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Case Report

Anesthetic and Analgesic Management Using Intravenous Multimodal Analgesia in an Elderly Diabetic Patient Undergoing Hartmann's Procedure

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ABSTRACT

Elderly diabetic patients undergoing emergency colorectal surgery present significant anesthetic and analgesic challenges. Thoracic epidural analgesia is considered the gold standard for postoperative pain control; however, refusal or contraindications may necessitate alternative techniques. This case describes the use of a WHO pain ladder–guided intravenous multimodal analgesic strategy in a 71-year-old patient undergoing Hartmann's procedure. Stepwise escalation of non-opioid, weak opioid, and strong opioid analgesics allowed effective intraoperative pain control, hemodynamic stability, and minimized postoperative opioid requirements.

Introduction

Hartmann's procedure is frequently performed for obstructive or perforated colorectal pathology and is associated with substantial nociceptive stimulation. Pain management in elderly diabetic patients is especially challenging due to altered drug handling, autonomic dysfunction, and increased perioperative vulnerability [1-2].

Although epidural analgesia provides superior pain control, it may be refused or contraindicated. In such cases, intravenous multimodal analgesia becomes essential [3]. The WHO analgesic ladder—initially developed for cancer pain—offers a structured, stepwise escalation model relying on the principle of beginning with non-opioids, progressing to weak opioids, and reserving strong opioids for severe pain. This simple hierarchy can be adapted to guide intraoperative analgesic planning during major abdominal surgery [3].

Case Report

A 71-year-old male (80 kg) with type 2 diabetes mellitus for 15 years presented with abdominal distension, vomiting, and constipation for three days. Vital signs and systemic examination were stable. Laboratory tests showed mild hyponatremia (Na^+ 132 mEq/L), fasting glucose 115 mg/dL, and HbA1c 6.8%. ECG and echocardiography were normal.

The patient declined epidural insertion; therefore, general anaesthesia with a WHO pain ladder–structured intravenous analgesic plan was selected.

Preoxygenation with 100% oxygen was performed, followed by induction using propofol 120 mg IV, fentanyl 100 µg IV, and vecuronium 7 mg IV. Anesthesia was maintained with sevoflurane 1% in a 50:50 oxygen–air mixture. A structured, stepwise intraoperative analgesic regimen was administered.

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Intraoperative Analgesia Structured by the WHO Pain Ladder

Step 1 – Non-opioids

A baseline multimodal foundation was established early using:

- IV paracetamol 1 g
- IV diclofenac 75 mg (NSAID) administered later in the surgery

These agents reduced background nociception and lowered the opioid requirement throughout the 6-hour surgery. Multimodal non-opioid analgesia is a key component of contemporary perioperative pain management and ERAS pathways [3-4]. Paracetamol remains a recommended first-line analgesic in older adults because of its favourable safety profile [1,5].

Step 2 – Weak Opioids

At 2.5 hours, when visceral traction produced increased nociceptive intensity, IV tramadol 50 mg was administered. This provided moderate analgesia through opioid and monoaminergic mechanisms without causing respiratory depression [6].

Step 3 – Strong Opioids

Fentanyl was reserved for moments of peak stimulation:

- 100 µg IV at induction
- Additional 50 µg IV boluses titrated to hemodynamics

This approach aligned with recommendations for individualized opioid titration during major surgery [3].

Intraoperative Course

Hemodynamics remained stable throughout the 6-hour procedure. Total intraoperative fluids were 1.5 L Ringer's lactate and 500 mL normal saline. Blood glucose was maintained between 110–150 mg/dL. Neuromuscular blockade was reversed using neostigmine 2.5 mg and glycopyrrolate 0.4 mg IV. The patient was extubated smoothly.

Postoperative Course

Pain scores remained ≤2/10 for up to 12 hours postoperatively. Analgesia consisted of:

- Inj. Paracetamol 1 g every 8 hours
- Inj. Diclofenac 75 mg every 12 hours
- Inj. Tramadol 50 mg every 8 hours as required

Recovery was uneventful with no opioid-related adverse effects.

Discussion

Elderly diabetic patients have reduced physiological reserve and altered pharmacokinetics, making balanced analgesia essential [1-2]. When epidural analgesia is not feasible, the WHO analgesic ladder provides a rational structure for escalating intravenous analgesia intraoperatively.

Non-opioids form the foundation of therapy and reduce opioid requirements while providing effective background analgesia. Paracetamol remains a recommended first-line analgesic in older adults because of its favourable safety profile when used appropriately [1,5].

Weak opioids such as tramadol are useful for moderate pain and provide analgesia through both opioid and monoaminergic mechanisms [6]. Strong opioids can then be titrated selectively for periods of intense surgical stimulation, thereby minimising overall opioid exposure while maintaining adequate analgesia [3].

This strategy aligns closely with Enhanced Recovery After Surgery (ERAS) principles, which advocate multimodal, opioid-sparing analgesic regimens to facilitate recovery and reduce postoperative complications [4,7]. Contemporary guidelines for pain management in older adults also support individualized multimodal analgesia, careful dose titration, and minimization of opioid-related adverse effects [1-2].

In the present case, sequential multimodal intravenous analgesia ensured overlapping durations of action, consistent analgesic coverage throughout the prolonged surgical procedure, stable haemodynamics, and excellent postoperative pain control without adverse opioid-related events.

Conclusion

A WHO pain ladder–guided approach to intraoperative intravenous multimodal analgesia offers a structured and rational method for pain management when neuraxial techniques are not feasible. In elderly diabetic patients undergoing major abdominal surgery, this strategy provides stable intraoperative conditions, reduces opioid exposure, and supports enhanced postoperative recovery [3,4,7]. The WHO analgesic ladder can therefore serve as a practical framework for multimodal analgesic planning in selected high-risk surgical patients.

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