIH – Pregnancy induced hypertension

APH – Ante-partum haemorrhage

PPH – Post-partum haemorrhage

Table 1: Age & Parity Distribution

Age (Years)	Study Group	Control Group	Parity	Study Group	Control Group
20-30	85	89	Primi	76	73
31 – 34	15	11	Multi	24	27
Total	100	100	Total	100	100

Table 2: Duration of Third Stage of Labor & Blood Loss

Duration (Minutes)	Study Group	Control Group	Average Blood Loss (ml)	Study Group	Control Group
< 2	24	5	< 100	7	4
2 – 3	45	28	100 -200	52	29
3.1 – 4	17	33	200-300	34	45
4.1 – 5	10	16	300-400	6	11
> 5	4	18	400-500	1	6
Total	100	100	> 500	0	4
			>1000	0	1