



# Use of Thromboelastography for Solving Neuraxial Blockade Dilemma

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*Cite this article as:* Karan N, Bakshi SG, Patil V, Sayed A. Use of Thromboelastography for Solving Neuraxial Blockade Dilemma. Turk J Anaesthesiol Reanim 2019; 47(4): 355-6.

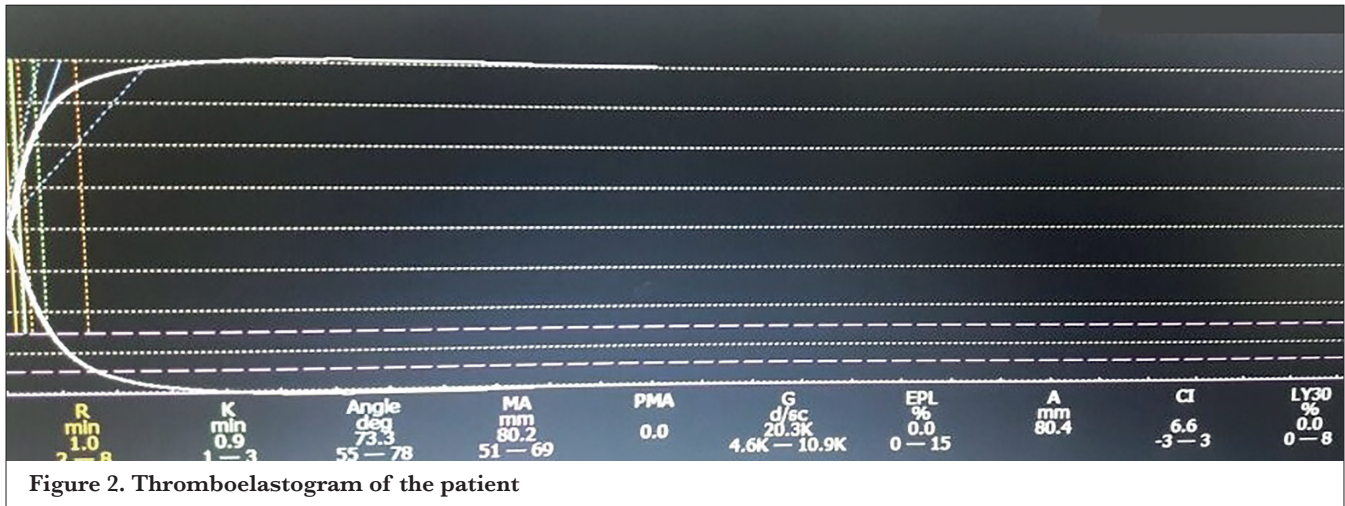
Dear Editor,

Epidural catheters are the most commonly used technique to manage acute post-operative pain. Epidural haematoma is a rare but potentially serious complication of neuraxial anaesthesia. A significant number of patients receive anticoagulants and antiplatelet medications during the postoperative period, with implications on the continuation and removal of neuraxial catheters (1, 2). The ASRA Practice Guidelines serve as a guide for the safe administration and removal of epidural catheters for patients receiving these medications (3). It is not unusual to encounter clinical situations that require the urgent removal of epidural catheter in patients on these medications, where adherence to the suggested time frame may not be feasible. Here, we present the peri-operative management of one such case.

A 66-year-old female with a previous history of cerebrovascular accident underwent nephro-ureterectomy for left renal cell carcinoma. Epidural catheter was inserted at T8-9 before induction. The patient's haemodynamic status did not allow the use of epidural analgesia intra-operatively. Considering the haemodynamic instability, the patient was shifted on ventilator support to the post-operative anaesthesia care unit (PACU). Bed-side two-dimensional echocardiography revealed a low left ventricular ejection fraction with mild hypokinesia. Cardiac evaluation in PACU revealed non-ST segment elevation myocardial infarction (NSTEMI), and the patient was initiated on tablet clopidogrel (75 mg OD) and injection enoxaparin (0.3 mL BID). Post-operative pain was effectively managed using 0.1 % bupivacaine infusion administered via the epidural catheter. After consultation with a cardiologist, epidural catheter removal was planned on post-operative day 6 after withholding clopidogrel for 72 h and enoxaparin for 24 h. However, considering the persistent vomiting, a contrast-enhanced computed tomography of



