

Perioperative pain management in colorectal surgery

Vinay Ratnalikar

Catrin Williams

Abstract

Postoperative pain management has a bearing on postoperative recovery and outcomes. This is particularly so in today's era of enhanced recovery after surgery (ERAS). Use of proven techniques such as central neuraxial blockade, advances in regional block techniques and combination of drugs with newer range of adjuvant analgesics are presented. This article discusses pain management options and practices.

Keywords Adjuvant analgesics; colorectal; intrathecal; regional blocks

Introduction

Surgical pain is commonly referred to as postoperative pain. Although enhanced recovery after surgery (ERAS) is a relatively new term, various components of it have already been in practice for several years. Extensive work by Kehlet formalized the concept and successfully showed the benefits of it. ERAS involves various interventions which help in reducing the endocrine, metabolic and inflammatory surgical stress responses thereby restoring organ functions and enables early mobilization and oral intake in the postoperative period. A thorough preoperative assessment and optimization of co-morbidities is integral to all surgery especially with ERAS. Effective analgesia and optimal fluid administration can have a significant impact on postoperative recovery.

Regional analgesia for open surgery

Traditionally and in the early days of ERAS, thoracic epidural analgesia was considered the 'gold standard' for laparotomy and colorectal procedures. It has been shown to be superior to intravenous opioids in the management of postoperative pain and also in the reduction in the pituitary, adrenocortical and sympathetic stress responses to surgery (Box 1).

However new evidence suggests that epidural analgesia may be harmful in colonic surgery.¹ Significantly high failure rates have been associated with management of epidural analgesia, though it may apparently look effective in the immediate postoperative period. In contrast, intrathecal analgesia carries higher

Benefits of regional anaesthesia compared with systemic opioids

- Lower pain scores
- Longer time to first request for rescue analgesia
- Fewer requests for rescue analgesia and lower total dose needed
- Reduced opioid-related adverse effects
 - Respiratory depression (59%)
 - PONV
 - Ileus
- Reduced overall mortality (30%)
- Earlier discharge home
- Lower unplanned re-admission rates
- Higher patient satisfaction scores

PONV, postoperative nausea and vomiting.

Modified from Fischer B. *Anaesthesia Intensive Care Med* 2003; **10**: 545–548.

Box 1

insertion rates, does not require further care, makes early ambulation possible and reduces work load on nursing staff.²

The MASTER trial (Multicentre Australian Study of Epidural Anaesthesia) compared adverse outcomes for high-risk patients undergoing major abdominal surgery with epidural block or alternative analgesic strategies with general anaesthesia. This study concluded that they are unable to demonstrate any significant effect of epidural analgesia on the overall frequency of complications after major abdominal surgery, except for a modest reduction in the incidence of respiratory failure.³

There are data to suggest that intrathecal analgesia may be effective even in open surgery. In our experience of over 50 cases when intrathecal diamorphine was administered in open surgery, the pain scores were satisfactory and comparable to laparoscopic surgery. Higher pain scores were noted in open surgery where the surgical incision extended up to the xiphoid process of sternum. This postoperative pain in the upper segments of the abdomen can be dealt with direct infiltration of local anaesthetic solution, typically 10–20 ml of 0.5% levobupivacaine on each side, done under direct vision by the operating surgeon.

Analgesia for laparoscopic surgery

Laparoscopic resection of the colon was first reported in 1991. Guidance from the UK National Institute for Health and Clinical Excellence recommended that all patients considered suitable must be offered laparoscopic surgery for the perceived benefits (Box 2).

There are relatively little data regarding the optimum analgesic technique in laparoscopic colorectal surgery but undoubtedly high-quality analgesia is needed to prevent delayed recovery. In laparoscopic surgery, parietal pain is less intense due to smaller incisions but visceral component remains the same and majority of patients require opioids perioperatively. By 24 hours postoperatively, simple oral analgesics are usually sufficient with a combination of paracetamol, non-steroidal anti-inflammatory drugs (NSAIDs) and weak opioids.

Vinay Ratnalikar MBBS MD FRCA is a Consultant Anaesthetist at ABM University Health Board, Singleton Hospital, Swansea, UK. Conflicts of interest: none declared.

Catrin Williams BSc(Hons) MB BCh FRCA is a Specialist Registrar in Anaesthesia at ABM University Health Board, Singleton Hospital, Swansea, UK. Conflicts of interest: none declared.

