



THE ROLE OF TRANEXAMIC ACID IN REDUCING BLOOD LOSS DURING ELECTIVE CAESAREAN SECTION IN A TERTIARY CARE CENTRE

Obstetrics & Gynaecology

Dr Shiva

Senior Resident at Department of Obs. and Gynae PMCH, Patna.

Dr Chitra Sinha*

Associate Professor at Department of Obs. and Gynae PMCH, Patna. *Corresponding Author

ABSTRACT

Introduction: The reduction of maternal mortality is one of the indicators under Goal 3- Ensure healthy lives and promote well-being for all at all ages of Sustainable Development Goals. It seeks to reduce global MMR to less than 70 per 100 000 live births by 2030. A leading cause of maternal mortality is Post-partum Haemorrhage (PPH). Hence, it is imperative that any improvement in maternal mortality rate must address the issue of Post-partum Haemorrhage.

Post-partum Haemorrhage (PPH) is defined as the amount of blood loss in excess of 500 ml following the birth of the baby (World Health Organization). The clinical definition, which is more practical, states, any amount of bleeding from or into the genital tract following the birth of the baby up to the end of the puerperium, which adversely affects the general condition of the patient evidenced by the rise in pulse rate and falling blood pressure, is called Post-partum Haemorrhage.

Aim: The present study is aimed to determine the clinical efficacy of tranexamic acid in reducing blood loss during elective caesarean section in Patna Medical College and Hospital, Patna.

Type of study: Prospective study

Study period: 1 year (January 2020 to December 2020)

Materials and Methods: This is a prospective study conducted in Obstetrics and Gynaecology department at Patna Medical College and Hospital, Patna. 100 female patients scheduled for elective caesarean section are enrolled for the present prospective study, which was carried out from January 2020 to December 2020. The patients were randomly divided into 2 groups. 50 patients received 1g intravenous tranexamic acid 10 minutes before skin incision in addition to active management of 3rd stage of labour and the other 50 patients were kept under the active management of 3rd stage of labour only.

Result: In the present study, the amount of blood loss was found to be significantly low (mean 537 ml) in the tranexamic acid group as compared to the control group (608 ml), the difference was statistically significant (p-value 0.001). The mean fall in haemoglobin level was also less (0.61 mg/dl) in the group which received the tranexamic acid as compared to the control group (1.07 mg/dl), the difference was statistically significant (p-value 0.001). Postpartum haemorrhage (blood loss more than 1000 ml) was observed in 1 patient in the control group and no case of PPH was observed in the study group.

Conclusion: To reduce blood loss following caesarean section, TXA may be safely recommended in addition to Oxytocin.

KEYWORDS

Post-partum Haemorrhage, Tranexamic Acid (TXA)

INTRODUCTION

The reduction of maternal mortality is one of the indicators under Goal 3- Ensure healthy lives and promote well-being for all at all ages of Sustainable Development Goals. It seeks to reduce global MMR to less than 70 per 100 000 live births by 2030. A leading cause of maternal mortality is Post-partum Haemorrhage (PPH). Hence, it is imperative that any improvement in maternal mortality rate must address the issue of Post-partum Haemorrhage.

Post-partum Haemorrhage (PPH) is defined as the amount of blood loss in excess of 500 ml following the birth of the baby (World Health Organization). The clinical definition, which is more practical, states, any amount of bleeding from or into the genital tract following the birth of the baby up to the end of the puerperium, which adversely affects the general condition of the patient evidenced by the rise in pulse rate and falling blood pressure, is called Post-partum Haemorrhage. The average blood loss following vaginal delivery, caesarean delivery and caesarean hysterectomy is 500ml, 1000ml and 1500ml respectively.

Tranexamic acid is an antifibrinolytic agent. It blocks the lysine binding site of the plasminogen and plasmin molecule thus inhibiting plasminogen activation and fibrinolysis.

