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The Impact of Tranexamic Acid on Postpartum Blood Loss

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ABSTRACT:
Introduction: Worldwide, postpartum haemorrhage (PPH) is a leading factor in maternal morbidity and mortality. Despite being a natural function, labour is frequently linked to morbidity and mortality. The most frequent cause of maternal death is bleeding. Blood loss of 500 mL or more after birth within 24 hours is known as postpartum haemorrhage.
Materials and Methods: In this observational study, 150 singleton pregnant women were randomly assigned to receive 10 units of oxytocin after foetus delivery, 1 gramme of intravenous tranexamic acid, or nothing at all. Using a graduated blood bag, quantify blood loss. Hematocrit and haemoglobin levels are measured before and after birth.
Results: When compared to the control group, the study group saw considerably less mean blood loss (245 ml vs. 327 ml, p=0.01). Hematocrit and haemoglobin levels after delivery were considerably lower in the study group when compared to the control group (11.4 gm/dl, 35% versus 10.5 gm/dl, 32%, p0.01).
Conclusions: Tranexamic acid aids in minimising vaginal delivery blood loss.
Key words: PPH

INTRODUCTION

Worldwide, postpartum haemorrhage (PPH) is a leading factor in maternal morbidity and mortality. PPH is the most frequent maternal death cause, with the highest prevalence in low- and middle-income nations (LMIC).[i] Additionally, postpartum haemorrhage (PPH), which accounts for 47.6% of all occurrences of severe maternal morbidity (SMM), is the leading cause of SMM.[ii] PPH refers to excessive vaginal bleeding that occurs up to six weeks postpartum after the baby is delivered. The two options are primary and secondary. Primary PPH is defined as the loss of more than 500 millilitres of blood within the first 24 hours of delivery or any other amount sufficient to result in hemodynamic instability. Approximately 3% of vaginal deliveries are complicated by primary PPH.[iii]

Due to issues with ocular blood measurement, the true blood loss is frequently underestimated in PPH cases. The risk of severe maternal morbidity and death from PPH relies on the volume and rate of blood loss as well as the clinical condition of the woman.[iv] For example, in women with severe anaemia or cardiac disease, blood loss of as low as 200 ml

could be fatal. Prior PPH, primiparity, protracted or enhanced labour, numerous pregnancies, prior caesarean delivery, polyhydramnios, and macrosomia are risk factors for PPH. However, the majority of PPH sufferers have low-risk pregnancies and no known risk factors. Therefore, it is crucial to protect all women from PPH.[v]

Tranexamic acid (TXA), an anti-fibrinolytic, and oxytocins are efficient in preventing and treating PPH.[vi] One method for preventing PPH is active management of the third stage of labour (AMTSL). After the infant is delivered, uterotonic drugs are administered, the cord is cut and clamped slowly, and controlled cord traction is used (CCT).[vii] When prohaemostatic medications like TXA are used in conjunction with mechanical haemostasis to avoid PPH, a supportive biochemical haemostatic effect may also be anticipated.[viii]

Strong antifibrinolytic tranexamic acid prevents the disintegration of blood clots (fibrinolysis) and leads to hemostasis by blocking lysine binding sites on plasminogen molecules. Maternal mortality could be significantly decreased by minimising postpartum blood loss.[ix] The goal of this study was to determine whether tranexamic acid is effective at reducing postpartum blood loss.

Materials and Methods:

This study is a prospective observational study, carriedout in the department of Obstetrics and Gynecology, in a tertiary care hospital. All women between the ages of 18-35 who had given birth vaginally to a term singleton with cephalic presentation qualified as participants. Patients who had undergone uterine surgery, had grand multiparity (parity > 5), or had uterine myomas were not included in the study. those people who have known coagulation problems. Additionally, anaemia was not included in the study. The study excluded patients who underwent caesarean sections.

150 pregnant women participated in the study. 75 people made up the control group and 75 people made up the study group. The study enrolled patients who were in labour, either naturally or through induction. Patients that meet the exclusion criteria listed above are not included. All the subjects participating in the study had their demographic information, medical history, and delivery information entered into a structured proforma. Each patient's pre-delivery haemoglobin levels and PCV were recorded. monitoring the work that has been done. After the baby was delivered, the mother received 10 units of intramuscular oxytocin (10 units), followed by 1 gramme of slow intravenous tranexamic acid in the study group. In the control group, only intravenous oxytocin was administered.

