

Reducing opioid use in patients before and after surgery

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Many patients who present for surgery and are already taking opioids are at increased risk of adverse effects, including difficulties in weaning postoperatively. This article outlines how to manage opioid use in patients before and after surgery and how to successfully wean them off their opioids.

'To get the best result from your upcoming joint replacement, let's talk about how you can prepare for it by boosting your strength and fitness, slowly weaning your oxycodone, and seeing a psychologist about the anxiety that has been grumbling away for a while now.'

Variations on this preoperative conversation may be the place to start when trying to reduce postoperative opioid use. This article outlines how to manage opioid use in patients before and after surgery and how to successfully wean them off their opioids. Useful strategies to reduce postoperative opioid use are discussed.

Avoid or reduce opioids before surgery

There is now compelling evidence that patients who present for many types of surgery and are already taking opioids are at increased risk of a number of adverse effects during and after surgery.¹⁻⁶ Patients already taking opioids who present for surgery:

- need higher doses of opioids during and after their hospital stay
- have more difficulty weaning off opioids after surgery

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Key points

- Opioid use is common in patients waiting for surgery but does not considerably improve pain or function and can lead to higher opioid doses and difficulties with opioid weaning after surgery.
- Patients with anxiety and depression are more likely to use opioids before surgery and experience issues after surgery; identification and management of these conditions can help pain management.
- It is important that GPs identify any shift from acute pain to chronic noncancer pain after surgery and reassess analgesic strategies, including discussing risks, benefits, expectations, treatment goals and triggers for weaning.
- Hospital opioid stewardship programs that match prescribing at discharge to actual usage of opioids in the previous one to two days do not reduce patient satisfaction with analgesia or increase GP refill prescriptions.
- Opioid weaning is more successful when initiated by the patient, and patients should be educated on the benefits of weaning before major surgery.
- For patients taking high-dose opioids, supervised opioid agonist therapy with buprenorphine can improve pain and quality of life.

- experience poorer pain control, despite the higher opioid doses
- have a worse surgical outcome
- are at higher risk of deep vein thrombosis and infection
- have longer hospital stays and higher reoperation rates
- require more opioid prescription refills in the community.

To maximise the success of surgery and make the task of post-operative opioid weaning easier for the patient, clinicians need to change their preoperative management by recommending patients optimise muscle strength and iron stores, encouraging smoking cessation, minimising the prescription of opioid analgesics and addressing patient anxiety. These are the most difficult outcomes to achieve, yet they are also the interventions known to improve the postoperative outcome for patients.⁷

Nevertheless, opioid use is common in patients presenting for surgery. Our audit of patients presenting for total knee arthroplasty in the public hospitals of the Hunter New England area in regional NSW found that 37% of 216 patients were taking opioids daily (unpublished data). It might therefore be presumed that the benefits of medium- to long-term opioid use for conditions such as osteoarthritis or comorbid back pain must include significant improvements in pain and function to outweigh the excess perioperative harms and poorer surgical outcomes. However, opioid use for arthritis consistently show benefits well under the minimally important difference of 1 point on the 10-point Brief Pain Inventory interference scale for pain, physical function and sleep quality, and a significant excess of side effects.⁸ Studies with relatively longer follow-up periods report even less relief.⁹ Reviews show that in patients with chronic noncancer pain, opioids are not superior to alternatives such as tricyclic antidepressants and anti-inflammatories, but may be more effective than anticonvulsants, which have even lower efficacy.⁹

■ Practice point

Opioid analgesia in the preoperative period has poor efficacy and more side effects compared with most alternatives, and is associated with more pain and complications in the postoperative period, poor surgical outcomes and difficulty weaning opioids postoperatively.

Manage anxiety and depression

Postsurgical pain follows a fairly predictable trajectory for most patients, with a decrease in severity over time, even when initial pain is severe.¹⁰ Although opioid-sparing techniques, such as local anaesthetic infusions and simple analgesics are used, the pain is usually opioid responsive. Immediate release, as-required opioids are adequate for significant breakthrough pain, with rapidly decreasing dose requirements. A subset of patients follow a different trajectory; pain remains at the same levels or increases, distress increases and increasing opioid doses may cause increased side effects without reduction in pain or even with hyperalgesia.

Patient factors commonly associated with this second trajectory

include anxiety and depression, pre-existing pain in multiple body sites, large functional limitations related to pain, and pre-existing opioid use. These are the patients in whom other strategies besides simply increasing opioid dose should be more actively pursued, not just because of opioid-related side effects but because the pain may not be particularly opioid-responsive.

The effect of these patient factors can be substantial. For example, patients with anxiety or depression who underwent a total knee replacement had a 2.5 times higher incidence of opioid prescription refills after hospital discharge than those without anxiety or depression.¹¹ This effect is not limited to the postoperative period. Multiple studies have demonstrated that patients with depression and anxiety are more likely to seek medical attention for pain, and to be prescribed opioids at higher doses and for longer durations.^{12,13} Therefore, patients with anxiety and depression are more likely to present for surgery already taking opioid medications and at higher doses, and to then use more opioid medications postoperatively.

