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ASSOCIATION OF THROMBOELASTOGRAPHY (MA) AND THROMBOTIC COMPLICATIONS AFTER MAJOR NON-CARDIAC SURGERY

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Background: There is growing recognition that postoperative thrombotic complications are an important cause of increased hospital length of stay and healthcare costs after major surgery including cardiovascular procedures. Given the potential for thrombotic complications to result from hypercoagulable states, we studied whether postoperative blood analysis using thromboelastography (TEG) could predict the occurrence of thrombotic complications. We present the preliminary results from this study.

Methods: After IRB approval and patient consent, 219 patients undergoing a wide variety of non-cardiac surgical procedures requiring postoperative inpatient admission were prospectively studied. TEG analysis was performed immediately after surgery and maximum amplitude (MA), representing clot strength, was determined. The TEG manufacturer defines a hypercoagulable state as a MA greater than the upper limit of normal of 68 millimeters. Patients were followed for thrombotic complications, defined as deep vein thrombosis (DVT), pulmonary embolism (PE), myocardial infarction (MI) or stroke, throughout their postoperative hospital stay until discharge. Assessment of thrombotic complications was performed by an individual who was blinded to the TEG results.

Results: 31 patients (14%) suffered post-operative thrombotic complications, including 18 MIs (8.2%), 9 DVTs (4.1%), 5 PEs (2.2%) and 3 strokes (1.4%). The MA (mean \pm SD) in patients with a thrombotic complication (72.8 ± 6.4) was significantly higher ($P < 0.0001$) than that observed in patients without thrombotic complications (65.3 ± 9.1). The figure shows the percentage of patients with a thrombotic complication by quartiles of MA values.

Conclusions: A hypercoagulable state as determined by thromboelastography may help assess patient susceptibility to postoperative thrombotic complications and assist in identifying patients who should be aggressively prophylaxed. Our final analysis will assess the independent effects of procedure type as well as type of thrombotic complication using multivariate analysis.

