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## Epidural analgesia in abdominal major surgery: pros, cons, and unresolved issues beyond pain control

### *Analgesia epidural en cirugía abdominal mayor: pros, contras y puntos sin resolver mas allá del control del dolor*

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**Palabras clave:** Analgesia Epidural, Dolor, Morbilidad, Dolor agudo, Imágenes

Epidural analgesia (EPA) is a recognized approach to pain control that is used in approximately 50% to 60% of all abdominal major surgeries around the world. It constitutes an important issue among strategies of multimodal postoperative analgesia, due to its potential to improve rehabilitation, low rate of complications, and high satisfaction reported by patients.<sup>1,2</sup>

Worldwide trends to use epidural catheters at high spinal levels (usually T6-T8) and new delivery systems that provide pain rescue modalities added to classic continuous infusions have the potential to reducing the rates of related adverse events (uncontrolled pain, motor block, and urinary retention).<sup>3</sup> Besides recognized advantages of EPA based on moderate to strong evidence, there are detractors who warn on a potential increase of intestinal leakage, but available information is of low/doubt quality and recent related papers have not found any association.<sup>4,5</sup>

Hypotension remains as a big problem related to EPA and future research must focus on strategies to prevent it. Acute pain management services play a key role to

implementation of standardized protocols of EPA in order to reduce postoperative morbidity and improve quality and safety (Fig. 1).

#### Ethical disclosures

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this study.

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## Epidural Analgesia in Abdominal Major Surgery: Pros. Cons & Unresolved Issues beyond Pain Control

Epidural analgesia (EPA) is calculated to be used in 50-60% of all abdominal major surgeries around the world.

### (Pros) Cardiopulmonary Morbidity

- Respiratory Depression OR 0.61 (95%CI 0.39-0.93)
- Atelectasis OR 0.67% (95%CI 0.48-0.93)
- Pneumonia OR 0.56 (95%CI 0.45-0.70)
- Heart A-V Blockade OR 0.25 (95%CI 0.11-0.57)
- Atrial fibrillation OR 0.63 (95%CI 0.49-0.82)
- Other tachyarrhythmias OR 0.69 (95%CI 0.55-0.87)

### (Pros) Gastrointestinal Morbidity<sup>2</sup>

- Ileus OR 0.43 (95%CI 0.21-0.88)
- PONV OR 0.76 (95%CI 0.58-0.99)
- Dizziness OR 0.42 (95%CI 0.24-0.72)
- Time to first postop. feces 0.67 (95%CI 0.47 to -0.87)

It constitutes an important issue among strategies of multimodal postoperative analgesia, due to its potential to improve rehabilitation, its low rate of complications and high satisfaction reported by patients.

### (Pros) Mortality<sup>1</sup>

- Global Mortality Epidural analgesia (EPA) 3.1% vs. endovenous analgesia (EVA) 4.9%; [OR 0.6 (95%CI 0.39-0.93)].
- Vascular Surgery Mortality EPA 2.5% vs EVA 5.3% [OR 0.39 (95%CI 0.17-0.88)].

### (Cons) Cardiovascular Morbidity

- Hypotension OR 4.92 (95%CI 3.11-7.78)

EPA is recommended to be assessed and managed by an institutional acute pain management service in order to assure prompt adjusting and treatment of morbid events.

A reduction of rate infusion, local anesthetic concentration or to make the patient lie on the side with the blocked leg up, must be considered when unilateral motor block is detected.

### (Cons) Other Morbidities

- Pruritus OR 1.47 IC95% (1.15-1.88)
- Urinary Retention OR 1.60 IC95% (1.02-2.51)

#### Unresolved but important\*

- Length of hospital stay OR 0.8 (95%CI 0.65-0.96)
- Hospital readmission OR 1.23 IC95% (0.56-2.7)
- Anastomotic leakage OR 1.36 IC95% (0.72-2.57)

\*low quality or insufficient evidence

### Most Frequent Regimens (but not limited to...)

Local Anesthetic	With or Without Opioid (mcg/ml)	Continuous Rate (ml/hr)	Rescue by Patient (ml)
Bupivacaine 0.1-0.125% Ropivacaine 0.1%	Fentanyl 2-5 Hydromorphone 5-10	4-7	4-5

This infographic is dedicated to epidural analgesia (EPA), a classic but permanently renewed strategy against postoperative pain after major abdominal surgery. Worldwide trends to use epidural catheters at high spinal levels (usually T6-T8) and new delivery systems providing pain rescue modalities added to classic continuous infusions have the potential to reduce the rates of related adverse events (uncontrolled pain, motor block and urinary retention).<sup>3</sup>

Besides recognized advantages of EPA based on moderate to strong evidence, there are detractors who warn on a potential increase of intestinal leakage but available information is of low/doubt quality and recent related papers have not found any association.<sup>4,5</sup> Hypotension remains as a big problem related to EPA and future research must focus on strategies to prevent it. Acute pain management services play a key role to implementation of standardized protocols to reduce postoperative morbidity and improve quality and safety.

Figure 1. Impact of epidural analgesia for major surgery on perioperative outcomes and recommended puncture levels for different procedures. Source: Authors.

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