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Postoperative Pain Management After Abdominal Surgery in a Surgical Intensive Care Unit A Retrospective Observational Study

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ABSTRACT

Background: Postoperative pain following abdominal surgery remains a major concern in anesthesia and critical care practice. Inadequate pain control delays recovery, prolongs hospitalization, impairs respiratory function, and increases postoperative morbidity. Multimodal and individualized analgesic strategies are therefore essential for optimizing postoperative outcomes.

Objective: This study aimed to evaluate the kinetics of postoperative pain during the first 48 hours after abdominal surgery and to identify the main determinants associated with pain intensity in patients admitted to a surgical intensive care unit.

Methods: We conducted a retrospective, descriptive, and analytical study including 500 patients who underwent abdominal surgery at the Surgical Intensive Care Unit of the Ibn Rochd University Hospital between September 2024 and August 2025. Patients undergoing abdominal surgery either by laparotomy or laparoscopy and requiring hospitalization for at least 48 hours were included. Patients with communication difficulties or incomplete medical records were excluded. Pain intensity was assessed using the Visual Analog Scale (VAS) at awakening and during the first 48 postoperative hours.

Results: A total of 500 patients were included, with a predominance of males (67.2%). The mean age was 45 years. Laparotomy accounted for 75% of procedures, whereas laparoscopy represented 25%. General anesthesia was performed in 87% of cases. Postoperative pain progressively decreased over the first 48 hours, with severe pain decreasing from 44.4% at awakening to 9.2% at H48. Simultaneously, the proportion of patients with well-controlled pain (VAS ≤ 3) increased from 16.8% to 71.2%. Laparoscopy was associated with significantly lower pain intensity compared with laparotomy. Similarly, patients without surgical drains experienced lower pain scores than those with drains. Multimodal analgesia based mainly on paracetamol and stepwise opioid escalation resulted in satisfactory but still improvable pain control.

Conclusion: Postoperative pain after abdominal surgery remains frequent during the immediate postoperative period but shows favorable evolution under structured multimodal analgesia. Surgical approach, drain placement, and patient-related factors significantly influence postoperative pain intensity. Expanding locoregional anesthesia techniques and optimizing multimodal analgesic protocols could further improve postoperative recovery and opioid-sparing strategies.

KEYWORDS: postoperative pain, abdominal surgery, multimodal analgesia, laparotomy, laparoscopy, intensive care, locoregional anesthesia.

INTRODUCTION

Postoperative pain remains one of the most frequent complications after abdominal surgery and constitutes a major challenge in perioperative medicine. Poorly controlled postoperative pain contributes to delayed mobilization, respiratory complications, prolonged hospitalization, increased opioid consumption, and impaired patient satisfaction. Effective analgesic management has therefore become an essential component of enhanced recovery pathways.

The pathophysiology of postoperative pain after abdominal surgery is multifactorial and involves inflammatory, visceral, and parietal mechanisms. Pain intensity may vary according to several determinants, including surgical approach, preexisting comorbidities, psychological factors, and perioperative analgesic strategies.

Current international guidelines advocate multimodal analgesia combining non-opioid medications, opioid-sparing techniques, and locoregional anesthesia whenever feasible. Despite these recommendations, postoperative pain management remains heterogeneous across institutions, particularly in resource-limited settings.

The present study aimed to describe the evolution of postoperative pain during the first 48 hours after abdominal surgery in patients admitted to a surgical intensive care unit. Secondary objectives included identifying the principal determinants associated with pain severity and proposing practical strategies to improve postoperative analgesic management within our institution.

MATERIALS AND METHODS

Study Design and Setting

We conducted a retrospective, descriptive, and analytical observational study in the Surgical Intensive Care Unit of the Ibn Rochd University Hospital over a 12-month period extending from September 2024 to August 2025.

Study Population

A total of 500 patients undergoing abdominal surgery were included in the study. Eligible patients were adults who underwent abdominal surgery either through laparotomy or laparoscopy and required postoperative hospitalization for at least 48 hours.
Patients presenting communication or comprehension difficulties, as well as those with incomplete or missing medical records, were excluded.

Data Collection

Clinical and perioperative data were extracted from medical records and anesthesia charts. The following variables were analyzed:

- Demographic characteristics
- Medical and surgical history
- Type of surgery
- Surgical approach
- Presence or absence of drainage
- Anesthetic technique
- Analgesic protocol
- Postoperative pain evolution

Pain intensity was evaluated using the Visual Analog Scale (VAS) at awakening and during the first 48 postoperative hours.

Statistical Analysis

Quantitative variables were expressed as means and qualitative variables as percentages. Descriptive and comparative analyses were performed to assess pain kinetics according to surgical approach and drain placement.

RESULTS

Patient Characteristics

A total of 500 patients were included in the analysis. Male patients predominated, representing 67.2% of the study population, while females accounted for 32.8%. The mean age was approximately 45 years, with a predominance of patients younger than 40 years.
The most common comorbidities identified were chronic smoking, hypertension, diabetes mellitus, respiratory diseases with bronchorrhea, and previous abdominal surgery.

Surgical and Anesthetic Characteristics

Three-quarters of the procedures were performed through laparotomy, whereas one-quarter were performed laparoscopically. General anesthesia represented the predominant anesthetic technique, accounting for 87% of cases, while locoregional anesthesia was used in 13% of patients. No procedures were performed under local anesthesia alone.
Surgical drains were placed in 358 patients (71.6%), whereas 142 patients (28.4%) did not require drainage.