Figure 1. Computed tomography scan



abdomen was performed on post-operative day 4, which revealed a descending aortic thrombus (Figure 1) that required immediate systemic heparinisation followed by oral warfarin therapy. Because the patient had received a dose of therapeutic enoxaparin 12 h prior and considering the ongoing oral clopidogrel therapy, a thromboelastography (TEG) was required to guide the epidural catheter removal. TEG revealed a hypercoagulable state with no platelet dysfunction (Figure 2). The epidural catheter was removed and systemic heparinisation was administered after an hour. The patient was monitored for neurological signs for next 24 h, and following an uneventful course in the PACU and ward, she was discharged from the hospital on oral warfarin (3 mg OD). The patient showed good recovery on her first follow up after 3 months from discharge with the primary unit.

As per the guidelines, clopidogrel should be discontinued for 5 days and low molecular weight heparin for 24 h (3). However, it was not feasible to wait for such a long duration in the present case. In a previous case report, the catheter was removed after 72 h of withholding a dual antiplatelet drug (4). TEG is a haemostatic assay which reflects the interaction of platelet with the coagulation cascade (5). The insensitiveness of regular TEG to antiplatelet drugs may not necessarily be ineffective for guiding epidural catheter removal (5). The hypercoagulable state revealed by TEG facilitated the decision of removal and helped in deviation from the available guidelines. In summary, although the result observed in this patient cannot be extrapolated to other patients, it is important to recognize the role of a comprehensive assay, such as TEG, in decisions pertaining to neuraxial catheter removal, in patients with a perceived risk of deranged coagulation pathways.

**Informed Consent:** Written informed consent was obtained from patient and her son who participated in this study.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept – N.K., S.G.B.; Design – N.K., S.G.B.; Supervision – N.K., S.G.B., V.P.; Resources – V.P., S.G.B., N.K., A.S.; Materials – S.G.B., N.K.; Data Collection and/or Processing – A.S., N.K., S.G.B.; Analysis and/or Interpretation – V.P., S.G.B., N.K.; Literature Search – N.K., A.S., S.G.B., V.P.; Writing Manuscript – S.G.B., N.K., V.P., A.S.; Critical Review – S.G.B., N.K., V.P., A.S.; Other – A.S., N.K., S.G.B., V.P.

**Conflict of Interest:** The authors have no conflicts of interest to declare.

**Financial Disclosure:** The authors declared that this study has received no financial support

## References

- Vandermeulen E. Regional anaesthesia and anticoagulation. *Best Pract Res Clin Anaesthesiol* 2010; 24: 121-31.
- Vandermeulen EP, Van Aken H, Vermeylen J. Anticoagulants and spinal-epidural anesthesia. *Anesth Analg* 1994; 79: 1165-77. [\[CrossRef\]](#)
- Rosenquist RW. About bloody time!: guidelines from the American Society of Regional Anesthesia and Pain Medicine, European Society of Regional Anaesthesia and Pain Therapy, American Academy of Pain Medicine, International Neuromodulation Society, North American Neuromodulation Society, and World Institute of Pain. *Reg Anesth Pain Med* 2015; 40: 179-81. [\[CrossRef\]](#)
- Glenn E, Mehl J, Rosinia FA, Liu H. Safe removal of an epidural catheter 72 hours after clopidogrel and aspirin administrations guided by platelet function analysis and thromboelastography. *J Anaesthesiol Clin Pharmacol* 2013; 29: 99-101. [\[CrossRef\]](#)
- Chen A, Teruya J. Global hemostasis testing thromboelastography: old technology, new applications. *Clin Lab Med* 2009; 29: 391-4. [\[CrossRef\]](#)