

Diagnosis must consider the history of injury, patient's sexual habits, clinical presentation, pathological features, and concomitant serologic test results. Serologic and pathological tests are essential to confirm the diagnosis. The most reliable serologic tests are VDRL and rapid plasma regain tests. However, if performed in the initial stages of the disease, false-negative results are not uncommon as a result of insufficient antibody levels. The FTA-ABS test is more specific.

The presence of plasma cells with perivascular distribution should raise the level of suspicion for syphilis. Other findings common in syphilis include epithelial hyperplasia with submucosal plasma cell infiltration, exocytosis, endarteritis,

neuritis, ulcerative areas, and, eventually, Langerhans-type giant cells.

The differential diagnosis for oral ulcerations of the lip should include squamous cell carcinoma, eosinophilic ulcer, actinic cheilitis, and paracoccidioidomycosis. Each of these should be ruled out based on the patient's history and clinical findings.

Kipper JF, Klein IP, Hildebrand LC, et al: Chronic ulcerative lesion of the lip. *J Am Dent Assoc* 150:220-224, 2019

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ORAL SURGERY

Managing postoperative pain



BACKGROUND

Clinicians are ethically bound to provide patients with relief from pain. About 80% of patients experience moderate or severe pain after oromaxillofacial surgery, so efforts to minimize the pain experience are essential. To cover the topic of pain management postoperatively in a comprehensive manner, the reasons postoperative analgesia should be optimized, who is at high risk for experiencing severe postoperative pain, and analgesic strategies to manage pain were presented.

OPTIMIZING POSTOPERATIVE PAIN RELIEF

Moderate to severe postoperative pain has been ranked by patients as the second worst aspect of surgery, after anxiety. The pain experience not only impairs physical function, but reduces the patient's quality of life and ability to sleep. When patients experience severe pain, they are also more likely to be dissatisfied with the anesthesia services.

The pathophysiological aspects related to severe pain include a higher risk for developing chronic pain and the activation of the surgical stress response, which can affect many body systems and produce poor surgical outcomes. In addition, postoperative pain is associated with a longer hospital stay and its associated costs.

RISK FACTORS FOR SEVERE POSTOPERATIVE PAIN

Patients who are at risk for developing severe postoperative pain should be identified preoperatively so that multidisciplinary interventions can be planned and implemented. Patients who are managed with a patient-centered, collaborative approach tend

to have more realistic expectations and be more educated about the strategies to manage their pain.

MANAGEMENT OPTIONS FOR POSTOPERATIVE PAIN

The strategies to manage postoperative pain include pharmacological, psychological, physical, and alternative medical and organizational approaches.

PHARMACOLOGICAL APPROACHES

Currently, pharmacological agents and methods include simple analgesics, opioid analgesics, local anesthetics, ketamine, gabapentinoids, corticosteroids, and α_2 adrenoceptor agonists.

Simple Analgesics

Among the simple analgesics are paracetamol, nonsteroidal anti-inflammatory drugs (NSAIDs), and COX-2 inhibitors. The combination of an NSAID and paracetamol has been reported to achieve a 3-fold reduction in pain and the need for analgesic supplementation compared to taking either drug alone. Unless it is contraindicated, this combination should be considered for all postoperative patients (Table 3).

When NSAIDs are given chronically, adverse effects include disruption of the upper or lower gastrointestinal, renal, and cardiovascular systems and of platelet aggregation. The gastrointestinal effects are more likely in patients with previous ulceration, those over age 65 years, those taking anticoagulation treatment concurrently, and when corticosteroids or increasing doses of NSAIDs are being taken. The renal effects are more likely in patients with pre-existing renal impairment, hypovolemia, heart

Table 3. Number Needed to Treat (NNT) to Achieve at Least 50% Reduction in Maximal Postoperative Pain (Moderate or Severe) Over 4-6 Hours. NNT of 2-5 is Considered Useful.

