

# **English**

*for the Students of*

## **Dentistry**

### **Volume 2**

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سرشناسه	Mojtaba Moayedfar
عنوان و نام پدیدآور	English for the Students of Dentistry (Volume 2)
مشخصات نشر	تهران: شایان نمودار، ۱۴۰۱.
مشخصات ظاهری	۱۳۲ ص.
شابک	۹۷۸-۹۶۴-۲۳۷-۷۰۱-۵
وضعیت فهرست نویسی	فیبا
موضوع	زبان انگلیسی -- دندانپزشکی
شناسه افزوده	Sara heidari Foroushani , Jafar Zarghami
رده بندی کنگره	ب۴ ۱۱۲۷/۵۹ PE ۱۴۰۱
رده بندی دیویی	۴۲۸
شماره کتابشناسی ملی	۲۳۹۵۴۶۰

### نام کتاب: English for the Students of Dentistry (Volume 2)

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ناشر: انتشارات شایان نمودار

مدیر تولید: مهندس علی خزعلی

حروف چینی و صفحه آرایی: انتشارات شایان نمودار

طرح جلد: آتلیه طراحی شایان نمودار

نوبت چاپ: اول

شمارگان: ۵۰۰ جلد

تاریخ چاپ: بهار ۱۴۰۲

شابک: ۹۷۸-۹۶۴-۲۳۷-۷۰۱-۵

قیمت: ۱,۲۰۰,۰۰۰ ریال



شایان نمودار

دفتر مرکزی: تهران/ میدان فاطمی/ خیابان چهلستون/ خیابان دوم/ پلاک ۵۰/ بلوک B/ طبقه همکف/ تلفن: ۸۸۹۸۸۸۶۸



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(تمام حقوق برای ناشر محفوظ است. هیچ بخشی از این کتاب، بدون اجازه مکتوب ناشر، قابل تکثیر یا تولید مجدد به هیچ شکلی، از جمله چاپ، فتوکپی، انتشار الکترونیکی، فیلم و صدا نیست. این اثر تحت پوشش قانون حمایت از مولفان و مصنفان ایران قرار دارد.)

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## **Preface**

Nowadays, competence in English has become an urgent need for dental students who are involved in medical services. It is due to the fact that they are required to have the ability to communicate with the other people in their field including other doctors and patients.

English for dental students volume 2 is prepared for the demands of professional dentistry also include English competence. This book provides students to improve their English skills.

The contents of this volume are based on dental knowledge.

Procedures taught in previous year, so that the contents are not something strange for students.

This course volume is certainly help to facilitate the student to acquire the ability to perform their duties in an environment where English is used and needed. I wish that this book will be studied and practiced easily to achieve the competence of dental English.

I hope that by the use of this volume, the dental students will be able to learn and practice English according to their professional skills. By mastering English for dental students volume 2, it will improve their quality of human resources and they will have added value so that job opportunities will be widely open for them to reach a bright future.

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## **Toothache and Analgesics**

An understanding of pain is important as it impinges on a dentist's daily activities because of the fact that it is a common symptom of dental disease and it will be the precipitating factor that leads many patients to seek care. Pain may be experienced during treatment or as a consequence of treatment and fear of pain may prevent patients seeking treatment.

### **The Nature of Pain**

Pain is a complex phenomenon involving physiological, psychological and situational factors. The Gate Theory of Pain acknowledges that experience of pain results not only from physical sensations but also from emotional and evaluative reactions to these sensations. Therefore, pain does not always correlate with physical damage or demonstrable organic disease and is influenced by higher centres in the central nervous system. It is a highly personal experience and patients will express the sensation of pain differently - i.e., there is a difference between pain sensation and pain behaviour. Thus, it is not always possible to determine how much pain an individual is experiencing from observation alone. The reaction to pain is influenced by the setting in which the pain is experienced. Thus, in the dental surgery patients may confuse other sensations with pain, especially if anxious pain is influenced by anxiety. Previous experience of pain influences subsequent exposure. Pain during a given procedure may lead to the expectation that it

will be more painful in future and will actually be pers more painful. Reaction to pain is influenced by cultural and emotional factors and variation in individual situational facis means that what is painful to one person will not be to another.

