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Efficacy of Intraumbilical Vein Injection of Syntocinon on Preventing the Complication of Third Stage of Labor

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Abstract
Objective: to evaluate the efficacy of injection of Syntocinon in umbilical vein on preventing the complication of 3rd stage of labor. **Study Design:** Randomized Control Trail. **Study Place and Duration:** Department of Gynecology and Obstetrics THQ Samundri, DHQ Khanewal and Nishtar Hospital, Multan from August 2017 to April 2018. **Material and methods:** Two hundred and thirty eight patients were enrolled for study and were divided randomly into two equal groups, cases and controls. Comparison between the two groups was done on the basis of duration of labor, mean Hb level decrease, difference of Hb before and after six hours of delivery and requirement of manual delivery of the placenta. Comparison between the two groups was carried out by using the Chi square test. Chi square test and independent t test was applied to check the statistical difference between two groups and P value ≤0.05 was considered as statistically significant. **Results:** Postoperative hemoglobin concentration was 11.53±1.28 g/dl and 11.69±1.06 g/dl in the cases and controls, respectively (p =0.295). Of the cases, 6.7% (8) patients experienced nausea and vomiting, while 4.2% (5) of the controls experienced nausea and vomiting (p =0.392). The difference between groups regarding postoperative hemoglobin levels and the incidence of nausea and vomiting was not statistically significant. There was need for manual placental removal in 4 (3.4%) of the cases and in 15 (12.6%) of the controls (p=0.009). Mean duration of third stage of labor was 5.09 ± 3.01 minutes in the cases and 9.22 ± 4.14 minutes in the controls (p <0.001). The statistically significant difference was observed in the manual removal of placenta and time period of 3rd stage of labor among the two groups. **Conclusion:** On clinically administration of Oxytocin into intraumbilical vein immediately after the delivery of the fetus, the overall time period for the 3rd stage of labor was reduced effectively.
Keywords: Intraumbilical Vein, Syntocinon, Injection, Complications, Postpartum Hemorrhage, Oxytocin, Labor

Introduction:

Time span from delivery of fetus to delivery of placenta is known as the third stage of labor (1). Postpartum hemorrhage is the most common complication presenting at this stage of the labor (2). Underlying causes of postpartum hemorrhage involves the prolongation of this stage, atony of the uterine cavity and retention of placenta (3). Third stage of labor usually lasts for five to fifteen minutes; nonetheless occurrence of placental retention is about 25%, and in these 25% percent of women, if immediate action is not taken, it can lead to severe hemorrhage (4). Current treatment of placental retention is manual delivery of placenta in the operation theater under anesthesia (5). In the absence of these facilities this phenomenon can lead to a very high mortality rate of about 10%. In 3rd stage of labor, use of oxytocin as primary treatment followed by ergot alkaloids and prostaglandins is termed as active management (6).

Oxytocin injection administered into the umbilical vein results in the direct effect of the drug on the bed of placenta and wall of the uterus, which ultimately causes the placental detachment by inducing early uterine contraction (7, 8).

Administration of oxytocin during the 3rd stage of the labor is known as active management of labor which is widely practiced in health care settings. It is not only used to induce the labor but also to control it. Not many studies are present in regard to assess the efficacy of oxytocin for management and prevention of postpartum hemorrhage. Intraumbilical vein injection of oxytocin (Syntocinon) for the prevention of postpartum complications in third stage of labor has not been studies enough in the past literature. Therefore in this study our aim is to assess the effectiveness of intraumbilical oxytocin injection in order to prevent the complications of labor in 3rd stage.

Material and Method

It is a randomized control trail. After obtaining the ethical approval study was performed at the Gynecology and Obstetrics Department THQ Samundri, DHQ Khanewal and Nishtar Hospital, Multan from August 2017 to April 2018. Study conducted by Anisodowleh Nankali et al was used as a reference to calculate the sample size (8). Sampling technique was non probability consecutive type. Inclusion criteria; women with single pregnancy, with

living fetus, gestational age of more than 32 weeks, cephalic presentation of the fetus and going through normal vaginal delivery only. Exclusion on the other hand was based upon these criteria; history of previous post partum hemorrhage, prolonged labor, placenta previa, and accelerated labor, multiple pregnancies, chorioamnionitis, polyhydramnios, history of C-section, antepartum hemorrhage, uterine scar, and women undergoing instrumental deliveries. Women taking anticoagulants or those with coagulopathies were also excluded from the study. Moreover women undergoing painless labor under epidural anesthesia were also discarded from the study. Two hundred and thirty eight patients were enrolled for study and were divided randomly into two equal groups, cases and controls.

Management of 3rd stage of labor in two groups was done by the infusion of oxytocin 20IU in 1L Ringers lactate solution. Rate of infusion was maintained at 100mL\min. All these steps were taken right after the delivery of the fetus. After cutting the umbilical cord, normal saline 1ml was administered in the form of intraumbilical vein injection in patients of one group (controls). Cases were administered with 1ml oxytocin through similar procedure. Symptoms of placental delivery were observed for at least 30 min after which impulsive placental delivery was carried out by moving the fundus by touching and at the level of symphysis pubis firm weight was applied and minor traction of the umbilical cord. Duration of first labor was recorded in case of each participant. Comparison between the two groups was done on the basis of duration of labor, mean Hb level decrease, difference of Hb before and after six hours of delivery and requirement of manual placental delivery. After proper sedation in a operating room manual placental delivery was performed, only when placenta failed to deliver even after 30 min of delivery of the fetus or when side effects of oxytocin were found. All the procedure were performed by the researcher herself.

