

# Anesthetic Management for an Urgent Artery Bypass Operation in A Patient with Severe Thrombocytopenia: A Case Report

Jin-Min Lee, M.D.<sup>1</sup>, Hey-ran Choi, M.D., Ph. D<sup>1\*</sup>

<sup>1</sup>Department of Anesthesiology and Pain Medicine, Inje University Sanggye Paik Hospital, Seoul, Republic of Korea

DOI: <https://doi.org/10.36347/sjmcr.2025.v13i11.031>

| Received: 25.09.2025 | Accepted: 08.11.2025 | Published: 15.11.2025

\*Corresponding author: Hey-ran Choi, M.D., Ph. D

Department of Anesthesiology and Pain Medicine, Inje University Sanggye Paik Hospital, Seoul, Republic of Korea

## Abstract

## Case Report

Severe thrombocytopenia poses a major anesthetic challenge due to high bleeding risk. We report an 81-year-old woman with myelodysplastic syndrome and refractory thrombocytopenia ( $<20,000/\mu\text{L}$ ) requiring urgent iliac-to-mesenteric artery bypass for bowel ischemia. Despite transfusions, platelet counts remained low. General anesthesia with desflurane and remifentanyl was maintained under strict hemodynamic and temperature control. Two apheresis platelet units were transfused, with an estimated blood loss of 200 mL. The surgery was completed uneventfully. This case demonstrates that major vascular surgery can be safely performed in patients with severe thrombocytopenia when individualized anesthetic planning, normothermia, and multidisciplinary communication are implemented.

**Keywords:** Thrombocytopenia, Platelet refractoriness, Anesthetic management, Vascular surgery, Case report.

**Copyright © 2025 The Author(s):** This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## INTRODUCTION

Thrombocytopenia ( $<150,000/\mu\text{L}$ ) is common in surgical patients and significantly increases bleeding risk. Severe thrombocytopenia ( $<50,000/\mu\text{L}$ ) poses particular challenges when urgent surgery cannot be delayed (Nagrebetsky *et al.*, 2019). Myelodysplastic syndrome frequently causes both quantitative and qualitative platelet dysfunction. This report describes a successful urgent vascular surgery in a patient with platelet counts  $<20,000/\mu\text{L}$  despite transfusion refractoriness.

## CASE REPORT

An 81-year-old woman (158 cm, 46 kg) with myelodysplastic syndrome presented with ischemic colitis secondary to atherosclerosis of the superior mesenteric artery. Laboratory tests showed hemoglobin 8.1 g/dL and platelet count  $22,000/\mu\text{L}$ . Despite multiple platelet and red cell transfusions, the platelet count remained below  $15,000/\mu\text{L}$ . As bowel ischemia worsened, urgent surgery was indicated.

General anesthesia was induced with propofol and rocuronium and maintained with desflurane and remifentanyl. Intubation was achieved on the first attempt using a McGrath® video laryngoscope. Invasive arterial pressure, ECG,  $\text{SpO}_2$ , BIS, and core temperature were continuously monitored. Ionized calcium levels

remained stable without supplementation. Unfractionated heparin (2,000 IU) was administered before iliac artery clamping. Two units of apheresis platelets and 900 mL of balanced crystalloid were infused intraoperatively. Estimated blood loss was approximately 200 mL. Hemodynamics and temperature ( $36.2\text{--}36.8\text{ }^\circ\text{C}$ ) remained stable throughout. The patient was extubated uneventfully and transferred to the ICU awake and stable.

## DISCUSSION

This case highlights how major vascular surgery can be safely performed in patients with severe thrombocytopenia, even when platelet transfusion is ineffective. Platelet transfusion refractoriness, often due to alloimmunization or marrow failure, limits correction before surgery (Nagrebetsky *et al.*, 2019). In such cases, anesthetic management must aim to prevent bleeding and maintain physiological stability.

Our strategy included: (1) continuous perioperative platelet transfusion initiated before anesthesia induction and maintained intraoperatively to achieve transient hemostasis (Metcalf *et al.*, 2025), (2) preparedness for antifibrinolytic intervention with tranexamic acid (Cai *et al.*, 2020), (3) strict blood pressure control to ensure hemodynamic stability and to prevent hypertensive or spontaneous bleeding (Saugel &

Sessler, 2021), (4) maintenance of normothermia and calcium homeostasis (Lier *et al.*, 2008), and (5) close communication between anesthesiology and vascular surgery teams. These principles align with recent transfusion guidelines emphasizing individualized, multidisciplinary approaches.

Previous reports rarely describe successful major surgery with platelet counts <20,000/ $\mu$ L. This case demonstrates that precise monitoring, atraumatic airway management, and minimal vascular punctures can enable favorable outcomes despite critical thrombocytopenia.

## CONCLUSION

Urgent vascular surgery may be performed safely in patients with profound thrombocytopenia when individualized anesthetic management, normothermia, and careful interdisciplinary coordination are applied.

### Ethical Approval and Consent

This case report was reviewed and approved for exemption from ethical review and exemption from written informed consent by the Institutional Review Board of Inje University Sanggye Paik Hospital (IRB No. SGPAIK 2025-10-006).

### Acknowledgments

We thank the Department of Hematology and the Vascular Surgery Team at Sanggye Paik Hospital for their collaboration in the patient's management.

## REFERENCES

- Cai, J., Ribkoff, J., Olson, S., Raghunathan, V., Al-Samkari, H., DeLoughery, T. G., & Shatzel, J. J. (2020). The many roles of tranexamic acid: An overview of the clinical indications for TXA in medical and surgical patients. *European Journal of Haematology*, 104(2), 79–87. <https://doi.org/10.1111/ejh.13348>
- Lier, H., Krep, H., Schroeder, S., & Stuber, F. (2008). Preconditions of hemostasis in trauma: A review. The influence of acidosis, hypocalcemia, anemia, and hypothermia on functional hemostasis in trauma. *Journal of Trauma*, 65(4), 951–960. <https://doi.org/10.1097/TA.0b013e318187e15b>
- Metcalf, R. A., Nahirniak, S., Guyatt, G., Bathla, A., White, S. K., Al-Riyami, A. Z., ... Stanworth, S. J. (2025). Platelet transfusion: 2025 AABB and ICTMG international clinical practice guidelines. *Journal of the American Medical Association*, 334(7), 606–617. <https://doi.org/10.1001/jama.2025.7529>
- Nagrebetsky, A., Al-Samkari, H., Davis, N. M., Kuter, D. J., & Wiener-Kronish, J. P. (2019). Perioperative thrombocytopenia: Evidence, evaluation, and emerging therapies. *British Journal of Anaesthesia*, 122(1), 19–31. <https://doi.org/10.1016/j.bja.2018.09.010>
- Saugel, B., & Sessler, D. I. (2021). Perioperative blood pressure management. *Anesthesiology*, 134(2), 250–261. <https://doi.org/10.1097/ALN.0000000000003610>