

## ORIGINAL RESEARCH

# Assessment of role of tranexamic acid in controlling bleeding in cesarean section

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### ABSTRACT

**Background:** Bleeding during or after a cesarean section (C-section) is a concern that healthcare professionals monitor closely. The present study was conducted to assess the role of tranexamic acid in controlling bleeding in cesarean section. **Materials & Methods:** 60 women undergoing cesarean section between 37 and 40 weeks were divided into two groups. Group I received 1 gm IV of tranexamic acid before 15 min of cesarean and group II didn't get tranexamic acid. Blood loss in both groups was compared. **Results:** The age group based on gestation age was 37 weeks in 8 in group I and 11 in group II, 38 weeks in 12 in group I and 7 in group II, 39 weeks in 7 in group I and 8 in group II and 40 weeks in 3 in group I and 4 in group II. The mean blood loss from placental delivery till the end of LSCS was 110 ml in group I and 130 ml in group II and from end of LSCS to 2 hours postpartum was 70 ml in group I and 120 ml in group II. The difference was significant ( $P < 0.05$ ). Blood loss  $< 500$  ml was seen in 21 in group I and 13 in group II and  $> 500$  ml in 9 in group I and 17 in group II. The difference was significant ( $P < 0.05$ ). **Conclusion:** Tranexamic acid was found to be effective in controlling bleeding in cesarean section. Hence, it can be utilized in such cases.

**Keywords:** Bleeding, cesarean section, placental delivery

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### INTRODUCTION

Bleeding during or after a cesarean section (C-section) is a concern that healthcare professionals monitor closely. Some bleeding is normal during the surgical procedure, but excessive bleeding can lead to complications.<sup>1,2</sup> Some bleeding is expected during a C-section due to the incision and the nature of the surgery. Surgeons take steps to minimize bleeding by cauterizing blood vessels during the procedure. Uterine atony is a common cause of postpartum bleeding.<sup>3</sup> It occurs when the uterus does not contract adequately after delivery, leading to increased bleeding. Healthcare providers often administer medications to stimulate uterine contractions and control bleeding. If the placenta is not delivered completely or if there are issues with its attachment, it can lead to bleeding. Proper examination and removal of the placenta are crucial to prevent complications.<sup>4</sup>

Despite various efforts to prevent bleeding after the cesarean section, the most common issue, which occurs in 20% of cases, is PPH, which results in the mother's grimness and death.<sup>5</sup> Intravenous tranexamic acid (TXA) is routinely used to reduce bleeding

during and following interventional operations, such as scoliosis, liver transplantation, hip or knee replacements, cardiac surgeries, and urinary tract procedures. In these mediations, it proved quite helpful in reducing blood loss and the need for repeat transfusions.<sup>6</sup> The present study was conducted to assess the role of tranexamic acid in controlling bleeding in cesarean section.

### MATERIALS & METHODS

The present study consisted of 60 women undergoing cesarean section between 37 and 40 weeks. All gave their written consent to participate in the study.

Data such as name, age, etc. was recorded. All were divided into two groups. Group I received 1 gm IV of tranexamic acid before 15 min of cesarean and group II didn't get tranexamic acid. Blood loss was estimated intraoperatively (ml) as = (weight of wipes utilized during activity - weight of wipes before procedure) + volume of blood maneuvered into the adsorption holder after the placenta was conveyed. Data thus obtained were subjected to statistical analysis. P value  $< 0.05$  was considered significant.

**RESULTS****Table I Distribution of patients based on gestation age (weeks)**

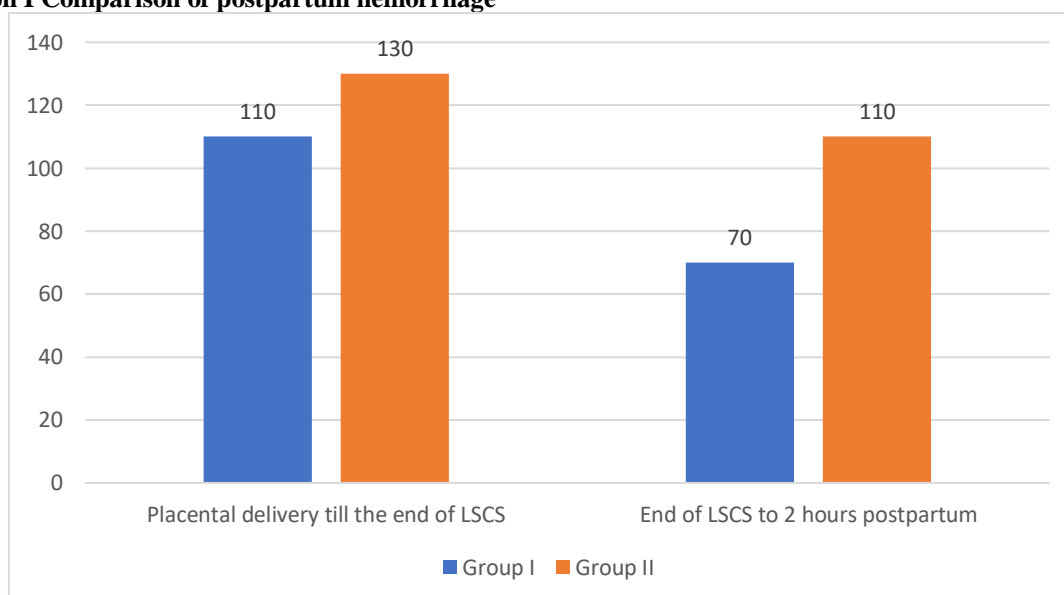
Age group (weeks)	Group I	Group II	P value
37	8	11	0.05
38	12	7	
39	7	8	
40	3	4	

