www.jcimcr.org

JCIMCR OPEN ACCESS Journal of Clinical Images and Medical Case Reports

ISSN 2766-7820

Case Report

Open Access, Volume 6

Anesthesia for surgical resection of a left costal Ewing sarcoma in an adolescent: Anesthetic and analgesic challenges

K El Ouafi*; M Sham; S El Méhari; F Faouzi; L Berrada; A Zerhoun; S Chabat; M Anas; R Chera; A Bouhours; C El Ketan

Operating Room 17, Ibn Rochd University Hospital Center, Casablanca, Morocco.

***Corresponding Author: Khadija El Ouafi**

Operating Room 17, Ibn Rochd University Hospital Center, Casablanca, Morocco.

Email: khadijaelouafi95@gmail.com

Received: May 24, 2025

Accepted: Jun 19, 2025

Published: Jun 26, 2025

Archived: www.jcimcr.org

DOI: www.doi.org/10.52768/2766-7820/3651

Abstract

Ewing sarcoma is a rare malignant bone tumor that primarily affects children and adolescents. Costal involvement presents specific anesthetic challenges, particularly due to the need for one-lung ventilation and hemodynamic risks associated with thoracic surgery. We report the case of a 16-year-old adolescent who underwent surgical resection of a left costal Ewing sarcoma. Anesthetic management involved a multimodal approach including thoracic epidural analgesia, strict hemodynamic monitoring, and tailored ventilation strategy. This case highlights the perioperative challenges and the importance of personalized care to optimize postoperative outcomes.

Keywords: Ewing sarcoma; Thoracic anesthesia; One-lung ventilation; Epidural analgesia; Thoracic surgery.

Introduction

Ewing sarcoma is a rare malignant bone tumor mainly affecting children and adolescents. Costal involvement presents significant anesthetic and analgesic challenges due to thoracic involvement and the need for one-lung ventilation during tumor resection. We report the case of a 16-year-old girl who underwent surgical resection of a left costal Ewing sarcoma.

Methodology

This case report was conducted in Operating Room 17 at Ibn Rochd University Hospital in Casablanca in March 2025. The study is based on observation and detailed analysis of anesthetic and perioperative management of a patient undergoing surgical resection of a costal Ewing sarcoma. Data were collected from the patient's medical records, including surgical reports, intraoperative hemodynamic parameters, ventilation and analgesia techniques, and immediate postoperative progress.

Results

Patient information

- A 16-year-old adolescent with no significant medical history except for an appendectomy in 2015.
- Presented with chest pain, leading to the diagnosis of a left costal Ewing sarcoma.
- Underwent nine chemotherapy sessions, the last in January 2025.

Preoperative assessment

- Clinical examination: Alert, hemodynamically and respiratory stable, thoracic deformity with decreased breath sounds on the left.
- Imaging: Chest CT showed mixed osteocondensing lesions, costal cortical rupture, intercostal soft tissue thickening, and right pulmonary nodules.

- Histology: Round cell tumor proliferation.
- Staging workup: Normal brain MRI and abdominal CT.
- Laboratory tests: Moderate anemia (Hb=9.2 g/dL), platelets at 150,000, AST at 92 IU/L, ALT at 63 IU/L.
- Cardiac assessment: Mild mitral regurgitation with LVEF at 70%, normal ECG.

Anesthesic management

- Monitoring: ECG, SpO_2, invasive blood pressure, temperature, thoracic epidural catheter.
- Induction: Fentanyl (500 mcg), propofol (200 mg), muscle relaxant (50 mg).
- Intubation: Left-sided double-lumen tube (size 35) for one-lung ventilation.
- Maintenance: Balanced anesthesia with propofol sedation and multimodal analgesia.
- Hemodynamics: Instability managed with norepinephrine (up to 3 mg/h), transfusion of 2 units RBC and 2 units FFP due to estimated 500 cc blood loss.
- Ventilation: One-lung ventilation well tolerated without respiratory distress.
- Surgery: Resection of the 3rd left rib, partial resection of 2nd and 4th ribs, partial left upper lobe lung and latissimus dorsi muscle resection. Duration: 4 hours.

Postoperative care

- Patient extubated in the recovery room after weaning from norepinephrine, then transferred to the ICU.
- Multimodal analgesia:

1. Continuous thoracic epidural with bupivacaine
2. IV morphine
3. NSAIDs, paracetamol, and nefopam

- Outcome: One-night ICU stay, good tolerance, and transfer to thoracic surgery the following day.

