

Management of dental pain before and after treatment

Dental pain can often be resolved by treating the underlying problem. But pre-emptive and postoperative treatment with a suitable analgesic will usually resolve any pain problems. Christine Battison discusses the range of analgesic options available

Making a dental appointment is often prompted by the onset of pain. The procedure subsequently undergone by the patient may then result in postoperative pain. Both these commonly occurring scenarios need to be managed effectively to achieve customer satisfaction.

This article discusses the different types of pain with which patients may present and the advice we can give in order to manage this pain and to prevent or reduce postoperative discomfort. The article will focus mainly on over-the-counter preparations that patients can self-administer. These are principally paracetamol, non-steroidal anti-inflammatory drugs (NSAIDs) and codeine-based products. The article will discuss how these different types of analgesic work, the indications and contraindications, and what doses are effective, either as a single analgesic or in combination.

Definition of pain

The International Association for the Study of Pain (IASP) defines pain as

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'an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage' (Merskey and Bogduk, 1994).

Mechanism of pain

There are four processes involved in the physiology of pain: transduction, transmission, modulation and perception (Kopf and Patel, 2010):

1. Transduction: this is the point at which the stimulus is detected by nociceptive (pain) receptors, which respond to chemical, thermal or mechanical pain stimuli
2. Transmission: this is the carriage of the signal by the nerve fibres to the spinal cord where they ascend to the brain to be processed. There are different types of nerve fibres: A-delta, A-beta and C fibres. A-delta fibres are fast and respond to gentle pressure, A-beta fibres respond to heavier pressure, and C fibres carry slow dull pain
3. Modulation: this happens in the brain where the signals are amplified or dampened and is brought about by brain chemicals such as serotonin and endorphins
4. Perception: a person's perception of pain can differ from that of others – it is an individual experience.

The management of pain can target any of these processes:

Dental pain

Analgesics (painkillers) should be used

only as a temporary measure until the cause of the pain can be dealt with (Joint Formulary Committee, 2011).

Dental pain caused by inflammation, for example in conditions such as pulpitis, alveolar osteitis (dry socket) or pericoronitis, is best managed by treating the underlying condition using restorative procedures and local measures such as cleaning and dressing (Joint Formulary Committee, 2011). However, if the patient has a high temperature, the antipyretic and anti-inflammatory actions of paracetamol and ibuprofen, respectively, may be helpful (Joint Formulary Committee, 2011).

The choice of analgesic should be based on its suitability to the individual patient, with most dental pain being effectively relieved by NSAIDs such as ibuprofen, diclofenac or aspirin. Paracetamol is an analgesic and antipyretic but has no anti-inflammatory effect and opioid analgesics such as dihydrocodeine are relatively ineffective for dental pain, as well as having unpleasant side effects (Joint Formulary Committee, 2011). Combining a non-opioid with an opioid analgesic, however, can provide greater relief of dental pain than using either analgesic alone (Joint Formulary Committee, 2011).

Managing pain

Analgesics can be taken before dental work is begun in order to manage a potentially painful procedure such as the surgical removal of wisdom teeth.

Any analgesic given before a dental procedure should be one with a low risk of increasing postoperative bleeding (Joint Formulary Committee, 2011).

Taking an analgesic before the effects of a local anaesthetic has worn off can improve the management of any postoperative pain (Joint Formulary Committee, 2011).

Postoperative analgesia is usually required for only 24 to 72 hours (Joint Formulary Committee, 2011).

Analgesics

There are several main analgesics available that are suitable for managing dental pain.

Paracetamol

For use in mild to moderate odontogenic pain or postoperative pain.

Properties

- Antipyretic (reduces temperature)
- Takes 30 to 60 minutes to act
- Has a half life of two hours (effect does not last very long)
- No anti-inflammatory properties
- No effect on blood clotting or the gastrointestinal lining
- Overdose can lead to liver failure
- Can be used during pregnancy without any harmful effects.

Dose

- Adults: 500-1000 mg every four to six hours
- Maximum daily dose: 4000 mg
- Children: 120 mg/ml oral suspension
- Sugar-free preparations available
- Can be bought over the counter or prescribed by a dentist on the NHS.

NSAIDs

Aspirin, ibuprofen and diclofenac are commonly used NSAIDs for dental pain.

Properties

- Anti-inflammatory
- Increased risk of bleeding
- Risk of gastric irritation.

‘Taking an analgesic before the effects of a local anaesthetic has worn off can improve postoperative pain management’

Aspirin (acetylsalicylic acid)

For use in mild to moderate odontogenic or inflammatory pain.

Dose

- Adults: 300 to 900 mg four times daily
- Maximum daily dose: 4000 mg
- Not to be used in children under 16 years of age as it can cause Reye's syndrome
- Can be bought over the counter or prescribed by a dentist on the NHS.