Table I shows that the age group based on gestation age was 37 weeks in 8 in group I and 11 in group II, 38 weeks in 12 in group I and 7 in group II, 39 weeks in 7 in group I and 8 in group II and 40 weeks in 3 in group I and 4 in group II. The difference was significant ( $P < 0.05$ ).

**Table II Comparison of postpartum hemorrhage**

Period	Group I	Group II	P value
Placental delivery till the end of LSCS (ml)	110	130	0.05
End of LSCS to 2hours postpartum(ml)	70	120	0.03

Table II, graph I show that the mean blood loss from placental delivery till the end of LSCS was 110 ml in group I and 130 ml in group II and from end of LSCS to 2 hours postpartum was 70 ml in group I and 120 ml in group II. The difference was significant ( $P < 0.05$ ).

**Graph I Comparison of postpartum hemorrhage****Table III Incidence of PPH**

Blood loss (ml)	Group I	Group II	P value
<500	21	13	0.02
>500	9	17	0.01

Table III shows that blood loss <500 ml was seen in 21 in group I and 13 in group II and >500 ml in 9 in group I and 17 in group II. The difference was significant ( $P < 0.05$ ).

**DISCUSSION**

Accidental injury to blood vessels during the surgery can cause bleeding. Surgeons are trained to identify and address any injuries promptly. Some women may have pre-existing blood clotting disorders that can contribute to excessive bleeding during a C-section.<sup>7,8</sup> Healthcare providers usually screen for such conditions before the surgery. Incomplete removal of fetal or placental tissue can lead to postpartum bleeding. Adequate examination and confirmation of a complete delivery are essential.<sup>9</sup> Management of bleeding during a C-section involves a combination of

techniques such as uterine massage, medications to promote uterine contractions, and, in severe cases, blood transfusions. Close monitoring and prompt intervention are crucial to prevent complications.<sup>10,11</sup> The present study was conducted to assess the role of tranexamic acid in controlling bleeding in cesarean section.

We found that the age group based on gestation age was 37 weeks in 8 in group I and 11 in group II, 38 weeks in 12 in group I and 7 in group II, 39 weeks in 7 in group I and 8 in group II and 40 weeks in 3 in group I and 4 in group II. Mohd FZS et

analyzed 100 women planned for cesarean in the range of 37 and 40 weeks. They were partitioned into two groups. The main group 50 individuals received 1 gm IV of tranexamic acid before 15 min of caesarean and the control set of 50 individuals didn't get tranexamic acid. The patient age, tallness, weight, gestational age in the two gatherings were comparative, measurably same. Haemoglobin fell marginally after labour in the two gatherings, however, no measurable distinction between the two gatherings was observed. There were no thrombosis events in the investigation. Tranexamic acid drops the blood loss from the minute the placenta was conveyed to 2 hours after labour.

We found that the mean blood loss from placental delivery till the end of LSCS was 110 ml in group I and 130 ml in group II and from the end of LSCS to 2 hours postpartum was 70 ml in group I and 120 ml in group II. Shahid et al<sup>13</sup> determined the effectiveness of tranexamic acid (TXA) in reducing blood loss during and after cesarean section (CS), as well as its safety. The patients were randomized to receive either injection TXA or distilled water just before the surgery. Blood loss was collected and measured. First from the time of placental delivery to the end of LSCS and later from the end of LSCS to two hours postpartum. Haemoglobin, urine analysis, liver and renal functions were tested in both groups. Tranexamic acid significantly reduced the quantity of blood loss from placental delivery to the end of LSCS which was  $356.44 \pm 143.2$  ml in the TXA group versus  $710.22 \pm 216.72$  ml in the placebo group ( $p < 0.001$ ). It also reduced the quantity of blood loss from the end of LSCS to 2 hours postpartum which was  $35.68 \pm 23.29$  ml in the TXA group versus  $43.63 \pm 28.04$  ml in the placebo group ( $p = 0.188$ ), was not significant. No complications or side effects were reported in either group.