Benefits of laparoscopic surgery

- Smaller incisions
- Reduced postoperative pain
- Reduced time to first mobilization
- Reduced time to first oral intake
- Shorter recovery time
- Lower incidence of postoperative wound infection
- Reduced perioperative morbidity
- Overall shorter inpatient stay

Modified from Hayden et al. *Cont Educ Anaesthesia Crit Care Pain* 2011; **11**: 177–180.

Box 2

There are several important differences between open and laparoscopic surgery that can affect neuraxial block. The presence of a pneumoperitoneum increases intraoperative cardiopulmonary stresses; therefore the effects of a block may be magnified. Positioning can affect block height and cardio-respiratory physiology, especially extended periods of steep Trendelenberg positioning. Hyperbaric bupivacaine needs at least 20 minutes to fix. Pneumoperitoneum or head-down positioning before the drug is fixed will result in high block. The abdominal incision is often smaller, transverse and below the umbilicus which may affect the decision of which level to insert the block. Shoulder tip pain can be a problem postoperatively and this cannot be covered by a neuraxial block. Hence meticulous attention to removal of any remaining gas in the abdominal cavity should be given. CO₂ being lighter, maintaining head-down tilt at the time of removing the trocars helps.

Non-opioid-based adjuvant analgesia

The desire to avoid opioids has led to the more widespread use of drugs more traditionally used in the management of chronic

neuropathic pain including anticonvulsants (gabapentinoids), N-methyl-D-aspartate (NMDA) receptor antagonists (ketamine/magnesium), membrane stabilizers (lidocaine) and α -2 agonists (clonidine/dexmedetomidine). Current evidence only supports the use of ketamine, the gabapentinoids, α -2 agonists and intravenous lidocaine for perioperative use (Table 1).⁴

Ketamine

Painful stimuli cause glutamate release which activate NMDA receptors causing pain. Ketamine, an NMDA receptor antagonist that non-competitively blocks NMDA receptors at subanaesthetic doses, is already widely used as an adjuvant perioperative analgesic.⁵ It reduces pain intensity by 20–25% and leads to 30–50% less analgesic consumption for up to 48 hours post-operatively.⁶ Major side-effects are uncommon for procedures under general anaesthetic where ketamine is used as an adjuvant agent.⁷

Gabapentinoids

Although the two clinically used gabapentinoids (gabapentin and pregabalin) are currently only licensed for chronic neuropathic pain, epilepsy and anxiety, they are being used more and more as an adjuvant for perioperative analgesia. Gabapentinoids mainly act on the α -2- δ -1 subunit of pre-synaptic calcium channels and inhibit the neuronal calcium influx. This reduces the release of excitatory neurotransmitters and therefore suppresses neuronal excitability. They are thought to contribute to better post-operative pain control, both by enhancing opioid analgesia and preventing opioid tolerance along with anxiolytic and sleep-modulating properties.⁸

Of the two, pregabalin has a greater analgesic potency and a more favourable pharmacokinetic profile as it is more rapidly absorbed, has a more predictable oral bioavailability and is longer acting. Gabapentin has very similar benefits and being an older drug there is more evidence surrounding its use. It has been shown to improve analgesia both at rest and with movement and

Current evidence for use of non-opioid adjuvant agents in perioperative pain

Drug	Doses	Pain intensity	Analgesia/opioid consumption	Side-effects
Ketamine	>30 mg not associated with improved analgesia	Decreased (20–25%)	Decreased (30–35%)	Psychomimetic – hallucinations/nightmares Sedation Nausea and vomiting
Pregabalin	50–600 mg per day in divided doses (average 300 mg)	Decreased but inconsistent	Decreased	Visual disturbance Dizziness
Gabapentin	300–1200 mg 1–2 hours preoperatively	Decreased	Decreased (20–62%)	Dizziness Sedation
IV Lidocaine	No consensus on dose needed	Decreased	Decreased	None but needs caution
Systemic α -2 agonist	Best dose and route of administration to produce maximal benefit largely unknown	Decreased	Decreased	Hypotension bradycardia

Modified from Ramaswamy et al. *Cont Educ Anaesthesia Crit Care Pain* 2013; **13**: 152–157.

Table 1

Download English Version:

<https://daneshyari.com/en/article/3838471>

Download Persian Version:

<https://daneshyari.com/article/3838471>

[Daneshyari.com](https://daneshyari.com)