■ Practice point

Pre-existing anxiety and depression act throughout the perioperative period to alter the trajectory of pain and opioid use, and need to be identified and adequately managed when addressing pain. Treating distress with opioids increases risk, particularly in the presence of polypharmacy.

Identify any shift to chronic postsurgical pain

About 10% of patients who have undergone surgery experience persistent pain that is severe enough to interfere with their lives. Other patients have continuation or recurrence of their preoperative pain complaint, particularly after back surgery. The same factors that predispose to the second trajectory in acute postsurgical pain also predispose to the development of chronic postsurgical pain or ‘failed back surgery syndrome’ in patients who have had back surgery. These patients experience ongoing, and sometimes increasing, pain and distress; however, the strategies used in the inpatient immediate postoperative period may no longer be appropriate. This is the time when medications need to be reassessed for their risk/benefit ratio for long-term use with reference to patient comorbidities and preferences.

A difficulty with opioids and persistent postsurgical pain is that the patient often presents with a failure to wean off short-term-use opioids. Initiation of opioids has already occurred and there can be a drift from short-term to longer-term opioids without a definitive discussion about potential risks, expectations for duration of treatment, defining what ‘successful opioid analgesia’ looks like, and under what circumstances the treatment should be weaned and ceased. Expectation management is therefore crucial in ensuring that opioids are used optimally and patients can be successfully weaned after surgery.

Acute postsurgical pain is a different process to chronic noncancer pain. Acute pain is associated with the nociceptive regions of the brain whereas chronic noncancer pain is associated with activity predominantly in affective, emotional areas of the brain.¹⁴ Sometimes clinicians may see patients with an ongoing nociceptive focus; for example, in patients with an external fixation device in place for months after a fractured long bone. In such cases, medical management may be a slightly modified continuation of acute postoperative analgesia. The development of chronic postsurgical pain or chronic back pain is very different, and is usually accompanied by changes in sleep, mood and life enjoyment, and requires a shift in analgesic approach.¹⁵

Activation of brain circuits, observable with functional MRI, linked to affective behaviour such as reward and emotion (corticolimbic circuitry) can account for 60% of the variance in the development of chronic pain and is the primary indicator of who will progress from acute to chronic back pain.¹⁶ Opioids are active in the affective brain regions and may produce an increased feeling of reward in the presence of chronic pain that can drive ongoing use without resolving the pain.¹⁷

■ Practice point

The neural circuitry involved in chronic postsurgical pain or 'failed back surgery syndrome' differs from that in uncomplicated acute pain, and treatment should recognise its strong affective component. Identification of a shift from acute pain to chronic noncancer pain should prompt complete reassessment of analgesic strategies, including comprehensive discussion of the risks and benefits of continued opioid use, expectations, treatment goals and triggers for opioid de-escalation or weaning.

Implement hospital opioid stewardship programs

Stewardship programs have recently been developed within hospitals to improve opioid prescribing at the point of discharge.¹⁸ The aims of these programs are to match prescribing at discharge to actual usage of opioids in the last one to two days before discharge, ask the patient how much they think they will need, and reduce the use of slow release opioids for acute pain.¹⁹

The link between supply and consumption of opioids is stronger than the link between pain and consumption.²⁰ Reducing the amount of opioid supplied to patients at discharge does not have adverse effects on patient satisfaction, pain scores, or prescription refills from the GP.²¹⁻²³ This is especially important in areas where GP access is difficult for patients. Hospital clinicians have been prescribing opioids far in excess of that required for adequate analgesia after discharge.^{18,24} This overprescribing is associated with increased opioid consumption and increased side effects without improved analgesic or patient satisfaction outcomes.²³ It also results in a large supply of opioids at home that may be used inappropriately by the patient or their relatives for minor pain

complaints, or diverted for misuse. Discussion of disposal of unused opioids should accompany any opioid prescription, with the recommendation of returning unused medication to a pharmacy.

■ Practice point

Opioid stewardship programs in hospitals designed to reduce use of slow-release opioids and quantities of opioids prescribed at discharge do not increase the need for prescription refills from GPs or decrease patient satisfaction with analgesia. The link between opioid supply and consumption is greater than the link between pain and consumption. Appropriate disposal of unused opioid should be reinforced.

Reduce opioids after surgery

For acute pain after surgery, opioids should be prescribed as part of a multimodal regimen, at the lowest effective dose, as immediate-release, and usually for three to seven days only.²⁵ Patients who take opioids as needed less than once per day do not need a formal taper and can be immediately ceased.²⁶ The longer the patient has been taking opioids, the longer the reduction process must be.²⁷

The corollary of poor opioid efficacy for chronic pain is that opioid cessation can usually be achieved without pain exacerbation.²⁸ In fact, most people report improved function with unchanged or improved pain.^{25,29} This is important information for patients who may have developed physiological dependence and will have withdrawal-associated increases in pain if weaning occurs too quickly.

Weaning patients off medium- and long-term opioids can be challenging. Strategies that can help successful weaning are summarised in the Box.

