Should having an elective laparotomy mean having an epidural for postoperative pain relief?

Outside of obstetric anaesthesia, epidurals are usually used to provide continuous, postoperative pain relief for patients undergoing major abdominal or gynaecological surgery. Some consider them essential especially when using enhanced recovery protocols for laparoscopic surgical techniques.

Epidural analgesia is thought to be the gold standard. Regardless of agents used, level of insertion, type and time of pain assessment, epidurals provide better postoperative pain relief than intravenous opioids (Block et al, 2003). A good working epidural can also obtund the neurohumeral stress response, reduce cardiorespiratory complications, and reduce the time to return of gastrointestinal function (Liu et al, 1995). Rodgers et al (2000) conducted a systematic review of 141 randomized controlled trials looking at the effects of neuroaxial blockade on outcome. They found a 30% reduction in mortality and a reduction in pulmonary morbidity and thromboembolism. But is an epidural the gold standard for pain relief?

Epidurals have well-known side effects including hypotension as a result of sympathetic blockade and vasoparesis, postdural puncture headache, epidural haematoma, nerve damage and epidural abscess. The exact incidence of these complications is unknown, and although they are not necessarily common they do carry significant morbidity.

The Australian MASTER (Rigg et al, 2002) trial looking at outcome after epidural is the largest multicentre trial to date. This attempted to see if 72 hours of epidural improved outcomes after abdominal surgery. Looking at 915 patients in 26 centres, they found no overall difference in outcome comparing epidural with control.

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Only respiratory failure was significantly lower in the epidural group (agreeing with Rodgers et al (2000)) but it still required 15 patients to be treated to prevent one episode of respiratory failure. Despite being undertaken by enthusiasts there was a high failure rate of epidural analgesia with 42.5% not working or having to be replaced. One problem with this trial was that it was underpowered, as the authors confirmed, but this suggests that if there is any benefit from epidurals it is low.

Both the MASTER trial and a meta-analysis by Block et al (2003) found a 1 cm improvement in a visual analogue score with epidurals compared to opiates. Again one could argue about the degree of clinical benefit, when in both studies the pain scores, overall, were low.

Epidurals affect sympathetic outflow, but the exact effect on splanchnic circulation is unknown. Hypotension and poor perfusion could have a negative effect on any gastrointestinal anastomosis. Gould et al (2002) looked at the effect of thoracic epidural anaesthesia on colonic blood flow and showed that once the epidural was established then there was a large reduction in flow. Fluid was given to restore the cardiac output and a vasopressor to restore mean arterial pressure. Only after filling and vasopressor did the colonic blood flow return to pre-epidural levels. Therefore giving only fluids may not be enough, and in patients with critical gastrointestinal perfusion this may be detrimental. These patients should perhaps be managed in higher dependency areas where their intravascular filling status can be assessed and vasopressors can be given if required.

The National Audit Project by the Royal College of Anaesthetists has looked at the major complications of central neural blockade (Cook et al, 2009). They found that perioperative epidurals were associated with the highest incidence of complications. The risk of permanent injury from perioperative epidural from an annual denominator of over 700 000 was between 8.2 and 17.4 per 100 000, compared with obstetric epidurals which had a risk of 0.6 per 100 000. As the authors point out caution should be used in over-interpretation of this data between subgroups with different risk benefit analysis. For example these patients may be older with more co-morbidities undergoing major surgery compared to the generally younger and fitter obstetric patients. But are these not the patients that perioperative epidurals are meant to help?

Conclusions

The routine use of epidural analgesia for postoperative laparotomy patients should be carefully assessed on an individual basis. There are some patient sub-groups who are more likely to benefit from postoperative epidural analgesia than others: these are likely to include those with chronic lung disease and respiratory insufficiency as well as the morbidly obese. Until further research is done, including looking at the effect of epidurals on different patient subtypes, the decision about whether or not to place an epidural for postoperative pain relief following laparotomy will often come down to personal choice. **BJHM**

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