It is important that pain is not dismissed simply because there is no obvious organic ex. However, do not be deemed to be psychological in origin until all polis of an organic source have been investigated thoroughly and eliminated.

## Psychological Approaches to Pain Control

The manner in which analgesic agents are prescribed has an important influence on their effectiveness. In addition to their pharmacological effect, much of the positive effect of drugs stems from the patient's belief in their efficacy: the placebo effect, psychological approaches to influencing patients' pain include many of those useful in reducing anxiety. Anxiety and pain are positively related, Anxious patients are much more likely to experience pain and in turn pain is likely to increase anxiety Techniques available include.

*Distraction* Involves shifting the patient's attention during treatment. Suggested techniques include provision of audiotapes, pictures on the ceiling of the surgery to be viewed when the patient is reclined to prevent patient from focusing on potentially painful stimulus.

*Enhancing control* Advise patient to raise a hand if they want to stop. Effective communication Explain the sensations the patient is likely to experience. Avoid suggestive words such as pain and hypnosis Useful in some patients. Provides a sense of calm and well-being, thereby reducing anxiety.

Most dental pain is inflammatory in origin whether it be pulpal periodontal or, less frequently, temporomandibular joint or muscular. Non-steroidal anti-inflammatory drugs (NSAIDs) with their associated analgesic properties are therefore frequently appropriate prescriptions for dentally related pain.

The way in which analgesics are prescribed may have a significant bearing on the success of their actions. 'Just take aspirin if you have any pain' is not likely to induce confidence in patients, whereas an explanation of the positive qualities of the drug in the particular patient's context may well result in more benefit. No response to standard analgesics may indicate atypical facial pain. often of psychogenic origin, or a more sinister cause.

Most analgesics will have no perceptible effect on acute pulpitis, periodontal or periapical abscess if physical measures are not taken by the dentist to actively relieve the pain.

## Acute Dental Pain

Acute pain is pain that is provoked by disease or injury, and is associated with musculoskeletal spasm and nervous system activation. While acute pain often resolves, pain that lasts longer than 3 months is considered to be chronic.

Acute orofacial pain can result from pathological conditions, underlying disease processes, and/or their treatment. Pain can be attributed to conditions affecting the hard tissues such as caries of the enamel, dentin, and cementum, or it can be due to soft tissue conditions such as gingivitis and periodontitis.

Patients sometimes present to a medical practitioner with dental pain if they cannot see a dentist. Doctors need to be aware of the common dental diseases that result in pain so they can help to manage the patient's symptoms until they are able to see a dentist. Appropriate advice regarding analgesics for dental pain is important. Paracetamol and ibuprofen are more effective in combination than either of them alone, with or without opioids. Antibiotics are only indicated as an adjunct to dental treatment when there are signs of systemic involvement, progressive and rapid spread of infection, or when the patient is immunocompromised.

## Common Types of Dental Pain

Dental pain is usually acute, unilateral and localised within the mouth. It can be exacerbated by thermal or osmotic stimuli or when biting and can present with swelling.

When obtaining a pain history, the mnemonic SOCRATES can be useful:

**Site** – Where is the pain? **Onset** – When did it start? **Character** – Can you describe the pain? **Radiation** – Does the pain spread anywhere? **Associations** – Are there other problems associated with the pain? **Time course** – Does the pain follow any pattern? How long does it last? **Exacerbating or relieving factors** – Does anything worsen or improve it? **Severity** – How bad is the pain?

*Pain exacerbated by thermal or osmotic stimuli* If the patient reports sensitivity or sharp, shooting pain to cold, hot or osmotic stimuli lasting only seconds to minutes, the

painful tooth is likely to have an inflamed pulp. This should resolve and is called reversible pulpitis. If the inflammation progresses, the pulp may not be able to heal. This results in irreversible pulpitis. In this case, the patient may report dull or throbbing, poorly localised pain of longer duration. The term dentinal hypersensitivity is used interchangeably with reversible pulpitis as the patient presents with the same symptoms. However, dentinal hypersensitivity is related to exposed dentine. Occasionally, temporomandibular disorders can arise secondary to pulpitis. This can present as odontogenic and non-odontogenic pain simultaneously. There is a lack of evidence for the use of antibiotics to reduce pain associated with irreversible pulpitis and the patient should be advised to seek prompt dental treatment.

