

**Thromboelastography in Orthopaedic Surgery of the Pelvis and Lower Extremity:
A Matched Controlled Study**

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Purpose: Thromboelastography (TEG) is a method of measuring whole blood coagulation, including plasma and cellular components. Research is scarce regarding the utility of TEG in orthopaedic trauma patients. The purpose of the study was to determine if there was a difference in the rate of transfusions between patients who had a perioperative TEG versus patients who did not have a TEG and who sustained similar operative injuries to the lower extremity and pelvis.

Methods: This matched controlled study was a 2-year, single institution retrospective chart review. Patients with pelvis, femur, and/or tibia fracture and who underwent a TEG study within 24 hours of surgical intervention composed the study group. The matched group was composed of patients with similar injuries, age, and ISS who did not undergo a TEG. All adult patients were included.

Results: A total of 89 patients met inclusion criteria (40 in the study group and 49 in the control group). The median (range) age was 70 years (18-98). There were no significant differences in the mean age or ISS between groups. There were no significant differences in the preoperative use of anticoagulation between groups. The TEG group had a longer median length of stay (7.5 days) than the control group (5 days), $P = 0.008$. 75% of patients in the study group and 51% of the control group patients received a blood product transfusion, $P = 0.02$. The TEG and control groups had a median of 3 and 1 units of blood products, respectively, $P = 0.002$. When considering packed red cells (pRBCs) alone, the median number of units for the study and control groups was 3.5 and 2, $P = 0.076$. There was no difference in the rate of deep vein thrombosis, pulmonary embolism, or infections between groups. The transfusion practices in the control group were almost exclusively pRBCs, in contrast to the study group where plasma, platelets, and cryoprecipitate were also used.

Conclusion: In the current study, patients who underwent a perioperative TEG received more blood product transfusions than those in the control group. Although the ISS was not significant between groups, the median ISS and length of stay were larger in the study group, which may explain the increased number of transfusions. It is also plausible that orthopaedic trauma patients may be underresuscitated. Prospective control trials are needed to validate the utility of TEG in orthopaedic surgery trauma.