Perioperative management of patients taking treatment for chronic pain

Conor Farrell,1 Paul McConaghy2

A large European survey conducted in 2003 found that 19% of adults report living with chronic pain.1 The British Pain Society defines chronic pain as pain that is continuous for more than 12 weeks or (if the pain followed trauma or surgery) is longer than the time the healing would have been expected to take.2 Chronic pain, however, can be idiopathic, existing as its own disease entity, and does not need to have followed a specific traumatic or surgical event.

When patients with chronic pain are admitted to hospital, staff may be unfamiliar with the underlying condition and its management, potentially leading to a failure of staff to appreciate the need for continuation of regular analgesia as well as supplementation for acute postoperative pain. The presence of preoperative pain and high anxiety have been validated as predictors for early postoperative severe pain.3 Therefore, an inadequately managed patient with chronic pain risks experiencing severe postoperative pain. Providing effective analgesia is complicated by omission of regular medications owing to preoperative fasting,4 potentially leading to worsening of symptoms or development of withdrawal syndromes, while the prescription of additional medications perioperatively can increase the likelihood of side effects and drug interactions.5 There are physiological and psychological consequences to unresolved acute pain, which can be associated with complications and impaired healing, and there is evidence that an improved pain score is one factor in improved outcomes after fast track surgery.6

We discuss the management of the drug and interventional treatments for chronic pain syndromes that the non-specialist may encounter in the perioperative hospital setting.

What should a preoperative assessment cover?

A preoperative assessment is an opportunity to evaluate the patient and develop a perioperative management plan (Box 1). The fundamentals are the same for any preoperative assessment, but some areas specific to the patient with chronic pain need a more focused approach. In this article we discuss the management of the following patient groups who may attend a preoperative assessment clinic:

- Patients taking oral ketamine or methadone
- Patients with a history of opioid addiction.
- Patients anxious about the postoperative control of their acute surgical and background chronic pain
- Patients with a history of opioid addiction.

To understand a person’s chronic pain it is necessary to take a history of the pain, in particular recording the patient’s current medications used for pain control and the daily intake of opioids or other drugs used. This questioning enables assessment of the patient’s potential tolerance to opioids and allows drug interactions or side effects to be anticipated.1 Identify exacerbating and/or relieving factors for the pain and the use of adjunctive therapies, so that they can be avoided or used perioperatively.

SUMMARY POINTS

- Communicate with, and involve the patient in, perioperative management decisions
- For opioids, continue baseline dose via appropriate route with additional supplementation for the acute event carefully titrated to the pain
- For antidepressants, continue low dose tricyclic antidepressants, selective serotonin reuptake inhibitors, and selective noradrenaline reuptake inhibitors; be aware of potential for serotonin syndrome
- For anticonvulsants, continue perioperatively; if stopping, taper the dose slowly to avoid withdrawal
- If patient has a spinal cord stimulator, turn this off perioperatively
- If patient has an intrathecal drug delivery system, continue perioperatively and supplement patient with additional analgesia for the acute event enterally and/or parenterally; be aware of potentially serious adverse effects of abrupt cessation of intrathecal medications

Box 1 | Treatments for managing patients with chronic pain (only those that may be encountered perioperatively are included)

<table>
<thead>
<tr>
<th>Drugs</th>
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<tbody>
<tr>
<td>Analgesics—paracetamol, non-steroidal anti-inflammatory drugs, opioids, methadone, ketamine, tramadol</td>
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<tr>
<td>Antidepressants—tricyclics, selective serotonin reuptake inhibitors, and selective noradrenaline reuptake inhibitors</td>
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<tr>
<td>Anticonvulsants—gabapentin, pregabalin, carbamazepine, oxcarbazepine, sodium valproate, lamotrigine, phenytoin</td>
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<tr>
<td>Others—baclofen, cannabinoids, lidocaine 5% patch, capsaicin cream</td>
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<tr>
<th>Interventional techniques</th>
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<tbody>
<tr>
<td>Intrathecal drug delivery system</td>
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<tr>
<td>Spinal cord stimulator</td>
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<table>
<thead>
<tr>
<th>Other treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiotherapy</td>
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<tr>
<td>Psychology (cognitive behaviour therapy)</td>
</tr>
<tr>
<td>TENS (transcutaneous electrical nerve stimulation)</td>
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<tr>
<td>Acupuncture</td>
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CME

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Box 2 | Strong opioids (with route of administration) available and used in patients with chronic pain in the United Kingdom.*

