

Effect of Oxytocin Injection into Umbilical Vein for Management of Retained Placenta

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Abstract

Background: Retained placenta is one of the causes of post-partum hemorrhage in Bangladesh as it is worldwide. If a retained placenta is left untreated, there is a high risk of maternal morbidity and mortality and it has inherent risks of infection and hemorrhage. Manual removal of placenta which is the recommended treatment of retained placenta usually requires regional or general anesthesia. Intraumbilical injection of saline solution with oxytocin might represent an important option for management of retained placenta.

Objectives: The aim of this study was to assess the effect of intraumbilical vein oxytocin in the management of retained placenta and to compare it to the risk of manual removal of placenta.

Materials and Methods: This experimental study was conducted in the department of Obstetrics and Gynecology in Dhaka Medical College & Hospital during July to December 2004. Total 50 patients with retained placenta were included in this study. The patients were divided purposively randomly into two groups — Groups A and B. Twenty patients in Group A were managed by intraumbilical vein injection of 10 units of oxytocin in 20 mL of normal saline slowly and 30 patients in Group B were managed by manual removal of placenta.

Results: Among the patients of Group A, 16 (80%) delivered placenta spontaneously with expulsion time of 7–12 minutes. Remaining 4 patients (20%) required manual removal of placenta even after intraumbilical vein injection of oxytocin. Group A patients had less complications, required less blood transfusion, less antibiotics and less hospital stay compared to Group B patients. **Conclusion:** Intraumbilical vein administration of oxytocin is superior to manual removal in the management of retained placenta.

Key words: Oxytocin; Intraumbilical vein; Retained placenta

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Introduction

Placenta is said to be retained when it is not expelled out even 30 minutes after birth of the baby.¹ Retained placental tissue and membrane causes 5–10% of post-partum hemorrhage (PPH).² Worldwide, PPH remains one of the most common causes of maternal mortality. If a retained placenta is left untreated, there is a high risk of maternal death. Manual removal of placenta which is the

recommended treatment also carries other risks such as immediate trauma to uterus, hemorrhage and an increased incidence of puerperal infection.^{3,4}

Retained placenta is potentially life-threatening not only because of retention but also because of associated hemorrhage and infection as well as complications related to its removal.⁴ There are now

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evidences that manual removal of placenta may be a risk factor for infection³, post-partum endometritis and risk of increased bleeding by interfering with normal mechanism of placental separation.²

Routine administration of oxytocin during the third stage hastens placental separation, reduces blood loss of delivery and decreases the chance of PPH by 40%.² Oxytocin is the first line agent because of the paucity of side effects compared with all other available agents.⁵

Umbilical vein injection of saline solution with oxytocin might represent an important option for management of retained placenta. This relatively simple and affordable technique could be used either for first response before proceeding to manual removal if necessary or as the only response where manual removal is not feasible.⁶ This procedure facilitates high concentration of oxytocin to the placental bed and uterine wall, resulting in uterine contraction and placental separation.⁷

Intraumbilical vein injection (IUV) is inexpensive, non-surgical, non-aggressive, cheap and pharmacological method which may be included in the treatment of retained placenta before going to manual lysis of placenta.⁸

Regarding retained placenta, findings from international studies and clinical researches showed that appropriate and adequate management during emergency can reduce the mortality and long term complications. As there are very few numbers of studies done on retained placenta in Bangladesh, we designed this experimental study to assess the effect of intraumbilical vein oxytocin in the management of retained placenta and to compare it to the risk of manual removal of placenta.

Materials and Methods

This experimental study was conducted in labor ward in the department of Obstetrics and Gynecology in Dhaka Medical College Hospital (DMCH), Dhaka during the period July to December, 2004. Patients who had undergone vaginal delivery and failed to deliver placenta within 30 minutes of delivery of the baby and admitted with retained placenta irrespective of whether active management policy was followed or not were included. Patients having comorbidities along with retained placenta, having partial

separation, morbid adhesion and retention of placenta for more than 24 hours, who presented with chorioamnionitis, complicated 1st and 2nd stage of labor and with abruption placenta were excluded. Study subjects were purposively randomly divided into two groups. Group A included 20 patients who were given intraumbilical vein oxytocin and Group B included 30 patients who were managed with planned manual removal of placenta.

A solution of 10 mL oxytocin diluted in 20 mL normal saline (0.9% sodium chloride) was injected into the umbilical vein in all patients of Group A after the umbilical cord was clamped distally. The umbilical vein injection was given over a period of 30 minutes and traction was avoided until there was evidence of placental separation.⁹ Suprapubic pressure was applied while observing for evidence of placental separation. No other intervention was performed to cause placental separation until at least 15 minutes after administration of oxytocin. After expulsion of the placenta oxytocin was administered as indicated.

Comparison between the groups was done by chi-square test using the SPSS version 16.0. p values <0.05 were considered significant.

Results

Total 8501 obstetric patients were admitted during the study period. Among them, number of patients having retained placenta was 175 (2.05%). Out of 50 study subjects 32 (64%) patients presented at 38 weeks of pregnancy and 15 (30%) patients at 39 weeks. Majority of the patients (38, 76%) delivered babies at home. Only 8 (16%) patients delivered in DMCH. Delivery was conducted by dai or relatives in majority patients (38, 76%). About 62% patients were admitted with features of shock and 12 (24%) had PPH without shock.

After administration of intraumbilical vein injection (IUV) of oxytocin in patients of Group A, placenta was delivered in 16 (80%) cases. Four (20%) cases required manual removal of placenta. Group B patients (30, 100%) were managed with planned manual removal of placenta.

