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## Surgery and opioids: some cracks in an enduring romance

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**Keywords:** analgesia; opioid crisis; opioid stewardship; pain; perioperative; postoperative pain

*One of the first duties of the physician is to educate the masses not to take medicine.*

Sir William Osler

We offer this commentary on the recent 2020 report and recommendations on the use of perioperative opioids by the Faculty of Pain Medicine, Royal College of Anaesthetists, done in collaboration with the Royal College of General Practitioners, Royal College of Surgeons, England, British Pain Society, Royal College of Nursing, and Royal Pharmaceutical Society. This report has been endorsed by the Centre for Perioperative Care, Royal College of Anaesthetists,<sup>1</sup> and was finalised after a public consultation exercise.

Opioids have been used successfully for centuries to alleviate the pain of surgery. Indeed, opioids provide effective analgesia for surgical pain and are an essential component of perioperative multimodal analgesia regimens. However, some cracks have developed in the enduring relationship between opioids and postsurgical pain relief that need urgent redressal. Inappropriate opioid prescribing can lead to misuse, overdose, and diversion of opioid medications.<sup>2,3</sup> Recently, there have been significant concerns within healthcare and political groups relating to inappropriate prescription and misuse of prescription opioids, especially in the USA. The White House commissioned report on the opioid crisis in 2017 highlighted that 175 lives were lost every day (64 000 annually) in the USA after opioid misuse (both prescription misuse and illicit use).<sup>4</sup>

Prescription opioids have contributed to the mortality from opioid misuse. A study from Ontario, Canada that investigated 2833 opioid-related deaths over a 4-yr period noted that half of all opioid-related deaths involved prescription opioids (both dispensed and diverted).<sup>5</sup> This draws attention to the supply side dynamics of the opioid demand–supply equation where excess supply/availability fuels use. An overview of Cochrane reviews on the adverse effects of long-term opioid use in pain found that ‘there was a significantly increased risk of experiencing any adverse event with chronic opioid use compared to placebo (risk ratio (RR) 1.42, 95% confidence interval (CI) 1.22 to 1.66) as well as with opioids compared to a non-opioid active pharmacological comparator, with a similar risk ratio (RR 1.21, 95% CI 1.10 to 1.33). There was also a significantly increased risk of experiencing a serious adverse event with opioids compared to placebo (RR 2.75, 95% CI 2.06 to 3.67)’.<sup>6</sup>

In England, opioid prescriptions increased by 34% between 1998 and 2016 (from 568 per 1000 patients to 761 per 1000 patients).<sup>7</sup> In Scotland, the number of opioid prescriptions doubled between 2003 and 2012.<sup>8</sup> This prompted the Chief Medical Officer of England to issue a warning to promote evidence-based, judicious use of opioids.<sup>9</sup> WHO has called the opioid-use disorder an epidemic, and efforts are underway to avoid globalisation of the opioid epidemic and reduce opioid-related mortality.<sup>10</sup>

Prolonged opioid use after surgery is now a significant concern.<sup>11–13</sup> The number of surgeries globally continues to

increase because of a variety of factors including an increasing older population with about 330 million surgeries performed annually worldwide and 4 million annually in the UK.<sup>14,15</sup> However, it is now recognised that an increasing number of surgical patients continue to use opioids beyond 90 days after surgery, by which time complete surgical tissue healing would have ordinarily occurred, known as persistent postoperative opioid use (PPOU). There are a variety of definitions for PPOU. For the opioid-naïve patient reporting for surgery, PPOU includes those patients who have received a 60-day supply of opioids between Days 90 and 365 postoperatively.<sup>16</sup> For those taking opioids before surgery, PPOU has been defined as any increase in opioid use relative to baseline.<sup>16</sup> Recent studies from the USA show that 0.6–26% of opioid-naïve patients develop PPOU, and the figure is even greater (35–77%) for those already taking opioids before surgery.<sup>16,17</sup> Furthermore, it has been shown that conservatively 0.6% of opioid-naïve patients who have PPOU develop opioid misuse disorder/addiction.<sup>18,19</sup> Extrapolation from the above estimates implies that conservatively between 24 000 and 104 000 patients in the UK develop PPOU annually and 144–6240 patients develop opioid addiction/misuse disorder each year after surgery. Although we currently do not have data from the UK, the extrapolated figures indicate a significant healthcare load on the UK NHS.