Contraindications to aspirin

- Not to be used in patients taking anticoagulants such as warfarin
- Not to be used following a dental extraction or other minor oral surgery
- Avoid in patients with asthma, peptic ulceration, or bleeding disorders
- Use with caution in elderly people, in women during pregnancy and breastfeeding, and in patients with renal, cardiac or hepatic impairment.

Ibuprofen

For use in mild to moderate odontogenic, postoperative or inflammatory pain.

Dose

- Adults: 400 mg four times daily
- Maximum daily dose: 2400 mg
- Children: 100 mg/5 ml oral suspension
- Sugar-free preparations available
- Can be bought over the counter or prescribed by a dentist on the NHS.

Contraindications

- Not to be used in patients taking anticoagulants such as warfarin
- Avoid in patients with asthma, peptic ulceration, or bleeding disorders
- Use with caution in elderly people,

in women during pregnancy (avoid in the third trimester) and breastfeeding. It should also be used with caution in patients with renal, cardiac or hepatic impairment due to the increased risk of bleeding.

Combining paracetamol and ibuprofen

In cases where paracetamol or ibuprofen alone is not effective, both drugs can be taken alternately. Ibuprofen may be taken first followed by a dose of paracetamol two hours later, and so on. This regimen controls ongoing pain and pyrexia without exceeding the recommended dose or frequency of either drug (Scottish Dental Clinical Effectiveness Programme, 2011).

Diclofenac

For use in moderate odontogenic, postoperative or inflammatory pain.

Dose

- Adults: 50 mg three times daily
- Maximum daily dose: 150 mg
- Prescription-only medicine; cannot be bought over the counter
- Not recommended for dental use in children.

Contraindications to diclofenac

- Not to be used in patients taking anticoagulants such as warfarin
- Avoid in patients with asthma, peptic ulceration, or bleeding disorders
- Use with caution in elderly people, in women during pregnancy and breastfeeding and in patients with renal, cardiac or hepatic impairment.

Opioids

Examples include dihydrocodeine.

Properties

- Relatively ineffective for dental pain when used alone, although still prescribed by some dentists for more severe odontogenic pain when other forms of analgesic have proven to be ineffective for that case. Opioids are best used in combination with a simple analgesic as described below in more detail
- Many side effects, including drowsiness, nausea, dry mouth and constipation
- Potential for abuse and dependence.

Dose

- Dihydrocodeine:
- Adults: 30 mg every four to six hours
- Prescription-only medicine; cannot be bought over the counter.

Contraindications to opioids

- Avoid in patients with acute respiratory depression
- Avoid in pregnancy.

Compound analgesics

These are combinations of a simple analgesic with an opioid. Examples include co-codamol (paracetamol and codeine phosphate) and co-dydramol (paracetamol and dihydrocodeine tartrate).

Dose

Co-codamol 8/500

- 8 mg codeine phosphate and 500 mg paracetamol
- Adults: one to two tablets every four to six hours
- Maximum: eight tablets daily.

Co-codamol 15/500

- 15 mg codeine phosphate and 500 mg paracetamol
- Adults: one to two tablets every four to six hours
- Maximum: eight tablets daily.

Co-codamol 30/500

- 30 mg codeine phosphate and 500 mg paracetamol

KEY POINTS

- Patients will often present with dental pain.
- Analgesics should be used only as a temporary measure until the cause of the pain can be dealt with or for short-term postoperative pain.
- Choice of analgesic should be based on its suitability to the individual patient, taking into consideration presenting condition, medical history and current medication.
- Most dental pain is effectively relieved by non-steroidal anti-inflammatory drugs (NSAIDs).
- Paracetamol may relieve pain and has antipyretic properties but has no anti-inflammatory effect.
- Opioid analgesics are relatively ineffective; however, analgesics combining an opioid with a non-opioid may provide greater relief of dental pain than using either alone.

- Adults one to two tablets every four to six hours
- Maximum: eight tablets daily.

Facial pain

Trigeminal neuralgia can be controlled quickly by treatment with the anti-epilepsy drug carbamazepine 100 mg twice daily. Referral to a specialist or the patient's GP is required for full blood count and liver function tests to monitor for adverse effects, assess the response and titrate the dose (Scottish Dental Clinical Effectiveness Programme, 2011).

Pain caused by temporomandibular joint (TMJ) dysfunction may respond to analgesics such as ibuprofen or a short course of the anti-anxiety drug diazepam 2 mg three times daily. However, diazepam is addictive and is susceptible to abuse and therefore should be prescribed with caution (Scottish Dental Clinical Effectiveness Programme, 2011).

Conclusion

Analgesics should be used only as a temporary measure for the relief of

pain until the underlying cause can be managed or to relieve short-term postoperative pain.

If the regimens described in this article are ineffective the patient should be referred to their GP (Scottish Dental Clinical Effectiveness Programme, 2011).

All patients to whom analgesic advice is given should be reminded to follow the instructions on the drug's patient information leaflet with regard to dosages and any possible interactions with other medications and/or medical conditions.

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