When pulp inflammation progresses to pulp necrosis, the symptoms associated with thermal or osmotic stimuli may resolve initially. Dull throbbing pain localised to a tooth with an infected root canal system can then occur when there is inflamed periodontium around the root apex (symptomatic apical periodontitis). Knowing the patient's history of symptoms and past dental treatment can be useful as pulp inflammation and necrosis usually develop from tooth decay. A patient with a history of root canal therapy can develop symptoms over time if the root canal system remains or becomes re-infected. Other causes of dull throbbing pain include food impaction, bruxism (grinding of teeth), temporomandibular disorders, oral ulceration, pericoronitis which this may present with continuous pain localised near a wisdom tooth, acute necrotising ulcerative gingivitis, dry socket (alveolar osteitis).

When pain occurs with a temporal pattern (e.g., intermittent pain), it is likely to have a nonodontogenic cause and the clinician should consider myalgia related to bruxism, cluster headaches or neuropathic pain. A patient with nocturnal bruxism may report discomfort, fatigue or pain in the jaw muscles and headache, especially in the morning.

***Pain when biting*** When assessing the patient, consider the character and location of the pain. Sharp pain with short duration may be localised to a vital tooth with cracks or dislodged dental restorations.



***Pain with swelling*** Urgent referral to a dentist is indicated when there is dental pain with swelling. A patient with an acute apical abscess will experience a rapid onset of spontaneous pain, which can sometimes be poorly localised and present with firm or fluctuating swelling in the overlying soft tissues. The tooth is extremely tender when palpated or tapped. The symptoms and clinical presentation of a periodontal abscess can be confused with an acute apical abscess. However, pain from a periodontal abscess is usually localised. From the history, the patient may have had previous periodontal treatment, a history of periodontal abscess or a recent soft tissue trauma sustained during eating. On examination, there may be an ovoid swelling in the gingival tissues along the lateral surface of the root. Suppuration can present spontaneously or when the abscess is pressed. Again, systemic antibiotics are only indicated as an adjunctive treatment when there is systemic involvement or spread of infection, or if adequate drainage cannot be provided.

**Maxillary sinusitis** The symptoms associated with maxillary sinusitis can mimic pain of pulpal origin and vice versa. The medical history of a patient with sinusitis may reveal recent upper respiratory tract infection, a history of chronic rhinitis or pain associated with air travel. Symptoms can be unilateral or bilateral and are described as a continuous dull pain exacerbated by biting, touch, postural changes or exercise. The patient may also have nasal congestion and discharge, headache, facial pain or fullness, erythema over the cheeks and olfactory disturbance. Maxillary sinusitis may be suspected to have an odontogenic cause when it does not respond to medical therapy and presents with unilateral symptoms and a history of dental or jaw pain. The patient may have a history of dental caries, periodontal disease or complications with surgery in the posterior maxilla. If sinusitis of odontogenic cause is suspected, the patient should be directed to a dentist.

***Orofacial pain of non-odontogenic*** origin Knowing the location and timing of the pain can help to differentiate between the musculoskeletal, neuropathic, vascular, primary headache or mixed conditions. Chronic orofacial pain has a non-odontogenic origin and is characterised by painful regional syndromes with a chronic unremitting pattern. The most common example is temporomandibular disorders which can present as unilat-

eral or bilateral, continuous or episodic pain. The patient may complain of pain in the jaw, temple, inside or in front of the ear, which is modified by jaw movements. Fibromyalgia, back pain, chronic fatigue syndrome, depression and headache can be associated with a temporomandibular disorder. Clicking, crepitus, pain, trismus or locking of the temporomandibular joints can present with disruption of the disc movement. Jaw claudication can potentially be a sign of temporal arteritis, and the patient can be referred to an oral maxillofacial surgeon for diagnosis and management.