- Oral
  - Morphine—solutions; tablets; modified 12 hour release; modified 24 hour release
  - Oxycodone—also modified release; modified release with naloxone
  - Tramadol—also 12 and 24 hour modified release
  - Fentanyl—tablets; lozenges
  - Methadone—liquid and tablets
  - Ketamine

- Transdermal
  - Fentanyl patches
  - Buprenorphine

- Sublingual
  - Fentanyl
  - Buprenorphine

- Intranasal
  - Fentanyl

- Intrathecal (via implanted pump reservoir)
  - Morphine
  - Fentanyl
  - Hydromorphone
  - Diamorphine (usually in combination with local anaesthetic)

*Intravenous, intramuscular, and subcutaneous routes of opioid analgesia are excluded as it is not common practice to prescribe these to patients with chronic pain (British Pain Society’s good practice guidelines)

It is important to involve patients in management decisions. More than 50% of patients with chronic pain experience anxiety problems, which may be alleviated by the reassurance that decisions will be made with their consent. Educating patients about the analgesic techniques to be used enables them to develop a realistic expectation of perioperative pain control; such explanations are best communicated at a preoperative assessment clinic.

How do we manage patients with chronic pain who are taking regular opioids?

A large survey showed that 12% of patients with chronic pain in the United Kingdom are prescribed strong opioids (box 2). Patients taking regular opioids need their usual total daily opioid dose for controlling their ongoing chronic pain and avoid withdrawal, with additional analgesia available to manage their acute postoperative pain. Little scientific evidence suggests a definitive technique to achieve this, but the principle is to cause as little disruption to the patient’s usual daily analgesic regimen.

A patient’s routine opioid regimen will not provide sufficient analgesia for acute postoperative pain. In such patients, a doubling or quadrupling of the morphine dose appropriate for an opioid naive patient having the same procedure may be needed. Although potential complications, such as sedation and respiratory depression, are indeed dose dependent, long term users of opioids are often tolerant to such effects.

Recent reviews show that patients using transdermal pain patches (such as fentanyl or buprenorphine) can continue with these throughout the perioperative period. However, opioid patches are not licensed for acute postoperative pain and should not be titrated in an effort to achieve this. Pharmacokinetic models have shown that drug absorption increases with a rise in skin temperature, so monitor patients with fever for side effects from opioids.

Patients taking long acting oral opioids can continue taking them up to and including the morning of surgery, restarting them as soon as possible after surgery. Certain circumstances, commonly perioperative fasting, necessitate prolonged cessation of patients’ usual oral medication, with opioid medication having to be continued parenterally. This can be complex but is manageable using dose conversion charts: the patient’s regular opioid medications are converted into a single total daily oral morphine equivalent dose (figure). This equivalent dose can then be converted to a daily parenteral dose. Equivalent doses of strong opioids cannot be exact and are therefore only a guide; because of cross tolerance, published recommendations suggest starting at 50% of the equianalgesic dose when moving from one opioid to another.

Several approaches are available for replacing the daily morphine requirement, such as a background parenteral infusion for the baseline requirement of the patient, equating to the daily parenteral dose split over 24 hours. If additional opioid analgesia is needed to manage the acute postoperative pain use a patient controlled analgesia pump, which allows the patient greater control over their own pain management and reduces negative psychological effects such as anxiety and improves patient satisfaction.

The conversion back to oral long acting opioids can be complicated as it varies among individuals and depends on the opioid preparation and on whether the surgery will have influenced the patient’s level of chronic pain. Re-establishing the correct dose is best achieved in consultation with the acute pain service.
Renal dysfunction

Gabapentin and pregabalin are excreted unchanged in the urine. For selective noradrenaline reuptake inhibitors:

Hepatic dysfunction

Most are renally excreted.

Drug conversion chart. The potency of parenteral morphine is three times that of oral morphine. Therefore, after conversion to the daily equivalent of oral morphine, further division of the dose is needed to calculate the daily equivalent parenteral dose. Adapted from Lewis et al.

