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Original Research

Evaluation of role of tranexamic acid in controlling bleeding during cesarean section

[1]Dr. Arti Gupta, [2]Dr. Priyanka Khare

[1]Assistant Professor, Department Of Obstetrics & Gyanecology, Career Institute Of Medical Science And Hospital, Lucknow, Uttar Pradesh, India
[2]Assistant Professor, Department of Obstetrics and Gynecologist, T S Misra Medical College & Hospital, Lucknow, Uttar Pradesh, India

Corresponding Author
Dr. Arti Gupta
Assistant Professor, Department Of Obstetrics & Gyanecology, Career Institute Of Medical Science And Hospital, Lucknow, Uttar Pradesh, India

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ABSTRACT

Background: Due to the incision and the procedure's nature, some bleeding is anticipated during a C-section. To minimize bleeding during the operation, the surgeons use cauterization on blood vessels. The present study was conducted to assess the role of tranexamic acid in controlling bleeding in cesarean section.

Materials & Methods:90 women undergoing cesarean section between 37 and 40 weekswere divided into 2 groups of 45 each. 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 recorded.

Results: Gestation age 37 weeks comprised of 13 patients in group I and 15 in group II, 38 weeks had 16 in group I and 13 in group II, 39 weeks had 9 in group I and 12 in group II and 40 weeks had 7 in group I and 5 in group II. The difference was non- significant (P> 0.05). Blood loss <500 ml was seen in 25 in group I and 23 in group II and >500 ml in 20 in group I and 22 in group II. The mean blood loss from placental delivery till the end of LSCS was 118 ml in group I and 136 ml in group II and from end of LSCS to 2 hours postpartum was 74 ml in group I and 120 ml in group II. The difference was significant (P< 0.05).

Conclusion: Tranexamic acid was found to be effective in minimizing bleeding during cesarean sections. It can thus be utilized in these circumstances.

Keywords: Bleeding, cesarean section,tranexamic acid

Introduction

Healthcare professionals monitor for bleeding with great care during and after a cesarean section (C-section). It is normal to have some bleeding during surgery, but excessive bleeding can lead to complications.[1,2] Due to the incision and the procedure's nature, some bleeding is anticipated during a C-section.[3] To minimize bleeding during the operation, the surgeons use cauterization on blood vessels. Uterine atony is a common cause of postpartum hemorrhage. After delivery, the uterus may not contract properly, leading to heightened bleeding.[4] Medical practitioners often use medication to trigger uterine contractions and control hemorrhage. If the placenta is not completely delivered or if there are issues with its attachment, bleeding may occur. To avoid complications, it is essential to examine and remove the placenta properly.[5]

Despite various efforts to control bleeding during cesarean sections, PPH remains the most common issue, affecting 20% of cases and resulting in maternal mortality and grimness.[6] Intravenous tranexamic acid (TXA) is often used to control bleeding prior to and following interventional procedures such as scoliosis surgery, liver transplants, hip or knee replacements, cardiac surgeries, and urinary tract operations. In these mediations, it was quite useful for reducing blood loss and the need for repeated transfusions.[7]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 90 females 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. Patients were divided into two groups of 45 each. Before the

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15-minute cesarean section, group I was administered tranexamic acid intravenously at a dosage of 1 gm, whereas group II did not receive any tranexamic acid. Intraoperative blood loss (in ml) was determined using this formula: (weight of wipes used during activity - weight of wipes before the procedure) + volume of blood transferred into the adsorption holder during placenta transfer.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table: I Gestation age (weeks) wise distribution

Age group (weeks)	Group I (45)	Group II (45)	P value
37	13	15	0.47
38	16	13	
39	9	12	
40	7	5	