The Faculty of Pain Medicine of The Royal College of Anaesthetists commissioned a working party to develop ‘whole system guidance’ for the best practice relating to opioid use perioperatively for the UK. The key aim was to address inappropriate opioid prescribing, in particular in the perioperative period, without affecting pain control for patients after surgery. This document, entitled ‘Surgery and opioids – an evidence based expert best practice consensus guideline on the perioperative use of opioids in the United Kingdom’,<sup>1</sup> is a multi-organisational and multidisciplinary landmark collaboration document, representing almost 2 yr of effort by the working group, which included the Royal College of General Practitioners, Royal College of Surgeons, and Royal College of Nursing with corresponding members from the British Pain Society, Royal College of Psychiatry, and University of Leicester. The document sets out the guiding principles in this critical area of opioid stewardship in the perioperative period. We provide a commentary on the salient features of the guideline and on the perioperative use of opioids.<sup>1</sup>

Perioperative opioid stewardship should start with judicious opioid prescribing in surgical clinics and in general practice. Opioids should be started when indicated but must be stopped when they are no longer required.<sup>9</sup> Multidisciplinary collaboration is essential.

For the opioid-naïve patient due for surgery, an assessment of risk factors for continued opioid use should be performed.<sup>20</sup> Some commentators have argued for identification of patients at risk of developing chronic postsurgical pain (CPSP).<sup>21</sup> Patients with existing chronic pain and taking opioids have a slower resolution of their postoperative pain, are more likely to develop PPOU, and require more intense pain management resource input.<sup>22</sup> The guidance emphasises the need to screen

for chronic pain patients and those on opioids preoperatively and to ensure optimisation of pain management before surgery (prehabilitation).<sup>23,24</sup> The guidance stresses the need to develop a multidisciplinary perioperative care plan tailored to the individual patient. The term 'transitional pain service' is gaining traction and popularity over the last few years. Perioperative transitional pain service is an innovative risk mitigation strategy that includes a multidisciplinary team (e.g. physicians, nurses, physical therapists, pharmacists, mental health professionals, among others) that identifies high-risk patients and provides a suite of perioperative supportive services aimed, in part, at preventing development of opioid misuse long-term.<sup>25</sup> A recent study from the USA demonstrates the utility of a perioperative transitional pain service in producing a 40% decrease in opioid use after orthopaedic surgery.<sup>26</sup>

The document also encourages a closer and more integrated working model between the inpatient (acute) and community pain (chronic) teams. This may include referral to a pain specialist (where necessary preoperatively) for complex pain patients. A perioperative plan with collaborative multidisciplinary care is likely to improve inpatient pain management, decrease length of stay, and increase the potential for opioid tapering both before and after surgery.<sup>25,26</sup> However, opioid tapering is not without significant risks including suicidal ideation and behaviours and transitioning to heroin use, and hence should be attempted with proper institutional governance mechanisms in place.<sup>27–29</sup>

There has been a trend toward limiting use of opioids intraoperatively to reduce intraoperative nociception and postoperative pain.<sup>30,31</sup> Advocates of 'opioid-free anaesthesia' highlight better anaesthesia outcomes including reduced risk of PPOU.<sup>32–34</sup> However, the generalisability of these findings is being questioned, and an opioid-free anaesthesia protocol for colorectal surgery observed a negligible effect on discharge opioid prescribing.<sup>35</sup> The jury is still out on how intraoperative opioid management and dosage schemes influence the incidence of persistent opioid use after surgery.

The guidance highlights that perioperative pain management must be tailored to individual patients. Intraoperative nociception management as part of a balanced anaesthesia technique should include multimodal analgesia techniques and opioid-sparing techniques where relevant. Enhanced use of procedure-specific analgesic techniques (PROSPECT)<sup>36</sup> is suggested.