We found that blood loss  $<500$  ml was seen in 21 in group I and 13 in group II and  $>500$  ml in 9 in group I and 17 in group II. Gungorduk et al<sup>14</sup> determined the efficacy and safety of tranexamic acid (TA) in reducing blood loss during elective cesarean section (CS) in 660 women. The patients were randomly selected to receive an intravenous infusion of either TA (1 g/10 mL in 20 mL of 5% glucose;  $N = 330$ ) or 30 mL of 5% glucose before surgery. The primary outcome was the estimated blood loss following CS. No demographic difference was observed between groups. The mean estimated blood loss was significantly lower in women treated with TA compared with women in the placebo group ( $499.9 \pm 206.4$  mL versus  $600.7 \pm 215.7$  mL, respectively;  $P < 0.001$ ), and the proportion of women in the TA group who had an estimated blood loss  $>1000$  mL was significantly lower than in the placebo group (7 [2.1%] versus 19 [5.8%], respectively;  $P < 0.03$ ). Furthermore, more women in the placebo group than in the TA group required additional uterotonic agents (48 [14.5%] versus 28 [8.5%], respectively;  $P = 0.02$ ).

Maternal and neonatal outcomes did not differ significantly. TA significantly reduced bleeding during CS, the percentage of patients with blood loss  $>1000$  mL, and the need for additional uterotonic agents. Furthermore, the incidence of thromboembolic events did not increase. Our results suggest that TA can be used safely and effectively to reduce CS bleeding.

The limitation of the study is the small sample size.

## CONCLUSION

Authors found that tranexamic acid was found to be effective in controlling bleeding in cesarean section. Hence, it can be utilized in such cases.

## REFERENCES

1. As AK, Hagen P, Webb JB. Tranexamic acid in the management of postpartum haemorrhage. *Br J ObstetGynaecol* 1996; 103:1250–1251.
2. Gai MY, Wu LF, Su QF, Tatsumoto K. Clinical observation of blood loss reduced by tranexamic acid during and after cesarean section: A multi-center, randomized trial. *Eur J ObstetGynecolReprodBiol* 2004;112:154–157.
3. Gohel M, Patel P, Gupta A, Desai P. Efficacy of tranexamic acid in decreasing blood loss during and after cesarean section: A randomized case-controlled prospective study. *J ObstetGynaecol India* 2007;57:228–230.
4. Sekhvat L, Tabatabaai A, Dalili M, Farajkhoda T, Tafti AD. Efficacy of tranexamic acid in reducing blood loss after cesarean section. *J Matern Fetal Neonatal Med* 2009;22: 72–75.
5. Shook PR, Schultz JR, Reynolds JD, Spahn TE, DeBalli P. Estimating blood loss for cesarean section: how accurate are we? *Anesthesiology* 2003;98(Suppl):A1.
6. Ferrer P, Roberts I, Sydenham E, Blackhall K, Shakur H. Anti-fibrinolytic agents in postpartum haemorrhage: A systematic review. *BMC Pregnancy Childbirth* 2009;9:29.
7. Stafford I, Dildy GA, Clark SL, Belfort MA. Visually estimated and calculated blood loss in vaginal and cesarean delivery. *Am J ObstetGynecol* 2008;199:519.
8. Wellington K, Wagstaff AJ. Tranexamic acid: A review of its use in the management of menorrhagia. *Drugs* 2003;63: 1417–1433.
9. Fiechtner BK, Nuttall GA, Johnson ME, et al. Plasma tranexamic acid concentrations during cardiopulmonary bypass. *AnesthAnalg* 2001;92:1131–1136.
10. Henry DA, Moxey AJ, Carless PA, et al. Anti-fibrinolytic use for minimising perioperative allogeneic blood transfusion. *Cochrane Database Syst Rev* 2001;(1):CD001886.
11. Mousa HA, Alfirevic Z. Major postpartum hemorrhage: survey of maternity units in the United Kingdom. *Acta ObstetGynecol Scand* 2002;81:727–730.
12. Mohd FZS, Jahangir J. A study to assess the use of tranexamic acid intraoperative & post cesarean section to reduce blood loss. *Indian J ObstetGynecol Res* 2020;7(1):42-45.

13. Shahid A, Khan A. Tranexamic acid in decreasing blood loss during and after cesarean section. *J Coll Physicians Surg Pak*. 2013 Jul 1;23(7):459-62.
14. Gungorduk K, Yildirim G, Asıcıoğlu O, Gungorduk OC, Sudolmus S, Ark C. Efficacy of intravenous tranexamic acid in reducing blood loss after elective cesarean section: A prospective, randomized, double-blind, placebo-controlled study. *American journal of perinatology*. 2011 Mar;28(03):233-40.