The aim during opioid weaning should be manageable pain and a return of function. Weaning should be actively discussed with patients when oral morphine equivalents exceed 60 to 90 mg per day, as the side effects start to increase substantially above these levels. An opioid dose conversion calculator is available free from the Australian and New Zealand College of Anaesthetists Faculty of Pain Management (http://fpm.anzca.edu.au/documents/opioid_calculator_app.pdf).³⁰

Patients need to be willing and ready to commence weaning off their opioids. Mandatory opioid weaning is associated with increased dropout rates, and in patients with longer-term use or complicating factors, rapid cessation may lead to potentially serious withdrawal and uncontrolled pain.^{25-28,31} The best results occur when weaning is patient-initiated as a result of education. For example, there is early evidence that if opioids are slowly weaned before joint replacement surgery by at least 50%, the analgesic and functional result of surgery is close to the result achieved in patients who go into surgery opioid naïve and significantly better than the result achieved in those who are not weaned.³² This information may help a patient

Strategies to help wean medium- to long-term opioids

- Aim for manageable pain and a return of function
- Actively discuss weaning with patients when oral morphine equivalents exceed 60 to 90 mg per day (a dose conversion calculator is available at http://fpm.anzca.edu.au/documents/opioid_calculator_app.pdf)
- Educate patients about the benefits of opioid weaning to support patient initiation of weaning
- Involve family members or other support systems as appropriate
- For patients taking high-dose opioids, consider a shift to a structured opioid agonist therapy (OAT) program, which can improve pain and quality of life
- Consider opioid rotation to initiate the dose reduction process
- Accompany weaning with treatment of anxiety, depression or other psychiatric disorders
- In patients with no history of mental health issues, consider psychological intervention to help minimise distress and provide behavioural pain management skills
- Recommend slow, graded increases in physical activity, which can help prevent the development of chronic pain and result in lower opioid doses
- In general, wean by decreasing the opioid dose by 10% of the original dose each week for patients with medium-term opioid use. Weaning can be done more slowly for long-term use
- Consider pausing dose reduction at times, especially if the patient experiences withdrawal or a temporary increase in pain; this is preferable to intermittently increasing the dose

avoid or wean from preoperative opioids to prioritise getting the best result from joint replacement surgery.

A general guide to weaning is to decrease the opioid dose by 10% of the original dose each week for medium-term opioid use.²⁵ This can be done more slowly with long-term use. A pause in reduction at times can be helpful, especially if withdrawal or a temporary increase in pain is experienced. It is better to slow the taper or plateau at a certain dose than to reverse and increase the dose intermittently.²⁷

Weaning should be accompanied by treatment for anxiety, depression or other psychiatric disorders. In patients using medication for depression, opioid tapering (as with smoking cessation) is more successful with adherence to antidepressant medication.³³ Even if there is no history of mental health issues, psychological intervention can be useful when developing a management plan, to help minimise distress and support cessation by providing behavioural pain management skills.

Opioid rotation can be a useful way to initiate the reduction process and slow, graded increases in physical activity can help prevent the development of chronic pain and lower opioid doses.^{34,35} Involving family members or other support systems as appropriate is also important to successful weaning.²⁷

For patients taking high dose opioids, the shift to a structured opioid agonist therapy program with buprenorphine improves pain and quality of life.³⁶ Opioid agonist therapy programs have been difficult to implement in the past because of perceived stigma, the logistics around frequent collection of buprenorphine and a lack of prescribers, especially in rural and regional areas. The development of injectable depot buprenorphine, a partial opioid receptor agonist approved for opioid dependence, may be a significant step forward in this area. A long-acting injectable depot formulation is PBS funded and is suitable once a patient is stabilised on a sublingual buprenorphine formulation, so this stabilisation needs to be the first step. Clinical guidelines are available on the NSW Health website and should be read alongside the *NSW Clinical Guidelines: Treatment of Opioid Dependence* (www.health.nsw.gov.au/aod/Pages/depot-buprenorphine.aspx).

Practice point

Opioid weaning is more successful if patient-initiated, and patients should be educated on the benefits of weaning before major surgery. Supervised opioid agonist therapy (OAT) with buprenorphine results in reduced pain and improved function in patients with chronic pain taking high-dose opioids. Buprenorphine depot formulations can potentially improve access to OAT for patients with chronic pain.

Conclusion

Although common, opioid use in the preoperative period before surgery does not considerably improve pain or function and can have negative postsurgical outcomes for patients, including the need for higher doses and problems in weaning. Patients with anxiety and depression are more likely to use opioids before surgery and experience issues weaning off opioids after surgery. It is important that GPs identify a shift from acute pain to chronic noncancer pain after surgery and reassess analgesic strategies accordingly. Weaning patients from medium- and long-term opioid use after surgery is most successful when the weaning is patient-initiated. It is therefore important that GPs carefully manage opioid use and educate patients on the risks and appropriate use of opioids before and after surgery. **PMT**

References

A list of references is included in the online version of this article (www.painmanagementtoday.com.au).

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