### ***Postoperative Pain***

Particularly after oral surgical procedures, good pain control should be considered essential. The use of local anaesthesia has benefits for patients undergoing surgery under general anaesthesia. It lowers the requirement for volatile gaseous agents, reduces the pain immediately postoperatively and hence the need for more powerful anaesthetics such as opioids, reduces afferent induced arrhythmias in the heart and will also reduce local haemorrhage, where vasoconstrictor is also used.

Patients should be instructed to start taking the prescribed analgesic before the local anaesthetic wears off, as continuity of measures appears to prevent the pain from becoming less receptive to analgesia.

## **Analgesics and NonSteroid Anti Inflammatory Drugs**

### **Nonopioid Analgesics**

Nonopioid analgesics include nonsteroidal anti-inflammatory drugs (NSAIDs), as well as acetaminophen. Examples of NSAIDs include ibuprofen, naproxen, celecoxib, and aspirin. They each work via slightly different mechanisms but, in general, inhibit cyclooxygenase (COX), an enzyme involved in the conversion of arachidonic acid to prostaglandins, which are mediators of inflammation, fever, and pain. The mechanism by which acetaminophen provides pain relief is less clear, but there is some evidence suggesting it involves the inhibition of prostaglandin synthesis in the central nervous system.

NSAIDs act peripherally, meaning they help with pain by reducing inflammation at the site where it is occurring. Alternatively, acetaminophen acts centrally by blocking

the transmission of pain signalling within the central nervous system. Due to these different mechanisms of action, taking NSAIDs and acetaminophen in combination has been shown to be highly effective in reducing mild to moderate pain, as the pain is being blocked at both ends of the nociceptive pathway.

Acetaminophen and some NSAIDs such as aspirin, ibuprofen, and naproxen sodium are available to patients over-the-counter (OTC) in standard doses (e.g., 200 mg ibuprofen; 325 or 500 mg acetaminophen), but higher doses of these medications can be prescribed to patients. There are also several other NSAIDs only available with a prescription, such as celecoxib, ketoprofen, and diclofenac.

Although effective in relieving acute pain, the use of NSAIDs, especially long-term use, can be accompanied by adverse effects. Because of the fact that prostaglandins have a role in gastrointestinal mucosal protection and also play an essential role in renal perfusion, by blocking prostaglandin synthesis, NSAIDs can cause gastrointestinal and renal adverse effects. The most common adverse effect of NSAID use is gastrointestinal toxicity, which can result in symptoms such as nausea, heartburn, abdominal pain, and bleeding. Additionally, NSAIDs may increase the risk of serious cardiovascular events and nephrotoxicity. All prescription NSAIDs must display a black box warning that cardiovascular thrombotic events, as well as gastrointestinal risks are possible when using the medication.

Acetaminophen use has been associated with liver toxicity as well as other less serious adverse effects such as headache, agitation, and gastrointestinal symptoms. Prescription acetaminophen must display a black box warning about hepatotoxicity, as taking over 4,000 mg per day has been associated with acute liver failure. Patients may be at risk of exceeding this 4,000 mg limit with OTC drugs, as there are many OTC combination drugs that contain acetaminophen as an active ingredient (i.e., cold and flu medications), and patients may unknowingly take more than one acetaminophen-containing drug at once. When NSAIDs are taken in combination with acetaminophen, there is little indication that adverse effects are any more significant than those experienced with each drug individually.

**Aspirin** has different therapeutic properties.

*Pain control* Trauma, infection or any inflammatory reaction leads to the production of arachidonic acid from cell phospholipid. Arachidonic acid is acted on by a number of enzymes including the cyclo-oxygenase system. This leads to the production of prostaglandins which, although not themselves pain producers, enhance the pain-producing effects of several other agents, such as bradykinin and  $\alpha$ -hydroxytryptamine, by sensitising the pain receptors. Most NSAIDs interfere with the production or conversion of arachidonic acid to prostaglandins. Anti-inflammatory action Prostaglandins are vasodilators and have an effect on capillary permeability, leading to redness and swelling of tissues. Prostaglandin inhibition by NSAIDs reduces these manifestations.

