

# The role of Tranexamic Acid in Patients Undergoing Urgent on Pump Coronary Artery Bypass Surgery under Antiplatelets Therapy Thromboelastography Guided Regimen

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**Background:** Aspirin combined with Clopidogrel is the treatment of choice for acute coronary syndromes but they increase the risk of bleeding and transfusion in those undergoing coronary artery bypasses grafting (CABG). The aim of this study is to assess the efficiency of Tranexamic acid (TA) in minimizing bleeding and transfusion requirements in patients undergoing CABG with respect to preoperative Clopidogrel and Aspirin use over a period of 5 days preoperatively.

**Methods:** This study is a prospective, randomized, double-blinded and placebo-controlled trial. A hundred and twenty patients who underwent primary and isolated on- pump CABG with their last dose of Clopidogrel and aspirin less than 5 days preoperatively were randomly assigned to receive systemic Tranexamic acid (10 mg/kg after anesthetic induction and maintenance of 10 mg/kg/h) or topical Tranexamic acid, (2gm Tranexamic acid in 200 ml saline) poured in the pericardium before closure of the sternum or saline in control group. The primary outcome of the study was postoperative 24 h blood loss. Secondary measures included intra-operative and postoperative transfusion of blood or its products. Thromboelastography guided assessment of anti- platelets effect was included.

**Results:** Twenty four hours chest tube drainage was less in both Tranexamic acid groups than that in the placebo group; the differences were statistically significant ( $P < 0.001$ ). Control subjects received significantly more units of Packed RBCs and Platelets as compared to Tranexamic acid-treated patients ( $P < 0.001$ ). Again, when compared to placebo, Tranexamic acid reduced Packed RBCs exposure in TA-systemic (RR, 0.406; 95% CI, 0.253-0.652) and TA-topical groups (RR, 0.500; 95% CI, 0.470-0.916) than in placebo group ( $P < 0.001$ ). The same for platelets transfusion, Tranexamic acid reduced exposure in TA-systemic group (RR, 0.225; 95% CI, 0.160-0.695) and TA-topical group (RR, 0.258; 95% CI, 0.135-0.683) than in placebo group ( $P = 0.001$ ).

**Conclusions:** Our findings proved that the use of Tranexamic acid, in patients undergoing CABG surgery and had no chance for adequate preoperative cessation of Aspirin and Clopidogrel, in such situations, they may continue their anti-platelets therapy till the day of surgery with limited increase in postoperative bleeding and transfusion requirement rates.

**KEY WORDS:** Antifibrinolytic; Hemorrhage; Coronary surgery; Thromboelastography

Major cardiac events are documented to be reduced in patients with acute coronary syndrome (ACS) by combining aspirin with Clopidogrel (1). Patients with ACS often undergo urgent angiography, followed by percutaneous coronary intervention (PCI). After PCI, long-term Clopidogrel therapy significantly reduces the risk of adverse ischemic events (2). Aspirin and Clopidogrel treatment during the peri-operative period is associated with a substantial increase in re-exploration rate, chest tube drainage, blood loss and blood product usage. As a result,

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Codex : o3/15/1308