Table I shows that in Group A, 5 (25%) patients required one unit of blood transfusion, 4 (20%) required two units, 4 (20%) three units and 7 (35%)

patients did not require blood transfusion. In Group B, 6 (20%) patients needed 4 units of blood transfusion, 8 (26.66%) needed 3 units, 10 (33.3%) required two units, 4 (13.33%) required one unit and 2 (6.6%) required no blood transfusion.

Table I: Units of blood transfusion per patient

Units	Group A (n=20) Number (%)	Group B (n=30) Number (%)	χ^2 value	p value
0	7 (35)	2 (6.6)	11.24	0.024
1	5 (25)	4 (13.3)		
2	4 (20)	10 (33.3)		
3	4 (20)	8 (26.66)		
4	0 (0)	6 (20)		

Table II shows that in Group A, duration of staying in hospital was ≤ 1 day in 16 (80%) patients and 2-4 days in 4 (20%) cases. In Group B, 8 (26.66%) patients stayed in the hospital ≤ 1 day, 20 (66.66%) for 2-4 days and 2 (6.66%) patients for 5-7 days. The duration of hospital stay was significantly less ($p=0.001$) in oxytocin group.

Table II: Length of hospital stay

Duration	Group A (n=20) Number (%)	Group B (n=30) Number (%)	χ^2 value	p value
≤ 1 day	16 (80)	8 (26.66)	13.9	0.001
2-4 days	4 (20)	20 (66.66)		
5-7 days	0 (0)	2 (6.66)		

Table III shows that in Group A, 16 (80%) cases required no anesthesia or analgesia, 2 (10%) required general anesthesia and 2 (10%) needed sedative with analgesia. In Group B, 20 (66.66%) patients required general anesthesia and 10 (33.33%) cases required sedative with analgesia.

Table III: Types of anesthesia and/or analgesia used during removal of retained placenta

Types	Group A (n=20) Number (%)	Group B (n=30) Number (%)	χ^2 value	p value
Sedative with analgesia	2 (10)	10 (33.33)	35.5	0.000
General anesthesia	2 (10)	20 (66.66)		
No anesthesia or analgesia	16 (80)	0 (0)		

Table IV shows the frequency and types of complications at or after removal of placenta. In Group A, 2 (10%) cases developed PPH and 18 (90%) cases had no complications. In Group B, 6 (20%) cases developed PPH, and 4 (13.33%) cases developed sepsis or endometritis.

Table IV: Frequency of complications at or after removal of retained placenta

Complications	Group A (n=20) Number (%)	Group B (n=30) Number (%)	χ^2 value	p value
PPH	2 (10)	6 (20)	4.28	0.118
Sepsis or endometritis	0 (0)	4 (13.33)		
No complications	18 (90)	20 (66.66)		

Table V shows the use of antibiotics in study subjects. In Group A, 16 (80%) patients required double antibiotics and 4 (20%) cases required triple antibiotics. In Group B, 3 (10%) cases needed double antibiotics and 27 (90%) cases required triple antibiotics.

Table V: Frequency of use of antibiotics

Antibiotics	Group A (n=20) Number (%)	Group B (n=30) Number (%)	χ^2 value	p value
Double antibiotics	16 (80)	3 (10)	24.95	0.000
Triple antibiotics	4 (20)	27 (90)		

Discussion

This study showed that during the period from January to December 2004 the incidence of retained placenta was 2.05% of total obstetric admission in DMCH. In a study by Chhabra et al¹⁰ in Kasturba Hospital, Delhi, it was found that incidence of retained placenta was 0.23% of all births over 15 years. In their study, out of four deaths two women delivered at nearby district hospital and were referred moribund and died. The policy option was that the properly conducted delivery can reduce the incidence of retained placenta and if removal occurs timely, appropriate care can save life.

Regarding management of retained placenta the present study can be compared with a number of

studies. In this study, 16 (80%) patients of Group A, who were managed by intraumbilical vein injection of 10 units oxytocin in 20 mL normal saline, delivered placenta spontaneously with an expulsion time of 7 to 12 minutes after injection and 4 (20%) patients required manual removal. Study done by Golan et al³ using the same methodology showed that expulsion of placenta occurred in all of their 10 cases a few minutes after intraumbilical injection. The average injection-expulsion time was 2–5 minutes. Using the proposed method of oxytocin injection into the umbilical cord of retained placenta they were able to spare 80% of the patients. A study done in department of Obstetrics and Gynecology, Liverpool Women's Hospital, United Kingdom revealed that women given an intraumbilical oxytocin injection had a significant increase in spontaneous expulsion of placenta within 45 minutes of delivery and fewer manual removal of placenta was needed. The result of their study suggested clinically important beneficial effect of intraumbilical oxytocin injection in the management of retained placenta.¹¹ These findings are consistent with the present study.

In this study, requirement of blood transfusion was less in oxytocin group. This finding correlates with study done by Gajvani et al.¹¹ A study done by Das SR¹² shows that 23.31% cases needed general anesthesia while removing the placenta manually. In the present study, only 2 (10%) patients in Group A required general anesthesia whereas in Group B, 20 (66.66%) patients required general anesthesia. Patients of Group B required exploration of uterus and had to stay longer in hospital than patients of Group A.

In this study complications at or after management of retained placenta with intraumbilical vein injection of oxytocin was less than the non-oxytocin group. Among oxytocin group 18 (90%) cases had no complications and 2 (10%) cases developed PPH. In non-oxytocin group eight patients developed fever and sepsis after manual removal of placenta. The complications were very less in oxytocin group which correlates with the findings of study done by Golan et al.³

The present study reveals that intraumbilical oxytocin solution is superior to manual removal of placenta. As this study was done in a small number of patients, we recommend that community based

study having adequate sample size should be carried out to find out further evidence of efficacy and feasibility of the method in low resource setting.

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