*Antipyretic* In the hypothalamic region of the brain, levels of prostaglandins become raised in response to leucocyte pyrogens. These higher levels appear to raise the temperature-setting mechanism of the body but are responsive to NSAIDs, and the temperature setting is thus lowered. The excess heat is lost by peripheral vasodilatation. Normal temperature is unaffected. In addition to these therapeutic activities, aspirin has various other metabolic effects.

*Antidiabetic action*

This involves the reduction of blood sugar in diabetics by increasing the peripheral utilisation of glucose.

*Increases basal metabolic rate (BMR)*

*Reduction of platelet adhesiveness*

This action is now widely employed in the prevention and treatment of thromboembolic vascular disease, where low-dose long-term therapy has proven

benefits in preventing thrombus formation. There is no requirement to alter the regime for extractions or routine minor surgery.

An increase in thyroid hormone levels happens with the long-term use of aspirin.

Patient groups at risk from aspirin are as follows:

Peptic ulceration Prostaglandins exert a moderating influence on acid secretion and stimulate mucin production in the stomach with a resultant protective effect on the gastric

mucosa. Aspirin and most other NSAIDs hence cause an increase in acid production and reduction in mucin, which may lead to erosive and ulcerative effects on the stomach and duodenum. This can cause bleeding even in normal conditions but may have more serious outcomes, such as perforation in patients with pre-existing peptic ulceration. NSAIDs are, therefore, largely contraindicated in these patients; paracetamol may be given safely.

Bleeding disorders In patients with known clotting defects such as haemophilia, an increased bleeding tendency generated by the above mechanism may have serious implications, and NSAIDs are, therefore, potentially dangerous and should be avoided.

Anticoagulants Coumarin-type drugs (such as warfarin) are enhanced by aspirin with an increased anticoagulant effect. This can increase blood loss from the gastrointestinal tract in addition to other systems. Paracetamol is a suitable alternative to any of the peripherally-acting NSAIDs.

For children under 16 years, Aspirin has been implicated in the aetiology of Reye's syndrome, a fatty degeneration in the liver and kidney with an associated encephalopathy. The morbidity is high, and the mortality from this condition is reported at 50%. Hence, aspirin is contraindicated in children under 16 years.

Elderly All the NSAIDs, but aspirin in particular, can cause more severe effects on the gastric mucosa. Additionally, they may be hazardous in older patients with cardiac disease or renal problems. In general, paracetamol is a safer prescription for analgesia in elderly patients.

Asthmatics Hypersensitivity may precipitate severe bronchospasm.

Pregnancy Use in the third trimester may cause prolongation of labour and bleeding at birth in both mother and baby

Renal or hepatic disease Dose may require a reduction in renal disease. Worsening bleeding problems may result in liver disease.

**Ibuprofen** Has similar but not identical effects to aspirin. It has less anti-inflammatory activity and less and more transitory effect on platelets than aspirin. Irritant to the gastrointestinal tract but less so than aspirin. Bronchospasm, especially if the patient is allergic to other NSAIDs. Many drug interactions are possible, notably angiotensin-

converting enzyme inhibitors, other NSAIDs, oral antidiabetic drugs and lithium.

Side effects include gastrointestinal discomfort and possible hypersensitivity, but also several others.

Children Reduced dose in paediatric suspension. They were not recommended for children under 7 kg or under one year of age. Elderly See above note on aspirin. All NSAIDs should be prescribed with caution in this group of patients.

**Acetaminophen** has Similar analgesic properties to aspirin. Antipyretic but little or no anti-inflammatory action. No significant gastrointestinal irritation. Not implicated in Reye's syndrome. Side effects are rare but include rash and blood dyscrasias. It is a safer analgesic alternative for groups of patients with peptic ulceration, taking anticoagulants or in the elderly.

Dose 500 mg 1 g orally 4-6 hourly. Maximum adult dose 4 g daily. Children Reduced dose in paediatric suspension. Overdose Causes severe but delayed hepatocellular necrosis. In adults, 7-10 g may be sufficient and, in children, as little as 3g.