Data regarding variables like age, gestational age, parity, hemoglobin levels before and six hour past the delivery and time taken from the normal placenta delivery and requirement of manual delivery of the placenta. Comparison between the two groups was carried out by using the Chi square test. Chi square test and independent t test was applied to check the statistical difference between two groups and P value ≤0.05 was considered as statistically significant. SPSS version 23 was used for the statistical analysis.

Results:

Mean age of the cases and the controls was 28.96 ± 4.44 years and 28.13 ± 3.42 years (p =0.110). The ratio of parity (1 / 2 / >2) was 30 / 56 / 33 and 33 / 50 / 36 in the cases and controls (p =0.736). Preoperative hemoglobin concentration was 11.79 ± 1.17 g per dl and 12.02 ± 1.11 g per dl in cases and control groups, respectively (p =0.127). The difference between the groups regarding baseline data was not statistically significant. Table-I

Postoperative hemoglobin concentration was 11.53±1.28 g/dl and 11.69±1.06 g/dl in the cases and controls, respectively (p =0.295). Of the cases, 6.7% (8) patients experienced nausea and vomiting, while 4.2% (5) of the controls experienced nausea and vomiting (p =0.392). The difference between groups regarding postoperative hemoglobin levels and the incidence of nausea and vomiting was not statistically significant. There was need for manual placental removal in 4 (3.4%) of the cases and in 15 (12.6%) of the controls (p=0.009). Mean time period of 3rd stage was 5.09 ± 3.01 minutes in the cases and 9.22 ± 4.14 minutes in the controls (p <0.001). The statistically significant difference in the manual removal of placenta and time period of 3rd stage was observed among the two groups. Table-II

Table-I
Baseline Data

Factor	Cases (n=119)	Controls (n=119)	P value
Age, years	28.96 ± 4.44	28.13 ±3.42	0.110
Parity (1 / 2 / >2)	30 / 56 / 33	33 / 50 / 36	0.736
Preoperative Hb, g/dl	11.79 ± 1.17	12.02 ± 1.11	0.127

Data is stated as mean ± S.D.

Table-II
Compared Outcome Variables

Variable	Cases (n=119)	Controls (n=119)	P value
Postoperative Hb, g/dl	11.53±1.28	11.69±1.06	0.295
Nausea and Vomiting, n (%)	8 (6.7)	5 (4.2)	0.392
Need for manual placental removal, n (%)	4 (3.4)	15 (12.6)	0.009
Mean length time for placental removal, min	5.09 ± 3.01	9.22 ± 4.14	<0.001

Data is stated as mean ± S.D or number (percentage).

Discussion

This study shows that oxytocin injection in the umbilical vein was associated with effective reduction of time period of the 3rd stage of the labor and manual placental delivery but was not effective in altering the Hb concentration before and after the administration of the injection. In multiple previous studies results are in accord to the conclusion of our study and thus provide evidence to the fact that injection of oxytocin in umbilical vein is useful in decreasing the time period of 3rd stage of the labor (9). On the contrary the results of a previous study suggested that administration of oxytocin via umbilical vein just after the delivery of the fetus vs. the normal saline, the duration required for the spontaneous delivery of placenta within forty five minutes after fetus delivery was not altered significantly (10).

A study performed in United States of America, where two groups were compared, one receiving only intravenous injection of oxytocin and other receiving intravenous oxytocin and additional oxytocin (11). When comparison of the two groups was made on the basis of time period of labor in 3rd stage, no significant difference was found. These results are opposite to the results of our study as in our study intraumbilical injection of oxytocin was associated with shortening of duration of 3rd stage of the labor.

Time period specified to observe the effect oxytocin was taken as thirty minutes in this study before manual delivery of placenta was used to remove the placenta. In previous studies, some have suggested the use of time interval of 30 minutes while in others time interval of 15 to 60 minutes has been used (12, 13). Similarly many other studies used different doses, methods and volumes for the infusion of oxytocin and reported almost similar results in patients with the retention of placenta to the results of the current study (14, 15, 16 & 17). Rogers and Sivalingam reported the results opposite to the current study and demonstrated that intraumbilical oxytocin injection was not successful in terms of reducing the duration of 3rd stage of labor and removal of retained placenta in the uterus (15, 16 & 17).

Our results advocate that manual delivery of placenta was required in 3.4% of patients in case group while 12.6% of the patients in control group thus showing a significant decrease in the requirement of manual delivery of placenta in patients who were administered with intraumbilical vein injection of oxytocin. Thus it can be recommended that even though intraumbilical oxytocin injection is associated with shortened time period of labor in 3rd stage and less requirement of manual placental delivery, it is not effective in assuring any beneficial effect on the levels of hemoglobin. This prompts to the need of further studies with larger sample size to assess the outcome of oxytocin on reduction of Hb level.

Conclusion:

Oxytocin when clinically administered into intraumbilical vein immediately after the delivery of the fetus, the overall time period for the third stage of labor was reduced effectively.

Funding Source:

Nil

Conflict of interest:

Nil

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