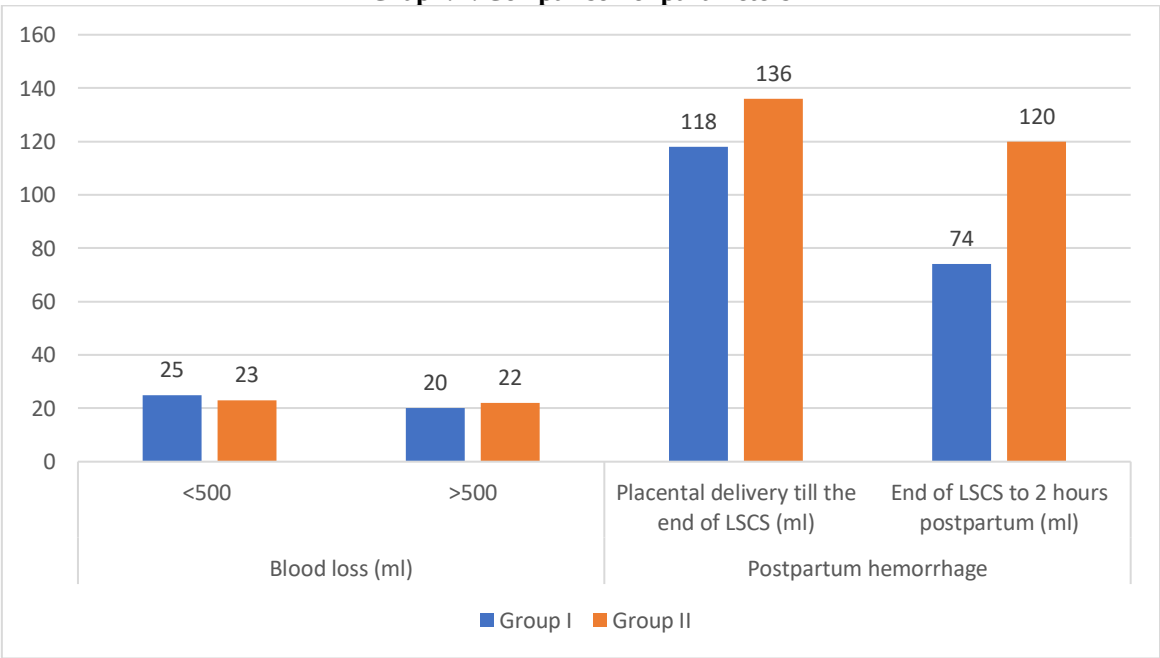
Table I shows that gestation age 37 weeks comprised of 13 patients in group I and 15 in group II, 38 weeks had 16 in group I and 13 in group II, 39 weeks had 9 in group I and 12 in group II and 40 weeks had 7 in group I and 5 in group II. The difference was non- significant (P> 0.05).

Table: II Comparison of parameters

Parameters	Variables	Group I	Group II	P value
Blood loss (ml)	<500	25	23	0.81
	>500	20	22	
Postpartum hemorrhage	Placental delivery till the end of LSCS (ml)	118	136	0.05
	End of LSCS to 2 hours postpartum (ml)	74	120	0.01

Table II, graph I show that blood loss <500 ml was seen in 25 in group I and 23 in group II and >500 ml in 20 in group I and 22 in group II. The mean blood loss from placental delivery till the end of LSCS was 118 ml in group I and 136 ml in group II and from end of LSCS to 2 hours postpartum was 74 ml in group I and 120 ml in group II. The difference was significant (P< 0.05).

Graph: I. Comparison of parameters



Discussion

In the course of an operation, blood vessels may be unintentionally damaged, leading to bleeding. It is part of surgeons' training to identify injuries and provide immediate treatment.[8] In some women, pre-existing blood coagulation abnormalities may lead to excessive bleeding during a C-section.[9,10] Before surgery, healthcare providers usually carry out

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screenings for these illnesses. Incomplete removal of placental or fetal tissue can lead to postpartum hemorrhage. It is essential to inspect and verify a complete delivery thoroughly.[11,12] A range of techniques, such as uterine massage, medications that promote uterine contractions, and blood transfusions in severe cases, are employed to manage bleeding during a C-section. To prevent complications, it is crucial to observe carefully and act promptly.[13,14]The present study was conducted to assess the role of tranexamic acid in controlling bleeding in cesarean section.