Symptoms occur 24 to 48 hours after ingestion. Early symptoms are anorexia, nausea, vomiting and abdominal pain. Maximal liver damage occurs in 3-4 days. Plasma levels are required if an overdose is suspected. The liver may be protected by treatment with acetylcysteine or methionine if administered within the first few hours of the overdose. If the patient reports taking what appears to be an excessive quantity, then this warrants immediate referral to an Accident and Emergency unit to assess the plasma level of paracetamol. An urgent medical assessment is required.

### **Opioids**

Opioid analgesics can be used to treat moderate to severe acute pain and include drugs such as oxycodone, hydrocodone, and codeine. These drugs are often prescribed as formulations that are combined with acetaminophen or aspirin.

Opioids act as agonists at opioid receptors and alter the nervous system's response to painful stimuli. They can be full agonists, partial agonists, or they can be mixed agonist/antagonists. The precise mechanism of action of opioids is not known. However, specific opioid receptors have been identified in the brain and spinal cord that are thought to play

a role. While NSAIDs exhibit an effectiveness ceiling where additional dosing does not provide additional relief, opioids do not have an analgesic ceiling.

Opioids should not be given to patients with a suspected head injury as the drug may mask pupillary evidence of increased intracranial pressure by its effect on the pupillo-constrictor centre

Recourse to narcotic analgesics is infrequent in dentistry other than in oral and maxillofacial surgery. In general, opioids have depressive and stimulatory effects on the central nervous system.

Opioids depress the pain centre, higher centres, respiratory and vasomotor centres and cough centres and stimulate vomiting, salivary and pupilloconstrictor actions.

The positive response to pain appears to be brought about more by an alteration in the patient's perception of pain rather than a reduction in the pain itself. Dependence Patients may become dependent on opioids, both physiologically and psychologically, with a craving for the drug and physical illness on acute withdrawal.

An increase in dose is needed to achieve the same therapeutic effect after using opioids for a while. This effect is restricted to the depressant effects on the central nervous system (CNS). Smooth muscle stimulation leads to constipation even with mild opioids such as codeine.

Common adverse effects associated with opioids include sedation, dizziness, nausea, vomiting, pruritus, sweating, constipation, and respiratory depression. Additionally, prescription opioids contain a black box warning stating the risks of addiction, abuse, and misuse, respiratory depression, accidental ingestion (especially by children), neonatal opioid withdrawal syndrome (from prolonged use during pregnancy), interactions with cytochrome P450 3A4 inhibitors, and dangers of concomitant use with benzodiazepines or other CNS.

**Codeine** is Normally not used alone but added to other non-opioid analgesics such as aspirin or paracetamol. It is an efficient cough suppressant but not a particularly advantageous analgesic, and it usually causes constipation.

**Dihydrocodeine tartrate** Has a similar potency to codeine. Although recommended for more severe dental pain, its advantage over NSAIDS is far from conclusive, particularly after oral surgery.

Side effects include nausea, vomiting, constipation and drowsiness. Larger doses may cause hypotension and respiratory depression. Serious interactions may occur with anti-depressants, especially monoamine oxidase inhibitors, and several other interactions are recorded (see BNF).

It should be avoided or used with caution in the elderly, children, asthmatics, concomitant antihypertensive therapy, pregnant or lactating women and those with liver or kidney disease.

This drug can be given intramuscularly (i.m.).

**Pethidine** is more suitable for ambulatory patients than morphine. Its side effects are less marked than morphine, but it is liable to induce dependence and is unsuitable for prolonged use. It can be given by i.m., subcutaneous or i.v. routes.

### Comprehension Questions

Answer the following questions according to the text you read.

1. What does the pain gate theory acknowledge?
2. What are the benefits of using local anaesthesia for patients undergoing surgery under general anaesthesia?
3. What are the causes of dull throbbing pain?

### Fill in the Blanks!!!

Fill in the blanks with appropriate words from the list below.