Single dose analgesic	NNT (95% CI)
Ibuprofen 400 mg + Paracetamol 1000 mg	BEST 1.5 (1.4 to 1.7)
Ibuprofen 200 mg + Paracetamol 500 mg	1.6 (1.5 to 1.8)
Paracetamol 1000 mg + Oxycodone 10 mg	1.8 (1.6 to 2.2)
Diclofenac potassium 100 mg	1.9 (1.7 to 2.3)
Diclofenac potassium 50 mg	2.1 (1.9 to 2.5)
Ibuprofen 400 mg	2.1 (1.9 to 2.3)
Paracetamol 1000 mg + Codeine 60 mg	2.2 (1.8 to 2.9)
Ibuprofen 400 mg + Oxycodone 5 mg	2.3 (2.0 to 2.8)
Naproxen 500 mg	2.7 (2.3 to 3.3)
Paracetamol 1000 mg	3.6 (3.2 to 4.1)
Tramadol 100 mg	4.6 (3.6 to 6.4)
Tramadol 50 mg	9.1 (6.1 to 19)
Codeine 60 mg	WORST 12 (8.4 to 18)

(Courtesy of Evans SW, McCahon RA: Management of postoperative pain in maxillofacial surgery. Br J Oral Maxillofac Surg 57:4-11, 2019.)

failure, cirrhosis, or multiple myeloma and in patients taking angiotensin converting enzyme (ACE) inhibitors, angiotensin II receptor antagonists, or diuretics.

Opioid Analgesics

Moderate to severe postoperative pain should be managed using opioids, with the attitude that the dosages and uses will be reduced as appropriate. Acute side effects include nausea, constipation, itching, drowsiness, respiratory depression, and overdose.

Weak opioids include codeine phosphate and tramadol, which have a relative potency of 0.1 compared to morphine. Neither of these agents is especially effective given alone. Codeine metabolism can vary widely, giving patients far too little for pain relief or far too much and triggering adverse events such as respiratory depression. It's contraindicated in patients who metabolize CHP2D6 ultra-rapidly and in children under age 12 years. Tramadol is contraindicated in patients whose epilepsy is poorly controlled.

Strong opioids commonly used for postoperative analgesia include morphine, oxycodone, and fentanyl. Oxycodone is about 1.5 to 2 times as potent as morphine, and fentanyl is

10 times more potent than morphine. When high doses of fentanyl are given, the potential for respiratory depression is substantial. Usually strong opioids are given intravenously as patient-controlled analgesia or orally as slow and immediate-release preparations. Oral doses are sufficient unless parenteral delivery is required.

If opioids are given chronically, the patient is at risk for developing drug tolerance, physical dependence, and addiction. Patients taking chronic opioids have higher pain scores, require more postoperative analgesia, and run a high risk for their severe acute postoperative pain to become chronic. They must be given doses to address their acute pain above and beyond those to relieve their chronic pain. It's essential to address these patients through a multidisciplinary approach that commences preoperatively.

The use of transdermal opioid patches should be continued perioperatively. Postoperatively, the patient should also receive additional opioids either orally or as patient-controlled analgesia. If patches are discontinued before surgery, they should be replaced gradually by oral immediate-release opioids, a process that can require up to 72 hours.

Opioid-induced hyperalgesia is an increased response to a painful stimulus or a painful response to a non-painful stimulus or a combination of the 2. Onset of this condition can be sudden, and increased doses cause greater pain. Only remifentanyl is associated with measurable postoperative opioid-induced hyperalgesia. Therefore its dosage should be reduced by using additional opioid-sparing techniques, such as local anesthetics or NSAIDs.

Local Anesthetics

Maxillofacial surgeons are well versed in *regional anesthetic techniques*. Many branches of the trigeminal nerve respond to peripheral blockade with local anesthetics, which are recommended as part of a multimodal approach. The preferred delivery is continuous through a catheter rather than as a single bolus if the duration of pain is likely to be longer than the drug's duration of action.