MATERIALS AND METHODS

This is a prospective study conducted in Obstetrics and Gynaecology department at Patna Medical College and Hospital, Patna. 100 female patients scheduled for elective caesarean section are enrolled for the present study, which was carried out from January 2020 to December 2020. The patients were randomly divided into 2 groups.

Group1- It consists of 50 patients who received 1g intravenous tranexamic acid 10 minutes before skin incision in addition to active management of 3rd stage of labour.

Group 2- It consists of 50 patients who were kept under the active management of 3rd stage of labour only.

Inclusion Criteria:

1. Singleton Pregnancy
2. Age 20-35 years
3. Gestational Age ≥ 37 weeks
4. Regular Ante-natal check-ups
5. Informed consent by patients

Exclusion Criteria

1. Thromboembolism
2. Allergy to tranexamic acid
3. Medical disorders
4. Obstetric complications like pre-eclampsia, eclampsia, antepartum haemorrhage.

OBSERVATION AND RESULTS

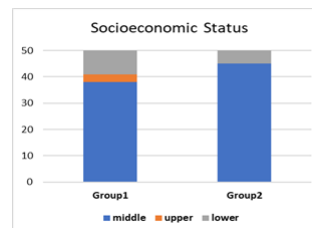


Fig – 1: Socioeconomic status of patients in two groups

Table – 1: Age Distribution

Age (in Years)	Group 1		Group 2	
	Number	Percentage	Number	Percentage
18-20	2	4	5	10
21-25	24	48	23	46
26-30	23	46	20	40
31-35	1	2	2	4
Total	50	100	50	100
Mean +/- SD	25.98 +/- 2.98		25.62 +/- 3.75	

The age distribution for both groups of the patients shows most of the patients in the 26-30 years age group. The mean age is about 26 years for both groups.

Table – 2: Gravida Distribution

Gravida	Group 1		Group 2	
	Number	Percentage	Number	Percentage
G1	12	24	12	24
G2	22	44	23	46
Multigravida	16	32	15	20
Total	50	100	50	100

Both the groups have a majority of primigravida and 2nd gravid patients.

Table – 3: Gestational Age

Gestation Age (in weeks)	Group 1		Group 2	
	Number	Percentage	Number	Percentage
37-38	11	22	6	12
38-39	19	38	24	48
39-40	16	32	15	30
>40	4	8	5	10
Total	50	100	50	100

Group 1 had 38% and Group 2 had 48% of the patients in their 38-39 weeks of pregnancy.

Table – 4: Pre-delivery Blood Pressure

Pre-delivery blood pressure (in mm of Hg)	Systolic BP	
	Group 1	Group 2
Mean	125.36	125.04
std dev	10.09	8.03
p-value	0.86	
Significance	not-significant	
Pre-delivery blood pressure (in mm of Hg)	Diastolic BP	
	Group 1	Group 2
Mean	81.36	81.20
std dev	6.01	4.52
p-value	0.88	
Significance	not-significant	

In the present study, the pre-delivery systolic and diastolic blood pressure was not found to be significant for both groups.

Table 5: Average Blood Loss

Average blood loss	Group 1	Group 2
Mean	537.70	608.50
std dev	86.09	109.10
p-value	0.0003	
Significance	significant	

The mean blood loss in Group 1 is 537.70ml and that in Group 2 is 608.50ml. The average blood loss in the present study is significant for the two groups.

Table 6: Comparison Of Pre And Post Delivery Haemoglobin

Pre-delivery haemoglobin (in g/dL)	mean	Group 1	Group 2
	std dev	1.02	1.13
	p-value	0.91	
	significance	not significant	
Post-delivery haemoglobin (in g/dL)	Mean	9.71	9.22
	std dev	1.04	1.04
	p-value	0.01	
	significance	significant	

In the present study, the pre-delivery haemoglobin with a p-value of 0.91 was not found to be significant, whereas, the post-delivery haemoglobin with a p-value of 0.01 was found to be significant.