The postoperative period is a key period in preventing PPOU. The guidance emphasises prudent use of opioids in this period and monitoring to ensure that opioid-naïve patients are not prescribed unnecessary opioids at discharge. The guidance underlines the need for a holistic assessment of pain immediately after surgery in the PACU before prescription of analgesics. The use of modified release (slow release) opioids for acute pain has been strongly discouraged recently by an ANZCA position statement because of increased side-effects and PPOU.<sup>37</sup>

The transition from hospital to community after surgery is another key period in opioid stewardship. The role of inpatient pain services and the surgical services in ensuring an appropriate opioid transition to the community is emphasised. Only 28% of prescribed opioid pills are consumed by patients after surgery.<sup>38</sup> Educating patients on opioid use after surgery improves opioid disposal rates.<sup>39</sup> Involving patients and managing their expectations along with shared decision-making reduces PPOU.<sup>39</sup> The guidance thus emphasises the need for

discharge planning that includes patient education, managing expectations, shared decision-making, and provision of a patient information leaflet. Reducing the size of postoperative opioid prescriptions reduces the amount of opioid consumed.<sup>40</sup> In the USA, state organisations such as the Washington State Agency Medical Directors group (WSAMD)<sup>41,42</sup> have been more specific in their recommendations for discharge analgesia. The WSAMD recommends discharge opioids of no more than 3 days for surgeries with rapid recovery, no more than 7 days for surgeries with medium recovery, and no more than 14 days for surgeries with long-term recovery and for patients taking preoperative opioids. This guidance from the UK<sup>1</sup> acknowledges the tension between prescribing inadequate analgesia and wastage/misuse potential and makes the recommendation that discharge opioids (including tramadol) should usually be prescribed for 5 days and not more than 7 days. This has been developed after extensive discussions within the working group where the majority were in favour of patients receiving an opioid review if they needed more than 7 days of opioid supply after an operation. The guidance working group<sup>1</sup> also felt that if a patient required a repeat opioid prescription 7 days after a surgery, the UK primary care system was robust enough to review patients before prescribing more opioids.

There is an emphasis on primary care providers to review postsurgical patients before refilling prescriptions and on the enhanced role of pharmacovigilance for opioid misuse and diversion. The long-term use of gabapentinoids has been associated with increased risk of suicidal behaviour or death from suicide (age adjusted hazard ratio [HR] 1.26; 95% confidence interval [CI] 1.20–1.32), unintentional overdose (1.24; 1.19–1.28), head or body injuries (1.22; 1.19–1.25), and road traffic incidents or offences (1.13; 1.06–1.20).<sup>43</sup> A well conducted RCT in 422 patients undergoing a wide variety of surgeries found that adding perioperative gabapentin did not affect time to pain cessation (HR 1.04; 95% CI 0.82–1.33;  $P=0.73$ ) after surgery in an intention-to-treat analysis. However, participants receiving gabapentin had a 24% increase in the rate of opioid cessation after surgery (HR 1.24; 95% CI 1.00–1.54;  $P=0.05$ ).<sup>44</sup> This guidance emphasises the need to be aware of the risks of gabapentin co-prescribing with opioids perioperatively and also the need to correctly diagnose and treat CPSP to decrease inappropriate opioid use.

The Faculty of Pain Medicine of the Royal College of Anaesthetists guidance on the perioperative use of opioids<sup>1</sup> emphasises that it is incumbent for all perioperative clinicians, healthcare professionals, and primary care providers to be involved in opioid stewardship. Opioid stewardship includes appropriate opioid prescription, precision pain management and ensuring that patients are not taking opioids unnecessarily. Opioids have served surgical pain relief well for centuries. It is important that we allow the surgery and opioid romance to continue, albeit with caution.

## Authors' contributions

Wrote this editorial: DS

Reviewed the manuscript and was chair of the working group for the 'Surgery and Opioids' guidance: PW

## Declarations of interest

The authors declare that they have no conflicts of interest.

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## Assessing ‘desire for more pain treatment’ reveals much room for improvement after tonsillectomy and appendectomy in children

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**Keywords:** appendectomy; non-opioid analgesics; opioids; paediatric; patient-reported outcomes; postoperative pain; tonsillectomy

In this issue of the *British Journal of Anaesthesia*, Stamer and colleagues<sup>1</sup> highlight that not all centres routinely administer intraoperative multimodal analgesia for open or laparoscopic appendectomy or tonsillectomy in children. They conclude

that they should. They reached this conclusion by asking if children (or their parent if the child was too young) desired more analgesia during the first 24 h after surgery.

Research in how best to assess pain in children has given rise to various pain intensity measurement tools for a range of developmental, cognitive, and communication needs.<sup>2,3</sup> These tools are based on physiological parameters, observed