Paracetamol NSAIDs gastrointestinal toxicity Opioids aspirin

1. The most common adverse effect of NSAID use is ....., which can result in symptoms such as nausea, and heartburn.
2. Increase in thyroid hormone levels happens with long-term use of.....
3. .... is a suitable alternative to any of the peripherally acting NSAIDs.



4. .... depress pain centre, higher centres, respiratory and vasomotor centres and cough centre.

5. ....act peripherally, meaning they help with pain by reducing inflammation at the site where it is occurring.

### **Matching**

Match the definitions in column 1 with the words in column 2.

Acute apical abscess      is Only indicated as an adjunct to dental treatment when there are signs of systemic involvement

Irreversible pulpitis      If the inflammation progresses, the pulp may not be able to heal

Acute pain      Caused by infection of the root canal of the tooth. It is usually localised intraorally

Antibiotics      Pain that is provoked by disease or injury and is associated with musculoskeletal spasm and nervous system activation

## Dental Fear and Anxiety

Most patients are likely to be anxious to a greater or lesser extent at the prospect of dental treatment. This can vary from mild apprehension to anxiety sufficient to prevent the patient from seeking care.

Anxiety may relate to the prospect of dental treatment in general or the fear of an individual object, e.g., a needle or a procedure such as a tooth extraction.

There are many possible causes of anxiety. Fear of pain may affect the pain threshold. Fear of the unknown; anxious patients are pessimistic and 'expect the worst'. Furthermore, many anxious patients ascribe their anxiety to previous 'bad experiences'. These frequently relate to the personal characteristics of a dentist. Parents can pass on their anxiety to their children. Preparedness: Some patients are 'innately' anxious. This is related to personality, and such individuals are anxious in all sorts of situations, particularly those they have not previously encountered.

Questionnaires are available, which can be used to measure anxiety. The patient is asked a series of questions related to potentially threatening situations. Answers are scored according to the severity and can be used to quantify anxiety. One of the best-known is the Dental Anxiety Scale.

The ability to cope with anxious patients and to help alleviate anxiety is crucial in the practice of dentistry. The emphasis should be on assisting patients to acquire the skills necessary to cope with dental treatment. Anxieties must be addressed directly. If a patient looks anxious, ask what is worrying them and take time to discuss and explain.

## Conscious Sedation

Many patients have understandable anxiety when undergoing dental treatment. Sympathetic and reassuring practitioners have a significant role in the successful management of such patients. There remain, however, several patients who need additional help, which can be achieved in several ways: oral premedication, normally a benzodiazepine inhalation sedation, intravenous sedation, hypnotherapy, oral or transmucosal, usually intranasal sedation.

A patient who is sedated satisfactorily is one who accepts treatment with or without local anaesthesia and who previously tolerated such treatment only with difficulty, if at all.

Conscious sedation is a technique in which the use of a drug or drugs produces a state of depression of the central nervous system enabling treatment to be carried out, but during which communication can be maintained, and the modification of the patient's state of mind is such that the patient will respond to command throughout the period of sedation. Techniques used should carry a margin of safety wide enough to render unintended loss of consciousness unlikely.

Ideally, all patients for conscious sedation should be formally assessed. Questions relevant to each specific technique should include drug history, drug allergy previous sedation/anaesthetic dental anxiety history.

This visit also allows for informed written consent to be obtained and baseline vital signs such as blood pressure and heart rate to be measured.

There are a number of routes available for sedation in dentistry, namely oral, inhalation, intravenous and transmucosal.

### **Oral Sedation**

Premedication Benzodiazepines may be used to help anxious patients achieve sleep before their dental treatment and to relieve nervousness by prescription an hour or two before appointments. Temazepam or diazepam is often used for this purpose. Patients should be warned of the sedative effects, should be accompanied to and from the surgery and should not drive a car or use potentially dangerous domestic or industrial machinery or appliances. Alcohol enhancement is known to occur, and therefore concurrent use should be avoided. A long-term prescription will lead to addiction, and there is no justification for long-term use in dentistry.

Many patients with myofascial pain dysfunction syndrome exhibit marked overactivity of the muscles of mastication and experience muscle pain due to spasms and fatigue. Diazepam (2-5 mg), taken an hour before bed for about one week, may have a good re-