Table 7: Comparison Of Fall In Haemoglobin Level

Fall in haemoglobin level (in g/dL)	Group 1	Group 2
Mean	0.61	1.07
std dev	0.25	0.31
p-value	<<0.00001	
Significance	Significant	

The mean fall in haemoglobin level for Group 1 is 0.61 while for Group 2 is 1.07 with a p-value much less than 0.00001 making this result extremely significant.

Table 8: Comparison Of Pre And Post Delivery Pulse Rate

Pre- delivery Pulse rate (in bpm)	Mean	Group 1	Group 2
	std dev	4.45	4.92
	p-value	0.31	
	significance	not significant	
Post- delivery Pulse rate (in bpm)	Mean	90.64	93.28
	std dev	5.02	5.03
	p-value	0.005	
	significance	significant	

The mean pre-delivery pulse rate in Group 1 is 88.84 bpm and 87.88 bpm in Group 2. The post-delivery pulse rate in Group 1 is 90.64 bpm and 93.28 bpm in Group 2 with a p-value of 0.005 making it significant.

Table 9: Post-delivery Blood Pressure

Post-delivery blood pressure (in mm of Hg)	Systolic BP	
	Group 1	Group 2
Mean	119.60	119.46
std dev	10.68	9.28
p-value	0.94	
Significance	not significant	
Post-delivery blood pressure (in mm of Hg)	Diastolic BP	
	Group 1	Group 2
Mean	75.80	73.18
std dev	6.02	10.66
p-value	0.13	
significance	not significant	

In the present study, the post-delivery blood pressure in both groups was not found to be significant.

CONCLUSION

Tranexamic acid significantly reduced the amount of blood loss during the lower segment caesarean section with no apparent effect on blood coagulation parameters.

REFERENCES:

- WHO recommendations for the prevention and treatment of postpartum haemorrhage. World Health Organization; Available at: http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/9789241548502/en/. Accessed on 12th April 2020.
- Shahid A, Khan A. Tranexamic acid in decreasing blood loss during and after caesarean section. J Coll Physicians Surg Pak. 2013;23:459-62.
- Nath J. A study on use of tranexamic acid in reducing blood loss during lower segment caesarean section. Int J Sci Res. 2015;4:1236-8.
- Sunda U, Bhadana P. Prophylactic use of tranexamic acid to reduces blood loss and transfusion requirements in caesarean section. Int J Reprod Contracept Obstet Gynecol 2020;9:2987-91
- American College of Obstetricians and Gynecologists. Clinical Management Guidelines for Obstetrician-Gynecologists Number 76, October 2006: postpartum hemorrhage. Obstet Gynecol. 2006;108:1039-47.
- Cortet M, Deneux-Tharaux C, Dupont C, Colin C, Rudigoz RC, Bouvier-Colle MH, et al. Association between fibrinogen level and severity of postpartum haemorrhage: secondary analysis of a prospective trial. Br J Anaesth. 2012;108:984-9.
- Nivedhana AP, Indu NR, Jalakandan B. Does prophylactic tranexamic acid reduce blood loss in Indian women following vaginal delivery?. Int J Reprod Contracept Obstet Gynecol 2021;10:497-504
- Goswami U, Sarangi S, Gupta S. Comparative evaluation of two doses of tranexamic acid used prophylactically in anemic parturients for lower segment caesarean section: A double-blind randomized case control prospective trial. Saudi J Anaesth. 2013;7:427.
- Satyavathi K, Vemu NJ, Mohammed S (2009): Tranexamic acid: A proven antifibrinolytic agent (A review). Oriental Journal of Chemistry, 25(4): 987-92.
- Mayur G, Purvi P, Ashoo G, Pankaj D (2007): Efficacy of tranexamic acid in decreasing blood loss during and after caesarean section: a randomized case controlled prospective study. J Obstet Gynecol India, 57(3):227-30.