<table>
<thead>
<tr>
<th>Drug group</th>
<th>Renal dysfunction</th>
<th>Hepatic dysfunction</th>
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</thead>
<tbody>
<tr>
<td>Non-steroidal anti-inflammatory drugs</td>
<td>These are nephrotoxic—avoid if possible Use lowest effective dose and monitor renal function</td>
<td>Increased risk of gastrointestinal bleeding and fluid retention Avoid if possible Use lowest effective dose</td>
</tr>
<tr>
<td>Opioids</td>
<td>Most are renally excreted. Can lead to increased efficacy and prolonged effect Those that are metabolised hepatically to inactive metabolites (fentanyl, alfentanil) are safer Reduce-dose in those with moderate or severe renal dysfunction Avoid oxycodone if estimated glomerular filtration rate is &lt;10 mL/min/1.73 m²</td>
<td>Opioids are metabolised hepatically and may precipitate coma in patients with hepatic dysfunction; avoid if possible If needed; reduce doses and titrate to effect Monitor for sedation and respiratory depression</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>For selective noradrenaline reuptake inhibitors: If estimated glomerular filtration rate is &lt;30 mL/min/1.73 m², reduce dose by 50%. If severe renal impairment, avoid if possible</td>
<td>For tricyclic antidepressants: avoid in severe dysfunction owing to sedative effect For selective serotonin reuptake inhibitors: reduce dose or avoid in severe disease For selective noradrenaline reuptake inhibitors: reduce dose in moderate disease, avoid in severe disease</td>
</tr>
<tr>
<td>Anticonvulsants</td>
<td>Gabapentin and pregabalin are excreted unchanged in the urine Adjust dose according to renal function (specific dose adjustments available in BNPS) Gabapentin and sodium valproate can be monitored via serum concentration</td>
<td>Phenytion levels should be monitored to avoid toxicity. Sodium valproate can induce liver impairment, avoid in severe liver dysfunction Carbamazepine should be withdrawn immediately in cases of acute dysfunction</td>
</tr>
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</table>

What are the implications of a spinal cord stimulator?

With a spinal cord stimulator, the spinal cord is stimulated by an implanted epidural electrode, powered by a pulse generator and most often implanted into the lower abdomen or upper buttock. Patients can turn the device on and off through a hand held programmer, and current opinion suggests the device should be turned off perioperatively and remain off until the patient is fully conscious, has returned to the ward, and when their acute postoperative pain has stabilised.

Although the spinal cord stimulator is turned off perioperatively, it is essential the anaesthetist and surgeon are aware of its presence, with the position checked on plain radiography and marked preoperatively. The device may interfere with the surgical field, and case reports exist of persistent neurological damage and even death caused by heating of implanted electrodes after the use of diathermy. Similarly, magnetic resonance imaging should be used with caution and only if there is no alternative as it can cause heating, malfunction and dislodgement of the electrodes. Spinal cord stimulators are indicated for management of non-malignant pain and may remain in situ for many years. If considering removal of a stimulator to facilitate surgery, discuss first with the patient to obtain their consent.

Postoperatively, the pain team can arrange for the device to be interrogated to assess for normal functioning. Antibiotic prophylaxis is not routinely needed.
What are the implications of intrathecal drug delivery systems?

Intrathecal drug delivery systems are used for managing patients with malignant pain, spasticity, and chronic non-malignant pain. The system involves the implantation of a subarachnoid catheter, attached to a subcutaneously implanted reservoir pump. This allows the continuous infusion of several medications into the intrathecal space, including opioids, local anaesthetics, and baclofen.

Advice about the anaesthetist and surgeon being informed and the device being interrogated postoperatively is similar to that for a spinal cord stimulator. And as with a spinal cord stimulator, magnetic resonance imaging should be used with caution and only if there is no alternative and antibiotic prophylaxis is not routinely needed.

The intrathecal dose is not sufficient, and nor can it be adjusted, to treat the acute postoperative pain. Current advice, based on clinical experience and a published case series, is that the intrathecal drug delivery dosage should not be altered but rather used as a background baseline infusion while standard supplemental multimodal medications are prescribed as necessary. Avoidance of withdrawal is critical in the case of a baclofen infusion, as abrupt cessation can be life threatening.

Special considerations

Owing to pharmacokinetic changes, the perioperative development of renal or liver impairment may mean specific drug groups need dose modification and monitoring. The table includes manufacturers’ and published drug specific recommendations.

Conclusion

Many of the 19% of adults in Europe who have chronic pain will need surgery at some point. Although our understanding of pain syndromes has increased, so too has the range of drug and interventional techniques available for treating them, making the peripartum management of patients with chronic pain more challenging. The main principles of good peripartum management include the provision of pain control and avoidance of withdrawal symptoms, while being aware of the risk of side effects and drug interactions.

Several strategies can achieve these goals, with each tailored to the needs of the individual patient.

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