Lidocaine may be infused during the surgery to reduce the need for perioperative opioids. Studies have supported this use, linking it to improved pain scores for up to 24 hours postoperatively, a reduced consumption of opioids, less postoperative nausea and vomiting, and a shorter hospital stay. During bimaxillary osteotomy, lidocaine has reduced pain scores for up to 8 hours along with the need for rescue medication.

Toxicity related to local anesthetics causes neurological and cardiac effects that progress from circumoral tingling to tonic-clonic convulsions to cardiac arrest. Doses should be kept within recommended limits. Susceptible patient are those with reduced α -1 antitrypsin concentrations, the elderly, children, and pregnant women.

When *ketamine* is used, pain intensity is reduced, as are the need for rescue analgesia, use of patient-controlled opioids, and postoperative nausea and vomiting. If doses are kept below 0.5 mg/kg, the risk of psychomimetic effects is minimized. Ketamine is especially helpful for patients who are opioid-tolerant. For dental procedures, ketamine reduces postoperative pain after third molar extraction whether it is given topically, submucosally, or intravenously.

Gabapentin and *pregabalin* have antineuropathic analgesic effects but studies indicate just a marginal improvement in postoperative analgesia and an increased risk of serious adverse events, such as excessive sedation. Pregabalin has been used preemptively for patients having bimaxillary surgery and reduced postoperative pain scores and opioid use, but the routine use of gabapentinoids is not supported by most evidence unless the benefit outweighs the attending risk.

Corticosteroids can reduce postoperative pain and swelling in orthognathic and third molar surgery with minimal risk of adverse events. Dexamethasone and methylprednisolone are among the corticosteroids used in dentistry.

The commonly used α_2 *adrenoreceptor agonists* are dexmedetomidine and clonidine. The oral or intravenous administration of these agents reduced the need for morphine for the first 24 hours postoperatively by 25% and 30%, respectively. Their reduction in acute pain was considerable but lasted only 48 hours. Clonidine has been associated with clinically significant hypotension and bradycardia. A dose of 0.2 mg of clonidine given orally did not improve pain or morphine consumption and higher doses were likely to be associated with hypotension and bradycardia. Dexmedetomidine has reduced postoperative pain and opioid use, but bradycardia was also a risk.

PSYCHOLOGICAL, PHYSICAL, AND ALTERNATIVE APPROACHES

Relaxation has been proposed as a way to manage postoperative pain, but insufficient evidence supports this approach. *Hilotherapy*,

acupuncture, or the use of cold compression through a facemask at 15°C, significantly reduces pain and swelling for 48 to 72 hours postoperatively. Its efficacy for specific procedures and optimal duration of treatment remain to be determined. In addition, *acupuncture* has been shown to significantly reduce postoperative pain and the use of opioids, with a 29% reduction in morphine use at 72 hours postoperatively. Finally, patients who have moderate or severe pain will likely see the greatest pain reduction through the use of well-resourced *acute pain services*. Acute pain teams should target those at highest risk for pain.

Clinical Significance

Acute pain after dental surgery is important not just for its impact on the patient but also for the effect on the health care system itself. A multimodal approach to analgesia is likely to be the best approach, according to current evidence. This involves the use of 2 or more analgesics with different modes of action delivered in the same or different ways. Evidence indicates that it's important to identify patients who are most at risk for moderate to severe postoperative pain well before surgery, coordinate the efforts of a multidisciplinary team to manage the pain, and employ multimodal analgesia. With less postoperative pain, there may also come fewer complications, less distress, shorter duration of hospital stay, and less risk of developing chronic pain syndromes.

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ORTHODONTICS

Clear aligners versus fixed braces



BACKGROUND

Fixed braces have been the conventional and very effective orthodontic appliance for more than 100 years. However, clear aligners are now able to treat nearly everything from mild to severe malocclusions and patients are demanding a

more esthetic and comfortable orthodontic treatment technique, which has led to the popularity of the clear aligners. Whether clear aligners are a viable alternative to braces in terms of treatment effectiveness was addressed in a systematic review and meta-analysis.