Case Report

The role of rotational thromboelastometry in (ROTEM) the management ofpostoperative bleeding in patients undergoing cardiac surgery: A Case series

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Abstract:
Severe postoperative bleeding following cardiac surgery may be associated with increased morbidity, mortality and transfusion requirements. Rotational Thromboelastometry (ROTEM), a point-of-care viscoelastic test, enables rapid assessment of coagulation status and facilitates goal-directed hemostatic therapy. We report a case series of two patients undergoing cardiac surgery who developed significant postoperative bleeding and were managed using a ROTEM-guided transfusion protocol. ROTEM analysis identified specific coagulation abnormalities in either case, allowing targeted administration of appropriate blood products. Following ROTEM-guided therapy, bleeding was effectively controlled and hemostasis improved. This case series highlights the potential value of ROTEM in the early detection of coagulopathy and in guiding individualized transfusion strategies in patients undergoing cardiac surgery.

Key Words: Cardiac Surgery, Post Operative Bleeding, Rotational Thromboelastometry

Introduction

Abnormal bleeding remains a frequent complication of cardiac surgery involving cardiopulmonary bypass (CPB)1,2. Excessive hemorrhage increases the need for massive transfusion and surgical re-exploration, both of which are potentially associated with increased morbidity and mortality3-6.In addition, blood transfusion has been associated with a prolonged hospital stay as well as increased hospital costs7. Therefore, prompt diagnosis and appropriate management of bleeding diathesis are essential to prevent adverse outcomes. Traditionally,transfusion decisions have been guided by standard laboratory coagulation tests. However, these tests have limited utility in acute bleeding due to delayed turnaround times and their poor ability to predict bleeding severity8. Viscoelastic point-of-care tests, such as rotational thromboelastometry (ROTEM), provide rapid and dynamic assessment of coagulation status. Incorporating ROTEM into transfusion algorithms enables goal-directed administration of hemostatic blood products, potentially reducing both blood loss and unnecessary transfusion. Furthermore, point-of-care testing may assist clinicians in differentiating coagulopathy from surgical sources of bleeding9. The aim of this study is to evaluate the impact of a ROTEM-guided transfusion algorithm compared with conventional management on all-cause mortality, transfusion requirements and short-term hospital outcomes in adult patients undergoing cardiac surgery with or without CPB.

This retrospective case series was conducted at Square Hospital Limited. Patients undergoing cardiac surgery who developed significant postoperative bleeding were included.

ROTEM assays (EXTEM, INTEM, HEPTEM, FIBTEM) were performed in the ICU when excessive bleeding was observed. Transfusion decision was guided by a predefined ROTEM algorithm.

Case presentation:

Patient 1 (Aortic Valve Replacement)

A 54-year-old male undergoing aortic valve replacement

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