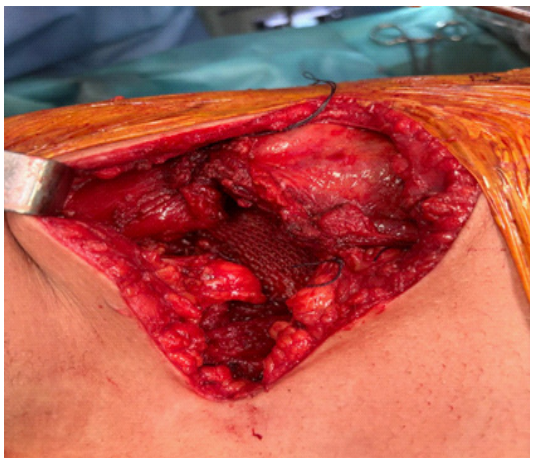

Figure 1: Intraoperative surgical exposure of a costal Ewing sarcoma facilitated by retractors.

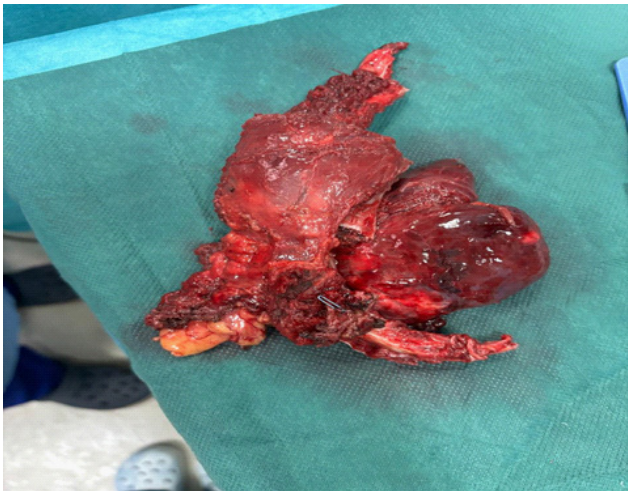

Figure 2: Excised costal Ewing sarcoma tumor placed on the sterile surgical field following complete resection.

Discussion

The anesthetic management of a costal Ewing sarcoma involves several major challenges:

- One-lung ventilation: Required precise selective intubation and strict monitoring to avoid hypoxia and hypercapnia [1,2].
- Hemodynamic instability: Caused by tumor resection and intraoperative bleeding, necessitating the use of catecholamines and targeted transfusions [3,4].
- Pain management: Thoracic epidural combined with multimodal analgesia allowed for rapid recovery and better postoperative comfort [5,6].
- Chemotherapy-related impact: Cardiac and hematological toxicity of chemotherapy requires rigorous preoperative assessment and intensive perioperative monitoring [7,8].
- Prognosis and rehabilitation: Optimal perioperative management, particularly enhanced recovery after surgery (ERAS), improves functional outcomes and quality of life [9,10].

Conclusion

The resection of a costal Ewing sarcoma in an adolescent presents a major anesthetic challenge. One-lung ventilation, management of hemodynamic instability, and postoperative analgesia require a rigorous and multimodal approach. In our case, this strategy led to a favorable postoperative outcome with rapid recovery. Perioperative optimization and patient-specific management are crucial for improving outcomes and minimizing complications.

References

1. Smith M, et al. Ventilation strategies in thoracic surgery, Anesth Analg. 2021.
2. Jones R, et al. Airway management in pediatric thoracic oncology, J Pediatr Anesth. 2020.
3. Kim H, et al. Hemodynamic instability in oncologic surgery, Crit Care Med. 2019.
4. Williams B, et al. Blood transfusion in cancer surgery, Lancet On-

col. 2022.

5. Brown C, et al. Epidural analgesia in thoracic surgery, Pain Med. 2021.

6. Carter J, et al. Multimodal analgesia in pediatric cancer patients, J Pain Res. 2020.

7. Thompson D, et al. Cardiotoxicity and anesthesia in oncology, Anesthesiology. 2019.

8. Patel S, et al. Hematologic complications of chemotherapy, Blood Rev. 2021.

9. Lee A, et al. ERAS in pediatric oncology surgery, J Clin Oncol. 2022.

10. Garcia P, et al. Quality of life post-thoracic surgery in adolescents, J Thorac Surg. 2020.