The amount of blood lost was measured using a calibrated blood collection bag. To assess the blood loss, the calibrated bag was positioned under the patient's buttock. Patients were closely watched for any problems or clinical indications of thrombosis. Any complications are noted. Within 24 hours of delivery, post-delivery haemoglobin levels and PCV were observed. Each group had blood loss as well as changes in their haemoglobin levels and PCV.

Results:

The 150 pregnant women who were divided into the groups were all examined. The socio-demographic, reproductive, delivery and neonatal weight features of the two groups were comparable. Table 1 displays the general demographics of the hired women. Significant blood loss occurred in both the study and control groups, amounting to 245 ml and 327 ml, respectively (P 0.01). The post-delivery haemoglobin (P0.01) and PCV (P0.01) were significantly different amongst the groups. The difference between the study and control groups' haemoglobin and PCV declines was statistically significant (P 0.01). Table 2 presents the outcomes. With the usage of tranexamic

acid in the trial, no negative effects were noticed.

Table 1: Demographic and obstetric characteristics of participants by group

N=150	Study groupN = 75	Control groupN=75	P Value
Age in years	28.76 ± 3.65	25.82 ± 2.36	
BMI	27.75±2.5	26.85±1.69	
Primipara	42	59	
Multipara	33	17	
Sponatenous labour	59	62	
Induced labour	17	14	
Stage 1 duration in minutes	365±31.6	312±21.13	0.29
Satge 2 duration in minutes	26.47±11.3	24.26±10.1	0.65
Stage 3 duration in minutes	10.5±3.9	9. 6±4.9	0.74
Birth weight in gms	2915.2±345.06	3006.4±398.3	0.79

Table 2: Comparison of hemoglobin and hematocrit and blood loss between the groups

N=150	Study group N=75	Control group N=75	P Value
Pre-delivery Hb (gms/dl)	13.1±0.14	12.3±0.15	0.27
Post-delivery Hb (gms/dl)	11.8±0.89	10.5±0.94	<0.01
Pre-delivery PCV	38.07±0.42	37.64±0.40	0.29
Post-delivery PCV	36.05±4.54	38.24±5.54	<0.01
Difference in Hb (gms/dl)	0.7±0.48	1.7±0.70	<0.01
Difference in PCV	1.6±1.29	5.4±2.33	<0.01
Blood loss(ml)	245±42.19	327±44.96	<0.01

75 participants in the trial group received injections. 75 patients in the control group received only Inj and 10 units of IM Tranexamic acid. IM 10 units of oxytocin.

Discussion:

By inhibiting fibrinolysis, transexamic acid, when administered prophylactically before to surgery, has been found to lessen blood loss. Tranexamic acid has been used widely in obstetrics and gynaecology to lessen blood loss after myomectomy, caesarean section, and menorrhagia when given orally. With the perioperative administration of tranexamic acid, there has been a reduction in the amount of blood loss and the requirement for post-operative blood transfusions. The usage of tranexamic acid is not associated with any harmful adverse effects.

The current investigation is an observational case-control study to evaluate the effectiveness of tranexamic acid, which was carried out in a tertiary care hospital. 100 women who had normal vaginal deliveries were separated into two groups for the analysis; one group received tranexamic acid along with the oxytocin, and the other group received simply intravenous oxytocin. The mean estimated blood loss in this trial was 245 mL in the study group and 327 mL in the control group. With the addition of tranexamic acid, the amount of blood loss was significantly reduced. Both Hb and PCV post-delivery showed a substantial difference between the two groups.

In a randomised experiment conducted by Gungorkuk et al.[x] with 439 patients following normal delivery, the tranexamic group saw significantly less blood loss than the placebo

group. A study by Priyankur Roy[xi] and colleagues in 2015 examined the effectiveness of tranexamic acid in preventing postpartum blood loss. The study discovered that using tranexamic acid effectively reduced blood loss. Tranexamic acid has been shown in research by Vijayalaxmi Raghavendra Gobbur et al.[xii] to lessen blood loss after caesarean sections. We did not see any negative effects related to tranexamic acid, despite worries about thrombosis in a study about thrombosis with the use of tranexamic acid.[xiii] There is reduced blood loss during caesarean sections when tranexamic acid is used, according to numerous research. Thus, taking tranexamic would also help patients having caesarean sections lose less blood.

When tranexmaic acid was given in our study, there was a noticeable reduction in blood loss. Thus, the use of tranexamic acid during the third stage of labour would aid in minimising blood loss. Maternal mortality is most frequently caused by postpartum haemorrhage. The medication trenexamic acid is easily acquired and reasonably priced. As a result, its use should be promoted to minimise blood loss. In our investigation, there were no negative effects associated with the usage of tranexamic acid. Larger studies including more women are required to assess tranexamic acid's effectiveness. Currently, just 150 women were included in the study.

