

Perioperative challenges and tailored anesthetic management in a frail elderly patient undergoing orthopedic surgery

Shilpa Sarang Kore^{1*} , Pratikshya Nath²

¹Dept. of Anesthesiology, Dr. D.Y. Patil Medical College and Hospital, Pimpri, Pune, Maharashtra, India

Received: 15-02-2026

Accepted: 22-04-2026

Published: 11-06-2026

***Corresponding author:** Shilpa Sarang Kore

Email: shilpasole@gmail.com

<https://doi.org/10.65929/JSIA.2026.1.2.006>

How to cite this article: Kore SS, Nath P. Perioperative challenges and tailored anesthetic management in a frail elderly patient undergoing orthopedic surgery. *J Sci Innov Anesthesiol.* 2026;1(2):60-61.

Sir,

Elderly patients frequently present with diminished physiological reserve, frailty, and multiple comorbidities, all of which significantly increase perioperative risk. Age-related cardiovascular, pulmonary, renal, and neurological changes make anesthetic management particularly challenging in this population.¹ We report the case of an 81-year-old female with severe multisystem disease undergoing dynamic hip screw fixation, illustrating how individualized regional anesthesia and vigilant perioperative monitoring can optimize outcomes.

The patient had hypertension, long-standing diabetes mellitus, chronic kidney disease, severe pulmonary arterial hypertension (PAH), moderate mitral regurgitation, severe tricuspid regurgitation, an atrial septal defect, osteoporosis, frailty, and significant hearing impairment. Age-related diastolic dysfunction, reduced baroreceptor sensitivity, and decreased cardiovascular compliance further increased her risk of perioperative hemodynamic instability.² Baseline investigations showed anemia, renal dysfunction, elevated cardiac biomarkers, chronic ischemic cerebral changes, pulmonary congestion, and grade III diastolic dysfunction. Such multimorbidity is known to predispose geriatric patients to postoperative delirium, acute respiratory failure, and increased mortality.³

General anesthesia was avoided because of its association with myocardial depression, respiratory compromise, and cognitive dysfunction in the elderly. Instead, a combined spinal-epidural (CSE) technique was chosen, consistent with evidence supporting regional anesthesia for hip fracture surgeries in older adults due to its superior hemodynamic stability and reduced opioid requirements.⁴

© 2026 The Author(s). Published by REVO Publication.

This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Intraoperatively, invasive arterial monitoring allowed precise management of systemic vascular resistance, essential in severe PAH where right ventricular failure is a major concern.⁵ Fluids were carefully titrated to avoid volume overload in the setting of renal impairment and cardiac dysfunction. A low-dose intrathecal administration of hyperbaric bupivacaine with fentanyl provided a stable T8 sensory block and avoided the respiratory risks associated with sedative supplementation. Normothermia was actively maintained, recognizing the elderly patient's vulnerability to hypothermia-related complications.⁶

Postoperatively, epidural analgesia with low-dose bupivacaine and paracetamol allowed effective pain control while minimizing opioids, which are known to increase the incidence of delirium and respiratory depression in geriatric populations.⁷ Early physiotherapy, incentive spirometry, and thromboprophylaxis were instituted, in accordance with principles of enhanced recovery and multimodal postoperative care in the elderly. The patient recovered uneventfully and was discharged on postoperative day seven.

This case reinforces the value of comprehensive geriatric assessment, multidisciplinary involvement, careful drug titration, and the strategic use of regional anesthesia in frail elderly patients. Tailoring perioperative management to physiological age rather than chronological age is critical for reducing morbidity and improving functional outcomes in this vulnerable group.

Ethical Approval

Ethical approval was not required for this case-based Letter to the Editor in accordance with institutional policies

Declaration of Patient Consent

Patient consent was obtained for the publication

Financial Support and Sponsorship

None.

Conflict of Interest

None.

Use of Artificial Intelligence (AI)

The authors declare that no artificial intelligence (AI) tools were used in the generation, analysis, interpretation, or writing of this manuscript.

References

1. Story DA. Postoperative complications in elderly patients and their significance for long-term prognosis. *Curr Opin Anaesthesiol*. 2008;21(3):375–9. <https://doi.org/10.1097/ACO.0b013e3282f889f8>
2. Walther CP, Nambi V, Hanania NA, Navaneethan SD. Diagnosis and Management of Pulmonary Hypertension in Patients With CKD. *Am J Kidney Dis*. 2020;75(6):935–45. <https://doi.org/10.1053/j.ajkd.2019.12.005>
3. Brunner LB, Boncyk CS, Rengel KF, Hughes CG. Elderly Patients and Management in Intensive Care Units (ICU): Clinical Challenges. *Clin Interv Aging*. 2023;18:93–112. <https://doi.org/10.2147/CIA.S365968>
4. Ouanes JP, Tomas VG, Sieber F. Special anesthetic consideration for the patient with a fragility fracture. *Clin Geriatr Med*. 2014;30(2):243–59. <https://doi.org/10.1016/j.cger.2014.01.014>
5. Inampudi C, Tedford RJ, Hemnes AR, et al. Treatment of right ventricular dysfunction and heart failure in pulmonary arterial hypertension. *Cardiovasc Diagn Ther*. 2020;10(5):1659–74. <https://doi.org/10.21037/cdt-20-348>
6. Yoo JH, Sung TY, Oh CS. Cold temperatures, hot risks: perioperative hypothermia in geriatric patients - a narrative review. *Anesth Pain Med (Seoul)*. 2025;20(3):189–99. <https://doi.org/10.17085/apm.25294>
7. Choi PT, Bhandari M, Scott J, Douketis J. Epidural analgesia for pain relief following hip or knee replacement. *Cochrane Database Syst Rev*. 2003;2003(3):CD003071. <https://doi.org/10.1002/14651858.CD003071>
8. Casiraghi M, Orlandi R, Bertolaccini L, Mazzella A, Girelli L, Diotti C, et al. The Role of Incentive Respiratory Techniques in Enhanced Recovery After Lung Cancer Resection: A Propensity Score-Matched Study. *J Clin Med*. 2024;14(1):100. <https://doi.org/10.3390/jcm14010100>