First comparative study of the effectiveness of the use of Tranexamic Acid against ε-Aminocapróic Acid in multiple doses via the oral route for the reduction of post-operative bleeding and transfusion rate in total primary knee replacement: A double-blind, randomized, controlled clinical trial.

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DISCLOSURES

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Introduction

• Total knee arthroplasty (TKA) is one of the most common surgeries used for the treatment of end-stage degenerative knee disease.

• The procedure is associated with substantial blood loss.
Introduction

- Anti-fibrinolytic drugs, such as tranexamic acid (TXA) and ε-Aminocaproic Acid (ε-ACA), decrease perioperative bleeding and the need for red blood cell transfusion by stabilizing clots.

- Studies have also shown that the use of oral TXA in hip arthroplasty, has a low cost and provides similar clinical results in comparison to topical or intravenous TXA.
Objective

• Compare the effects of oral aminocaproic acid as a hemostatic agent versus the use of oral tranexamic acid administered in multiple doses pre and post-surgery in patients undergoing elective total primary knee replacement
Material and methods

- Prospective, randomized, double-blinded clinical trial

<table>
<thead>
<tr>
<th>INCLUSION CRITERIA</th>
<th>EXCLUSION CRITERIA</th>
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<tbody>
<tr>
<td>• 18 years or older</td>
<td>• Thrombotic or embolic event</td>
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<tr>
<td>• Unilateral procedure</td>
<td>• ASA IV</td>
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<td>• Primary replacement</td>
<td>• Clinical history of coagulopathy</td>
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<tr>
<td>• Cemented replacement</td>
<td>• History of myocardial infarction, arteriopathy or unstable angina in the 12 months prior to surgery</td>
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<td>• Tricompartmental prosthesis</td>
<td>• Preoperative autologous blood donation</td>
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<td>• Etiology: OA or RA</td>
<td>• Revision knee replacement</td>
</tr>
<tr>
<td>• ASA I–III</td>
<td>• Bilateral knee replacement</td>
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<tr>
<td>• Any gender</td>
<td>• Terminal chronic kidney disease</td>
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<tr>
<td>• Signed informed consent</td>
<td>• Patients who were unable to receive oral intake of the drug</td>
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</table>
Material and methods

• The patients were randomly divided into two groups:
  • Group of oral aminocaproic acid received 3 doses (2000 mg per dose)
  • Group of oral tranexamic acid received 3 doses (1300 mg per dose)

• The drugs were administered according to the following schedule:
  • 2 hours before surgery, and 6 and 12 hours after surgery
Material and methods

- The following variables were analyzed:
  - Total blood loss
  - Hidden blood loss
  - External blood loss
  - Transfusion rate
  - Intra-operative blood loss
  - Visual Analogue Scale y SF-12
  - Surgical drainage output
  - Decrease in the hemoglobin and hematocrit values
Results

92 patients

46 Tranexamic acid
- M: 16
- W: 30
- Age: 69.7 ±9.51

46 Aminocaproic acid
- M: 18
- W: 28
- Age: 64.75 ±6.15
RESULTS

**Blood Loss**

- TBL
- HBL
- EBL
- IBL
- Drain output

**Hto Drop**

- PRE-OPE
- POD1
- POD2
- POD3
- POD7
RESULTS

![Graph of Hgb Drop]

- **Hgb Drop**
- **g/dl**
- **PRE-OPE**, **POD1**, **POD2**, **POD3**, **POD7**
- **ORAL ATX**, **ORAL EACA**
RESULTS

Visual Analogue Scale for Pain

VAS 3rd day  |  VAS 7th day
---|---
ATX | ACA

SF12

SF12 3rd day  |  SF12 7th day
---|---
ATX | ACA

p > 0.05  |  p > 0.05
Conclusions

- Oral use of aminocaproic acid is similar to its homologue tranexamic acid in the evaluation of parameters in the present study, transfusion rates were very low, and there were no between-group differences in postoperative complications.

- The use of multiple doses of aminocaproic acid orally at the selected dose to be effective and cost-effective as a standard protocol to achieve less blood loss and a lower rate of transfusion and adverse events related to the medication in patients undergoing a total primary knee replacement.