Conclusion:

It is obvious from our study that using tranexamic acid during labour and delivery would aid to limit blood loss. It is an affordable and easily accessible medicine. Utilizing it in conjunction with oxytocin would help to minimise blood loss during delivery. Given that bleeding is the most frequent cause of maternal death, avoiding bleeding would greatly reduce maternal death.

References:

[i] Amanuel T, Dache A, Dona A. Postpartum Hemorrhage and its Associated Factors Among Women who Gave Birth at Yirgalem General Hospital, Sidama Regional State, Ethiopia. *Health Serv Res Manag Epidemiol*. 2021;8:23333928211062777. Published 2021 Nov 26. doi:10.1177/23333928211062777

[ii] Igboke FN, Obi VO, Dimejesi BI, Lawani LO. Tranexamic acid for reducing blood loss following vaginal delivery: a double-blind randomized controlled trial. *BMC Pregnancy Childbirth*. 2022;22(1):178. Published 2022 Mar 3. doi:10.1186/s12884-022-04462-z

[iii] Wormer KC, Jamil RT, Bryant SB. Acute Postpartum Hemorrhage. [Updated 2022 May 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK499988/

[iv] Ngwenya S. Postpartum hemorrhage: incidence, risk factors, and outcomes in a low-resource setting. *Int J Womens Health*. 2016;8:647-650. Published 2016 Nov 2. doi:10.2147/IJWH.S119232

[v] Fukami T, Koga H, Goto M, et al. Incidence and risk factors for postpartum hemorrhage among transvaginal deliveries at a tertiary perinatal medical facility in Japan. *PLoS One*. 2019;14(1):e0208873. Published 2019 Jan 9. doi:10.1371/journal.pone.0208873

[vi] Sentilhes L, Daniel V, Darsonval A, et al. Study protocol. TRAAP - TRAnexamic Acid for Preventing postpartum hemorrhage after vaginal delivery: a multicenter randomized, double-blind, placebo-controlled trial. *BMC Pregnancy Childbirth*. 2015;15:135. Published 2015 Jun 14. doi:10.1186/s12884-015-0573-5

[vii] Hofmeyr GJ, Mshweshwe NT, Gülmezoglu AM. Controlled cord traction for the third stage of labour. *Cochrane Database Syst Rev*.

2015;1(1):CD008020. Published 2015 Jan 29. doi:10.1002/14651858.CD008020.pub2

[viii] Fabes J, Brunskill SJ, Curry N, Doree C, Stanworth SJ. Pro-coagulant haemostatic factors for the prevention and treatment of bleeding in people without haemophilia. *Cochrane Database Syst Rev*. 2018;12(12):CD010649. Published 2018 Dec 24. doi:10.1002/14651858.CD010649.pub2

[ix] Ker K, Roberts I, Chaudhri R, et al. Tranexamic acid for the prevention of postpartum bleeding in women with anaemia: study protocol for an international, randomised, double-blind, placebo-controlled trial. *Trials*. 2018;19(1):712. Published 2018 Dec 29. doi:10.1186/s13063-018-3081-x

[x] Gungorduk K, Asıcıoğlu O, Yıldırım G, Ark C, Tekirdağ Aİ, Besımoglu B. Can intravenous injection of tranexamic acid be used in routine practice with active management of the third stage of labor in vaginal delivery? A randomized controlled study. *Am J Perinatol*. 2013;30(5):407-413. doi:10.1055/s-0032-1326986

[xi] Roy P, Sujatha MS, Bhandiwad A, Biswas B. Role of Tranexamic Acid in Reducing Blood Loss in Vaginal Delivery. *J Obstet Gynaecol India*. 2016;66(Suppl 1):246-250. doi:10.1007/s13224-016-0856-4

[xii] Gobbur, V., Shiragur, S., Jhanwar, U., & Tehalia, M. (2017). Efficacy of tranexamic acid in reducing blood loss during lower segment caesarean section. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 3*(2), 414-417. Retrieved from https://www.ijrcog.org/index.php/ijrcog/article/view/942

[xiii] Meaidi, A., Mørch, L., Torp-Pedersen, C., & Lidegaard, O. (2021, May). Oral tranexamic acid and thrombosis risk in women. *EClinicalMedicine*, *35*, 100882. https://doi.org/10.1016/j.eclinm.2021.100882