We found that gestation age 37 weeks comprised of 13 patients in group I and 15 in group II, 38 weeks had 16 in group I and 13 in group II, 39 weeks had 9 in group I and 12 in group II and 40 weeks had 7 in group I and 5 in group II. Sentilhes L et al[15]investigated whether the prophylactic administration of tranexamic acid in addition to prophylactic oxytocin in women with vaginal delivery would decrease the incidence of postpartum hemorrhage. They randomly assigned women in labor who had a planned vaginal delivery of a singleton live fetus at 35 or more weeks of gestation to receive 1 g of tranexamic acid or placebo, administered intravenously, in addition to prophylactic oxytocin after delivery. The primary outcome was postpartum hemorrhage, defined as blood loss of at least 500 ml, measured with a collector bag.Of the 4079 women who underwent randomization, 3891 had a vaginal delivery. The primary outcome occurred in 156 of 1921 women (8.1%) in the tranexamic acid group and in 188 of 1918 (9.8%) in the placebo group. Women in the tranexamic acid group had a lower rate of provider-assessed clinically significant postpartum hemorrhage than those in the placebo group after adjustment for multiple comparisons post hoc) and also received additional uterotonic agents less often. Other secondary outcomes did not differ significantly between the two groups. The incidence of thromboembolic events in the 3 months after delivery did not differ significantly between the tranexamic acid group and the placebo group (0.1% and 0.2%, respectively.

We found that blood loss <500 ml was seen in 25 in group I and 23 in group II and >500 ml in 20 in group I and 22 in group II. The mean blood loss from placental delivery till the end of LSCS was 118 ml in group I and 136 ml in group II and from end of LSCS to 2 hours postpartum was 74 ml in group I and 120 ml in group II. Tripathy et al[16] in their study 1640 patients attending labour room for vaginal birth or caesarean section in 3rd stage of labour were included in the study. Total 1640 women were further divided into two groups, Group A (receiving both tranexamic acid along with oxytocin) and Group B (receiving only oxytocin). Blood loss in each group was measured by visual method and Gravimetric (measurement by weight) method. They were followed till delivery; maternal and neonatal outcome was studied. The majority of patients in Group A and Group B were between 26-30 years of age group. There was no significant difference between the groups in terms of maternal age, gestational age, gravida and booking status. The mean foetal birth weight among Group A was 2421.28 ± 626.91 and Group B was 2381.38 ± 721.20 with no significant difference between the groups. There was significant reduction in blood loss in study group A as compared to control group in both vaginal and LSCS birth with statistically significant difference.

ElwatidyS et al[17] assessed the effectiveness and safety of administering large amounts of TA to reduce blood loss during spinal surgeries. Two groups, TA and placebo, were formed through random assignment of 64 consecutive patients undergoing spinal surgery. The group consisted of 39 males and 25 females, with ages spanning from 4 to 86 years, an average age of 51 years, and a median age of 56 years. A total of 18 patients underwent multilevel anterior cervical discectomies (with or without internal fixation), while 22 patients received decompressive surgery (12 laminectomies and 10 intersegmental decompressions) for multisegment spinal stenosis. Additionally, 15 patients had laminectomy with posterior spinal fixation, and the remaining 9 underwent laminectomy and excision of a spinal tumor.Statistical analysis indicated that there were no significant differences between the two study groups concerning age, sex, weight, preoperative hemoglobin and hematocrit levels, type of surgery, and operative time. In contrast, patients who received TA experienced a 49% reduction in blood loss ($P < 0.007$) and required 80% less blood transfusion ($P < 0.008$) compared to those who received a placebo. Although the TA group had a shorter hospital stay, this finding was not statistically significant. This study found no complications associated with the use of high TA doses.

The shortcoming of the study is the small sample size.

Conclusion

Tranexamic acid was found to be effective in minimizing bleeding during cesarean sections. It can thus be utilized in these circumstances.

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