Overall Postoperative Pain Evolution

A progressive reduction in severe postoperative pain was observed during the first 48 postoperative hours. Severe pain was reported in 44.4% of patients at awakening and decreased to 9.2% at H48. Simultaneously, the proportion of patients with mild pain or no pain progressively increased.
Patients presenting satisfactory pain control (VAS ≤ 3) increased from 16.8% at awakening to 71.2% at H48, reflecting a favorable clinical evolution under postoperative analgesic management.

Pain According to Surgical Approach

Laparoscopy

After laparoscopic surgery, postoperative pain showed a favorable evolution with continuous improvement over 48 hours. Severe pain decreased from 28.1% at awakening to 6.2% at H48. The proportion of patients with mild pain progressively increased to 44.6%, while pain-free patients increased from 7% to 31.2%.

Laparotomy

Following laparotomy, pain reduction appeared slower and more progressive. Severe pain remained predominant until H6 and decreased from 50% at awakening to 10.2% at H48. Mild pain increased to 40.8%, whereas pain-free patients reached 28.8% at H48.

Overall, laparotomy was associated with higher postoperative pain intensity compared with laparoscopy throughout the postoperative period.

Pain According to Drain Placement

Patients without drains experienced more rapid pain improvement. Severe pain decreased from 32.3% at awakening to 5.7% at H48. At H48, more than half of these patients were pain-free.

Conversely, patients with drains exhibited slower pain reduction. Severe pain decreased from 49.4% to 10.7% during the study period, while moderate pain remained relatively frequent.

Analgesic Management

Postoperative analgesia relied on a progressive multimodal approach favoring lower analgesic steps before escalation when necessary.

Paracetamol alone was administered in 30.4% of patients. Step II analgesics were used in 47% of cases, whereas strong opioids were required in 22.6% of patients.

Overall, postoperative pain evolution remained favorable despite the absence of routine NSAIDs, intravenous lidocaine infusion, patient-controlled analgesia, or systematic locoregional anesthesia techniques.

DISCUSSION

Our study demonstrated a favorable reduction in postoperative pain during the first 48 hours after abdominal surgery. Nevertheless, pain intensity remained substantial during the immediate postoperative period, particularly after laparotomy and in patients requiring surgical drainage.

The demographic characteristics of our population were comparable to those reported in previous studies. The predominance of male patients and the relatively young mean age were consistent with findings from Chen et al., supporting the comparability of our cohort.

Pain kinetics observed in our study align with the literature describing an early postoperative pain peak followed by gradual reduction under analgesic therapy. Dişçeken et al. similarly reported maximal pain intensity during the early postoperative hours followed by progressive improvement.

Surgical approach strongly influenced postoperative pain. Patients undergoing laparoscopy consistently experienced lower pain scores than those undergoing laparotomy. These findings corroborate previous studies, including those by Ali et al., demonstrating the less invasive and less nociceptive nature of laparoscopic surgery.

Drain placement was also associated with increased postoperative pain intensity at all evaluated time points. Similar findings have been reported by Hwang et al., suggesting that drainage contributes significantly to postoperative discomfort and opioid requirements.

Although our analgesic strategy adhered globally to international recommendations favoring multimodal opioid-sparing analgesia, several limitations were identified. No locoregional anesthesia techniques were routinely implemented despite strong evidence supporting their efficacy in abdominal surgery.

Among available techniques, the transversus abdominis plane (TAP) block provides effective parietal analgesia after lower abdominal surgery and laparoscopy while reducing opioid consumption and facilitating early mobilization. Thoracic epidural analgesia remains the gold standard for major open abdominal surgery by ensuring both visceral and parietal analgesia while improving respiratory function and postoperative recovery.

Psychological factors also play a significant role in postoperative pain perception. Preoperative anxiety, depressive symptoms, and catastrophizing behaviors have all been associated with higher postoperative pain intensity and increased analgesic requirements.

Our study highlights several opportunities for improvement, including broader implementation of locoregional anesthesia, incorporation of patient-controlled analgesia, and optimization of enhanced recovery protocols.

CONCLUSION

Postoperative pain after abdominal surgery remains common and frequently severe during the immediate postoperative period. However, structured multimodal analgesia allows progressive pain reduction during the first 48 hours.

Surgical approach, drain placement, comorbidities, and perioperative management significantly influence postoperative pain intensity. Expanding locoregional anesthesia techniques and reinforcing multimodal opioid-sparing strategies may further improve postoperative recovery and patient outcomes.

REFERENCES

1) Chou R, Gordon DB, de Leon-Casasola OA, et al. Management of postoperative pain: a clinical practice guideline. *J Pain*. 2016;17(2):131-157. DOI: 10.1016/j.jpain.2015.12.008
2) Wick EC, Grant MC, Wu CL. Postoperative multimodal analgesia pain management with nonopioid analgesics and techniques. *JAMA Surg*. 2017;152(7):691-697. DOI: 10.1001/jamasurg.2017.0898
3) Lavand'homme P. Regional anesthesia and postoperative analgesia: benefits and risks. *Curr Opin Anaesthesiol*. 2022;35(5):673-679. DOI: 10.1097/ACO.0000000000001170
4) Memtsoudis SG, Poeran J, Cozowicz C, et al. The impact of peripheral nerve blocks on perioperative outcome. *Anesthesiology*. 2018;128(4):729-745. DOI: 10.1097/ALN.0000000000002139
5) Kehlet H, Joshi GP. Enhanced recovery after surgery: current controversies and concerns. *Anesth Analg*. 2017;125(6):2154-2155. DOI: 10.1213/ANE.0000000000002654