Anesthesia for opioid addict: Challenges for perioperative physician

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Abstract
Opioid addiction is on a rise globally. Such a patient presents to an anesthesiologist as well as to the surgeon with an array of challenges. We present the case of an opioid addict (pentazocine) who presented for debridement and grafting of eschars and old healed scars. Initially he was medically managed for opioid addiction followed by a planned anesthesia. We hereby discuss the challenges faced during perioperative period.

Key words: Challenges, naltrexone, opioid addiction, perioperative analgesia

Introduction
Globally there is a rising trend in opioid addiction. United Nation on Drug and Crime (UNODC) estimates that there were between 12 and 21 million opiate users worldwide in 2009. Heroin remains the most commonly used opiate, consumed by a vast majority of global opiate users (about 75%). Such a patient can present to an anesthesiologist in a variety of situations. The patient can be on varied drug therapy ranging from methadone (for opioid deaddiction) to naltrexone (for maintenance of abstinence). In this case study, we report an opioid (pentazocine) addict on naltrexone (opioid antagonist) for abstinence presented for nonhealing ulcers on both forearms secondary to his habit. Institutional ethical committee clearance and consent from the patient was obtained before reporting the case.

Case Report
A 35-year-old pharmacist with opioid dependence presented to hospital with history of taking injection pentazocine 30 mg via parenteral route since past 7 years. Frequency of usage increased from 1-2 to 4-6 injections over a period of 7 years. Route of administration varied from intravenous (IV), intramuscular (IM), and subcutaneous (SC) whichever was feasible. Each time he used his forearm for opioid shots. The patient presented 1 month back with history suggestive of opioid withdrawal. He complained of weakness and pain in whole body. On further examinations multiple abscess, crusts, scars, eschars, and ulcers were found on both forearms [Figure 1].

Patient was conservatively managed with tab clonidine 100 μg, tab tramadol 50 mg, and tab loperamide 5 mg to cover up the withdrawal phase. After symptomatic relief (about 2 weeks), patient was put on tab naltrexone 25 mg once daily as a part of abstinence maintenance therapy. Blood investigations revealed hemoglobin of 6.7 gm%, hence two units of packed red blood cells were transfused.

After a period of 1 month, patient was accepted for surgery under American Society of Anesthesiologist Grade II. A nonopioid anesthesia was planned. All the drugs including naltrexone were continued till the day of surgery. Strict orders were given to avoid all opioid analgesics till day of surgery.

An IV access was achieved in left lower limb after multiple attempts. Premedication consisted of Inj. midazolam 2 mg IV, Inj. glycopyrrolate 0.2 mg IV, and Inj. paracetamol 1 g IV. Anesthesia was induced with Inj. ketamine 100 mg IV, Inj. vecuronium 6 mg IV, sevoflurane at 4 vol%,
and $O_2$ 100%. Bag mask ventilation was done for 3 min followed by oral endotracheal intubation. Low flow anesthesia was started and anesthesia maintained with sevoflurane 2 vol%, $O_2$ (500 ml/min), $N_2O$ (500 ml/min), and Inj. vecuronium 1 mg IV as supplemental dose. Analgesia was supplemented via Inj. diclofenac 75 mg IV infusion. Noninvasive monitoring with electrocardiography (ECG), noninvasive blood pressure (NIBP), end tidal carbon dioxide (EtCO$_2$), pulse oximetry (SpO$_2$), and temperature were done and baseline parameters were noted. The intraoperative vitals were stable throughout the surgery. Intraoperative fluid management was done with ringer lactate 750 ml. Surgery was uneventful and at the end of surgery, neuromuscular blockade was reversed with Inj. neostimine 2.5 mg IV and Inj. glycopyrrolate 0.4 mg IV. The patient had smooth recovery, extubated, and was shifted to postanesthesia care unit for further management. Surgery lasted for 90 min.

In the postoperative care unit, patient demanded analgesia after 1 h of surgery. Patient heart rate and blood pressure had increased by almost 30% suggestive of pain. He was given first rescue analgesic in the form of Inj. diclofenac 75 mg IV.

Supplemental dose of analgesic (Inj. paracetamol 1 g IV) was repeated after 1 h. Patient was given Inj. diclofenac 75 mg IV and Inj. acetaminophen 1 g IV alternatively after every 3 h for 24 h. This was followed by Inj. diclofenac 75 mg IV after every 6 h for further 48 h. Tab naltrexone 25 mg was continued as given in the preoperative period.

