



International Journal of Surgery Science

E-ISSN: 2616-3470
P-ISSN: 2616-3462
© Surgery Science
www.surgeryscience.com
2019; 3(3): 17-19
Received: 14-05-2019
Accepted: 16-06-2019

Dr. Rajpal Singh
MBBS, M.S., MCh (Plastic
Surgery), Choithram Hospital and
Research Centre, Manik Bagh
Road Indore, Madhya Pradesh,
India

Dr. Deepak Khetan
MBBS, M.D. (Anaesthesia),
Choithram Hospital and Research
Centre, Manik Bagh Road Indore,
Madhya Pradesh, India

Dr. Nitin Sharma
MBBS, M.D. (Anaesthesia),
Choithram Hospital and Research
Centre, Manik Bagh Road Indore,
Madhya Pradesh, India

Dr. Neeraj Gupta
MBBS, D.A DNB (Anaesthesia),
Choithram Hospital and Research
Centre, Manik Bagh Road Indore,
Madhya Pradesh, India

Dr. Kritika Moolchandani
MBBS, DNB (Anaesthesia),
Choithram Hospital and Research
Centre, Manik Bagh Road Indore,
Madhya Pradesh, India

Dr. Vinod Naneria
MBBS, M.S (Orthopaedics),
Choithram Hospital and Research
Centre, Manik Bagh Road Indore,
Madhya Pradesh, India

Correspondence

Dr. Deepak Khetan
MBBS, M.D. (Anaesthesia),
Choithram Hospital and Research
Centre, Manik Bagh Road Indore,
Madhya Pradesh, India

Thromboelastography (TEG) guided management of refractory bleeding in post-operative non healing wound

Dr. Rajpal Singh, Dr. Deepak Khetan, Dr. Nitin Sharma, Dr. Neeraj Gupta, Dr. Kritika Moolchandani and Dr. Vinod Naneria

DOI: <https://doi.org/10.33545/surgery.2019.v3.i3a.140>

Abstract

We hereby present a case report of a 73 year old gentleman with refractory bleeding from wound site on postoperative day 10, post percutaneous femur nailing. This gentleman was evaluated and along with routine investigations, thromboelastography study was done, which pinpointed the cause of refractory bleeding and guided the treatment strategy to manage the bleeding. The aim of this case report is to increase awareness amongst medical personnel to diagnose and treat this condition at the earliest to conserve resources and to decrease morbidity of the patients.

Keywords: Thromboelastography (TEG), α aminocaproic acid, tranexamic acid, fibrinolysis, coagulation, haemostasis, non healing wound

Introduction

Routinely the functioning of coagulation cascade is measured by platelet count and coagulation profile. But being plasma tests, they do not accurately reflect the dynamics of the clotting mechanism, leading to inappropriate and inadequate transfusion management. TEG is the method of testing the efficiency of coagulation of blood. TEG being convenient method of monitoring whole blood coagulation reflects the visco elastic properties of coagulation. TEG is commonly used in assessing haemostasis during liver transplantation, obstetric haemorrhage, cardiac surgery and trauma management [5, 7].

Case Report

A 73 year old gentleman, status percutaneous femur nailing for Intertrochanteric fracture right femur 10 days back presented in emergency room with complaint of bleeding from operated wound site along with pain and swelling. Patient was also a known case of hypertension, parkinsonism and chronic obstructive airway disease on regular treatment. Primary treatment was started after admission. Routine blood investigations revealed a haemoglobin of 7.4 gm% with normal platelet count. Conservative treatment in the form of symptomatic measures, mild compression dressing and packed cell transfusion was initiated. Two units of packed cell were transfused and the above treatment was continued. In view of persistent oozing inspite of above management, the plastic surgery department was called upon for wound management on day six after emergency admission.

Routine blood investigations were repeated which showed normal haemogram and INR. Patient was planned for wound reexploration under subarachnoid block. On wound exploration, haematoma was evacuated, generalized diffuse oozing was noted with no obvious surgical bleeder. Without any obvious cause of surgical bleed and to rule out any medical cause of bleeding, a decision to run a TEG was taken intraoperatively. The TEG report showed fibrinolysis with platelet dysfunction (Figure No. 01) in comparison to NORMAL THROMBOELASTOGRAPH (FIG No. 03). On the basis of TEG report, two units of platelets transfusion was planned and patient was started on α aminocaproic acid infusion in a loading dose of 20 gm/hr and infusion of 5gm/hr over 4 hrs. Meanwhile thorough wound irrigation was done, hemostasis achieved and wound was closed in layers with negative suction drain in situ. Patient was shifted to ICU with stable haemodynamics. After 24 hours, a repeat TEG showed normal study (Figure 02) with no oozing and minimal collection in drain. Check dressing done on postoperative day 3 showed healing dry wound hence drain was removed. Patient was discharged on 3rd postoperative day.

