A study on efficacy of tranexemic acid in reducing cesarean section blood loss.

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ABSTRACT

Introduction
Obstetric hemorrhage remains one of the major determinants of maternal death in both developed and developing countries. Because of its weight as a leading cause of maternal mortality and morbidity, obstetric hemorrhage (ante-partum and postpartum hemorrhages) must be investigated for national guideline development. Haemostatic drugs are not usually used as first-line treatment in post-partum hemorrhage (PPH). It was authenticated that extensive tissue injury can direct the haemostatic equilibrium toward increased fibrinolysis, leading to coagulopathy and bleeding. Antifibrinolytic drugs, namely tranexamic acid (TXA) have been recognized to decrease blood loss and transfusion needs in various elective surgeries. Furthermore, the Clinical Randomization of an Anti-fibrinolytic in Significant Hemorrhage (CRASH-2) study concluded that tranexamic acid decreases the risk of death in bleeding trauma patients.

Aim: To find whether tranexamic acid is effective in reducing per -operative and post-operative blood loss in lower segment caesarean section and to find out the adverse reactions associated with tranexamic acid.

Materials and method: This study is randomized control study including 200 antenatal patients admitted for elective and emergency LSCS during the study period between November 2013 to August 2014 in The Institute of Obstetrics and Gynecology, Egmore, Chennai. The patients were randomized by block randomization into a study group (Group A) and control group (Group B). The study group received 15mg/kg dose of tranexamic acid in 100 ml lactate solution and control group received plain ringer lactate. Quantification of blood loss after delivery of the baby was done.

Results: Tranexamic acid significantly reduced the quantity of blood loss from the end of LSCS to 2 hours postpartum: 40.93 ml in the study group versus 73.7 ml in the control group (P=0.00). It also significantly reduced the quantity of blood loss from placental delivery to 2 hours post-partum: 307.33 ml in the study group, versus 454.5 ml in the control group. (P=0.00). No complications or side effects were reported in either group.

Conclusion: Tranexamic acid significantly reduces the amount of blood loss during and after the LSCS and its use was not associated with any side effects or complication like thrombosis. Tranexamic acid can be used safely and effectively in women undergoing LSCS.

KEYWORDS
Tranexamic acid, TXA, LSCS, Blood loss

Results and Discussion
There is no significance difference in age, BMI, parity indication and duration of cesarean section and birth weight of baby between the study group and control group. Both groups are comparable.

Table 1 shows the Mean blood loss from time of placental delivery to completion of skin closure was 266.4 ml in the Study Group and it was 380.8 ml in the Control Group (P=0.00), suggesting that there was statistically highly significant difference in blood loss in both the groups. Patients who had received tranexamic acid had 114.4 ml less blood loss than patients who did not receive tranexamic acid. Mean blood loss from time of completion of skin closure to 2 hours postpartum was 40.93 ml in the Study Group and it was 73.7 ml in the Control Group (P=0.00), suggesting that there was statistically highly significant difference in blood loss in both the groups. Patients who received tranexamic acid had 32.77 ml less blood loss than patients who did not receive tranexamic acid. Mean total blood loss from placental delivery to 2 hours postpartum was 307.33 ml in the Study Group and it was 454.5 ml in the Control Group (P=0.00) suggesting that there was statistically highly significant difference in blood loss in both the groups. Patients who received tranexamic acid had 147.17 ml less blood loss than patients who did not receive tranexamic acid. Hence from the above result it is obvious that tranexamic acid is a potent antifibrinolytic drug that influences the blood loss in

Quantification of blood loss after delivery of the baby was done. The quantity of blood loss estimation was started after placental delivery. Following the uterine incision the amniotic fluid was fully suctioned in a suction container that has measurement’s in milliliters. After the placental delivery the blood loss is suctioned in a separate container and measured. The pad used to weighted before and after surgery following placental delivery 1 gram weight = 1 milliliter blood loss volume. Total blood loss (ml) = weight of pad after surgery (gm)-weight of pad before surgery (gm) + amount of blood in suction container. So amniotic fluid and the amount of blood loss before placental delivery was not included in measuring blood loss in study.
cesarean section and its therapeutic efficacy can be used in minimizing caesarean section blood loss. Similar results were obtained by the study conducted by Cemal ark et all and Sekhvat et al regarding the mean blood loss with use of TXA.

Table 1 - Comparison of blood loss

<table>
<thead>
<tr>
<th>Blood loss</th>
<th>Study group</th>
<th>Control group</th>
<th>T value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placental delivery to completion of skin closure</td>
<td>266.4</td>
<td>54.46</td>
<td>308.8</td>
<td>75.62</td>
</tr>
<tr>
<td>Time of completion Of skin closure to 2 hours postpartum</td>
<td>40.93</td>
<td>8.3</td>
<td>73.7</td>
<td>16.81</td>
</tr>
<tr>
<td>Total blood loss</td>
<td>307.33</td>
<td>58.86</td>
<td>454.5</td>
<td>82.74</td>
</tr>
</tbody>
</table>

Per-operative Hb% was compared to Hb% in 3rd postoperative day in both study and control group. There was a fall of 0.74gm% in study group while the fall in control group was much higher at 1.02 gm%. The mean difference is 0.28 gm% which is highly significant (P=0.001) (Table 2). Abdelazim et al (2014) reported that there was no significant difference regarding per-operative hemoglobin value was found, but the 24 hours post-operative hemoglobin was significantly higher in study group (11.2± 1.5 mg/dl) compared to control group(9.6 ± 1.2 mg/dl (P<0.05) (8).

Table 2 Comparison of fall in hemoglobin

<table>
<thead>
<tr>
<th>Hb % (gm %)</th>
<th>Study group</th>
<th>Control group</th>
<th>T value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per operative</td>
<td>10.358</td>
<td>0.596</td>
<td>10.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Post-operative</td>
<td>9.61</td>
<td>0.516</td>
<td>9.63</td>
<td>0.778</td>
</tr>
<tr>
<td>Fall in Hb</td>
<td>0.74</td>
<td>0.328</td>
<td>1.02</td>
<td>0.384</td>
</tr>
</tbody>
</table>

Use of Tranexamic acid significantly leads to reduction of PPH. In the study group the need for additional uterotonic was significantly reduced. Yang HX, et al showed similar results. 9

Tranexamic acid does not produce adverse reaction like nausea, vomiting, diarrhea in a significant number. It was not associated with any thrombotic complication.

There are a few limitations in our study Blood Loss from Skin Incision till delivery of Placenta is not included in our study High Risk Population for PPH was is not included in this study

Conclusion
Tranexamic acid significantly reduces the amount of blood loss during and after the LSCS and its use was not associated with any side effects or complication like thrombosis. Tranexamic acid can be used safely and effectively in women undergoing LSCS.

Reference