**Discussion**

Opioid addict present to an anesthesiologist with a wide array of challenges. Anesthesia for emergency surgery can be encountered in trauma patients and those requiring urgent invasive procedures. Patients posted for elective surgery can be opioid addicts, on various withdrawal regimens like methadone or on pure antagonist for abstinence. Apart from this increased perioperative analgesic requirement, a difficult IV access poses a constant challenge. Also some of these patients are exposed to repeated surgeries, which again make task of perioperative physician arduous.

Opioid addicts may give false history or malinger during preanesthetic check up. If posted for elective surgery a proper psychiatric work up should be done. Judicious titration of drugs may be required perioperatively as these groups of patients are nutritionally depleted with hypoproteinemia. Patients may present with Munchausen’s syndrome (swallowing air to mimic intestinal obstruction), ensuring precautions to be taken as for full stomach patients. During perioperative period, patient can present with marked hypotension due to poor nutritional status and hypovolemia. Universal precautions should be taken as patients are at risk of hepatitis and human immunodeficiency virus (HIV). Further management depends on type of anesthesia planned for opioid addicted patients, which can be either opioid or nonopioid based.

If a nonopioid anesthesia is planned, as was done in this case, naltrexone can be safely continued till day of surgery and thereafter. Naltrexone HCl is related to the potent opioid antagonist naloxyne or nallylnoroxymorphone. It is suitable for oral administration in scored tablets containing 50 mg of naltrexone HCl. It binds to opioid receptors in the central nervous system and competitively inhibits the actions of opioid drugs (both pure agonists and agonist/antagonists) and endogenous opioids. It is indicated as opioid antagonist, maintenance of abstinence from opioid addiction, alcoholism, and in rapid opioid detoxification under anesthesia. Paracetamol, nonsteroidal antiinflammatory drugs (NSAIDS), ketamine, conscious sedation with benzodizapenes, volatile anesthetics form the mainstay of nonopioid anesthetic regimen. Various regional techniques devoid of opioids can be used.

If an opioid based anesthesia is planned, naltrexone should also be discontinued at least 24-72 h before surgery. The amount of opioid analgesic required may be greater than usual and resulting respiratory depression may be deeper and more prolonged. So a rapidly acting opioid analgesic like sufentanil, remifentanil (infusion), alfentanil, and fentanyl, which minimizes the duration of respiratory depression, is preferred. The patient should then be abstinent from the opioid for 3-5 days before resuming naltrexone treatment, depending on the duration of the opiate use and the half-life of the opiate. Patient can be started on analgesic regimens, which may include NSAIDS (diclofenac), paracetamol, local anesthetics via patient controlled-analgesia (PCA) or patch to cover up this opioid free phase postoperatively. COX 2 inhibitors like rofecoxib, celecoxib, and etoricoxib can be considered for patients at risk for bleeding renal impairment and gastric irritability. Neural blocks and wound infiltration can also be used where appropriate. A more conservative approach is to wait for 7 days till naltrexone is started. As an alternative, a naloxone challenge test can be administered.

The anesthesiologist should develop a clear management strategy that maintains a balance to gain patient’s trust with an understanding and empathic approach while being prepared to overcome high-grade tolerance with liberal doses of opioid and nonopioid analgesics. Opioid doses required to meet intraoperative and postsurgical analgesic requirements are affected by receptor down-regulation and may need to be increased 30-100% in comparison with requirements.
in opioid-naive patients\textsuperscript{[6,7]} Perioperative management of opioid-dependent patients begins with preoperative administration of their daily maintenance or baseline opioid dose before induction of general, spinal, or regional anesthesia. Patients should be instructed to take their usual dose of oral opioid on the morning of surgery.\textsuperscript{[8]}

If a patient is on any withdrawal regimen like methadone maintenance program, it should be continued till the day of surgery. The mixed agonist–antagonist-type opioid such as nalbuphine, butorphanol, and pentazocine should be avoided as they may precipitate acute opioid withdrawal in these individuals.\textsuperscript{[9,10]}

**Conclusion**

The anesthesiologist plays the key role in maintaining baseline opioid requirements, administering supplemental intraoperative and postoperative opioid, and providing nonopioid analgesics and neural blockade when required.

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\caption{Same patient with old healed scars secondary to parenteral drug abuse}
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