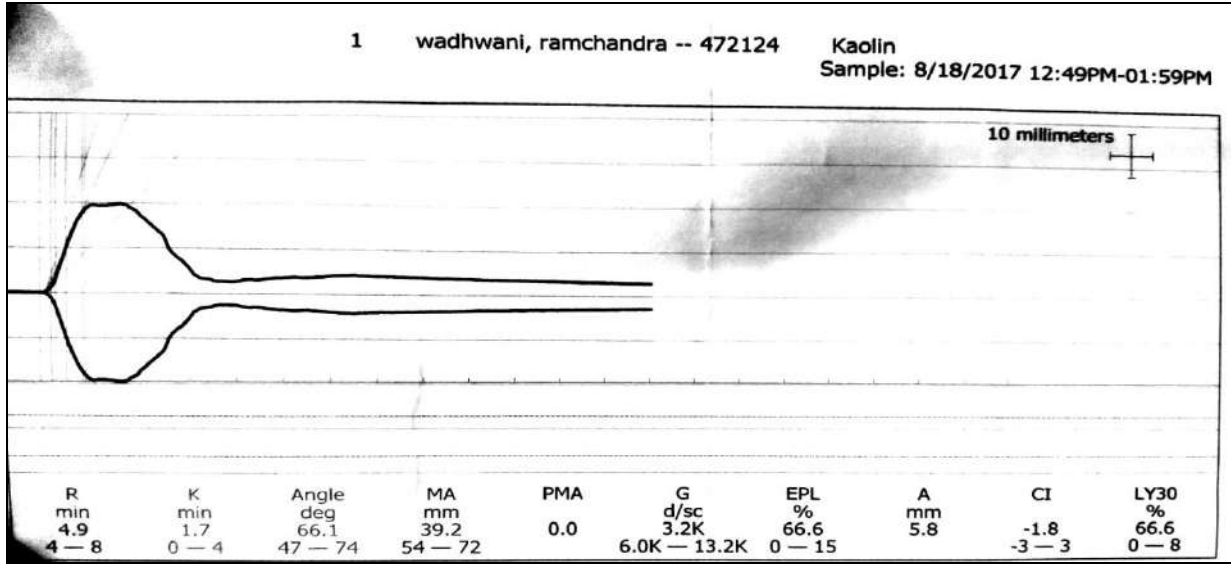


Fig 1: Intraoperative TEG Report

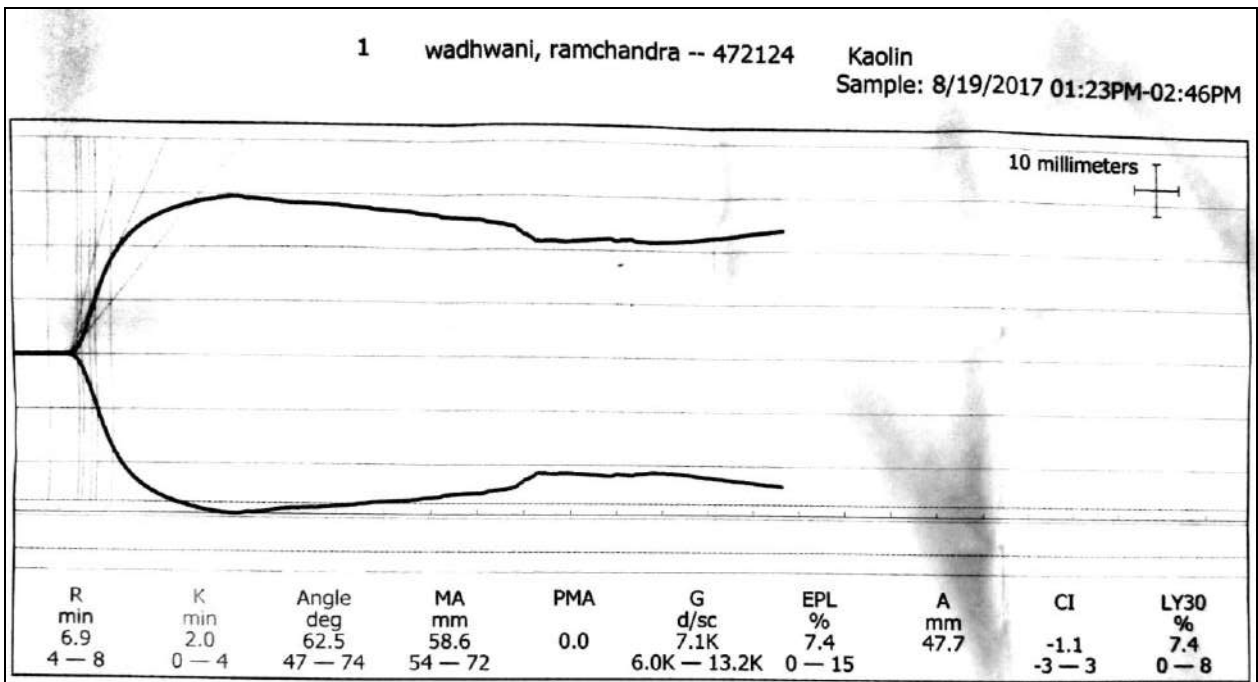


Fig 2: 24 Hrs after TEG Report

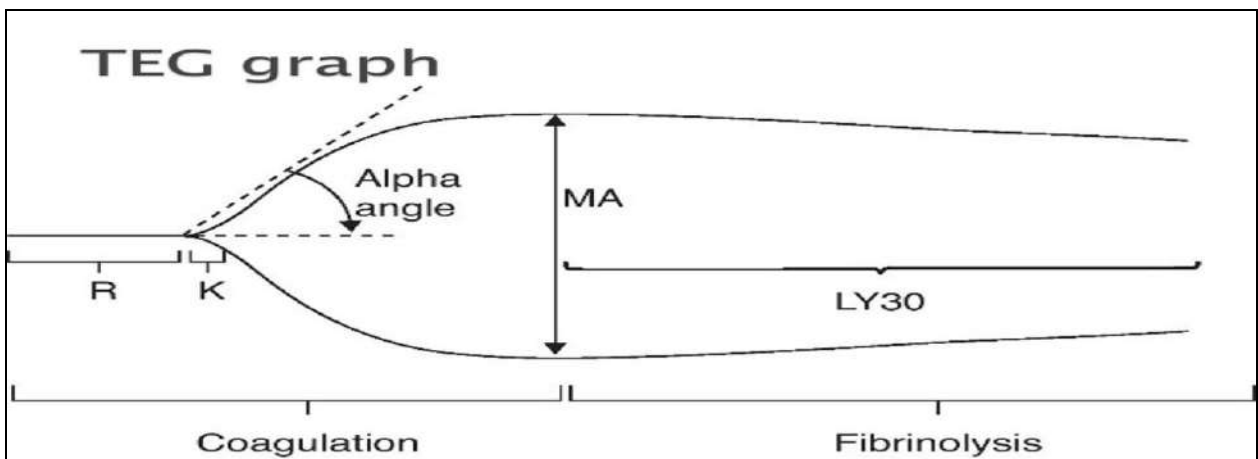


Fig 3: TEG Normal Graph

Discussion

Haemostasis in the process of clot formation is a joint function of platelet activation to form a plug and coagulation cascade leading to clot formation. Traditionally, this function is measured using conventional tests, such as platelet number, activated partial thromboplastin time, prothrombin time, thrombin time. These tests analyse various parts of the coagulation cascade but in isolation and they do not provide information about platelet function. Moreover they are laboratory dependent and invariably lead to delay in timely management [3-7].

TEG is a method of testing the efficiency of coagulation in the blood. TEG overcomes the above mentioned limitations of conventional coagulation tests. TEG provides an effective and convenient means of monitoring whole blood coagulation. It evaluates the elastic properties of whole blood and provides a global assessment of haemostatic function [1, 2, 5, 7].

TEG is commonly used in assessing haemostasis during liver transplantation, obstetric postpartum haemorrhage, cardiac surgery and trauma management. It is useful not only in cases of bleeding patients but also predicts postoperative bleeding. In cardiac surgery, where risk of bleeding is higher, TEG monitoring helps to identify and target those who need transfusion. TEG provides rapid point of care coagulation. [5-7]

The test sample is placed in the oscillating cup at 37 °C. A pin is suspended from torsion wire into blood sample. Development of fibrin strands couple the motion of the cup to the pin. This coupling is directly proportional to the clot strength. Increased tension in the wire is detected by electromagnetic transducer and electrical signal amplified to create a trace. Deflection of trace is proportional to clot strength [1, 7].

In this case, TEG was used as an advanced tool of coagulation monitoring as in spite of empirical treatment of medical bleed in the form of FFP and platelet could not stop the persisting oozing. TEG gives us a real-time information about the clotting process which acts as a guide to the treatment protocol helping to decide what blood products to give, how much to give and whether to give any at all [2, 4].

Conclusion

Thromboelastography is effective as a tool in pinpointing the cause of coagulopathy and guiding its management. It reduces the quantity of blood and blood products transfusion, and aids in early discharge of patient, thereby conserving precious resources and decreasing patient morbidity.

References

1. TEG and ROTEM: Technology and clinical applications. American Journal of Hematology. 2014; 89:228-232.
2. Mallet *et al.* Clinical utility of viscoelastic tests of coagulation in patients with liver disease. Liver International. 2013; 4:961-974.
3. Roeloffzen *et al.* Thrombocytopenic affects plasmatic coagulation as measured by thromboelastography. Blood Coagul Fibrinolysis. 2010; 21(5):389-97.
4. Cardenas JC, Wade CE, Holcomb JB. Mechanisms of trauma-induced coagulopathy. Curr Opin Hematol. 2014; 21(5):404-409
5. <http://www.authorstream.com/Presentation/ghaleb1962-1429322-thromboelastography/>
6. Sivula M, Pettila V, Niemi TT, Varpula M, Kuitunen AH. Thromboelastometry in patients with severe sepsis and disseminated intravascular coagulation. Blood Coagul Fibrinolysis. 2009; 20(6):419-426.

7. Thakur M, Ahmed AB. Review of Thromboelastography 10.5005/jp- journals-10027-1006.