The article will give the reader:

- An overview of facial pain in terms of epidemiology, classification, diagnosis and management
- Three case histories on which to try out diagnostic skills
- An overview of management of three types of facial pain.

### Epidemiology

Pain in the facial area may be due to neurological or vascular causes, but equally well may be dental in origin. The patient will often make the first attempt at diagnosis in that he or she chooses to consult either the dentist or the doctor. This may therefore lead to inappropriate diagnosis and treatment. Many patients with trigeminal neuralgia complain that their dentist treated them for dental causes of pain before finally they received the correct diagnosis. This is, however, highly understandable as dental pain is extremely common whereas trigeminal neuralgia is a rare condition and primary care medical and dental practitioners may only see three or four cases in their practising lifetime. All the neurological and vascular causes of facial pain (excluding headaches) are rare compared to the dental and temporomandibular causes. The risk factors for some of the conditions are known, but there is little information on natural history and prognosis. Further details of the epidemiology of facial pain can be found in *Epidemiology of pain*, which has been written using evidence based methodology.

### Classification and Diagnosis

A classification system is useful when attempting to make a diagnosis, to facilitate treatment decisions, and to predict future outcome. Not only does the pain itself need to be classified but also its psychosocial effects. The International Association for the Study of Pain (IASP)\(^2\) and the International Headache Society (IHS)\(^3\) have both classified these pains, and the fourth revision of the *Diagnostic and statistical manual* (DSM-IV) enables you to classify psychiatric disorders. Unfortunately only a handful of orofacial conditions have been well validated by case control studies.

I find the classification into musculoligamentous (group 1), dental (group 2), and neurological/vascular (group 3), as adapted from Hapak\(^4\), to be a useful system (table 1).\(^4\) Group 1 patients are in general best referred to oral physicians or maxillofacial surgeons who work in the secondary care dental system, group 2 to dentists, and the last group to neurologists. The presence of psychosocial disability will also affect referrals as those with higher levels may require referral to liaison psychiatrists.

The diagnosis of the majority of these facial pains is based on a careful history and examination. The patient must be given time to “tell their story” in order to determine both the pain disease and the pain illness/suffering. This is greatly facilitated if patients are given questionnaires to complete before the formal consultation. There are several questionnaires we use as standard. The Brief Pain Inventory (BPI) uses a visual analogue scale (0–10) to determine severity of pain and the impact on quality of life issues such as mood, relationships, and work. The Hospital Anxiety and Depression scale (HAD) is used to determine if there is evidence for a diagnosis of depression or anxiety. We ask patients to complete a questionnaire about their treatment goals as it gives us an indication of which issues are important to the patient—for example, reassurance that their pain is not caused by a serious underlying disease, taking less medication, having a diagnosis, or being able to communicate about their pain. During the consultation we will use the McGill Pain Questionnaire (MPQ) to gauge not only the sensory component of the pain but also the affective and evaluative aspects. It has been validated in a variety of orofacial conditions. Further discussions on measurements can be found in the *Textbook of pain*.\(^5\) It is important to ascertain whether patients have other pain complaints and symptoms which might suggest a need to undertake an examination of their mental state.
MANAGEMENT PRINCIPLES
In many respects treatment of a patient with chronic facial pain is no different from treating any patient with chronic pain, as the psychosocial and behavioural response patterns are the same despite different medical and dental causes. However, you need to remember that the psychological and symbolic significance of the head in the development of self esteem, body image, and interpersonal relationships confers special meaning on pain in this area.

Time needs to be spent in educating the patient and coming to a negotiated treatment plan that places the patient in the centre. This process involves active patient participation, good communication skills, appropriate choice of treatment based on high quality evidence, increased patient information, and self support as well as an emphatic clinician. Chronic facial pain cannot always be totally abolished and so it is important to have in place long term strategies for its management. Regular reassessment is vital and may even include a possible change in diagnosis. A holistic approach is essential and patients’ beliefs, expectations, and own goals must be explored using questions shown in the box below.

The aim of treatment can be summarised as below:
- Eliminate or minimise the facial pain
- Eliminate or minimise negative cognitive, behavioural, and emotional factors
- Increase efficacy of drug treatment by careful choice
- Improve adherence by ensuring you have a well informed patient
- Encourage self management which increases control over pain.

Treatments divide into medical, surgical, and alternative (ranging from acupuncture to cognitive behaviour therapy) and patients may need a variety of these.

SPECIFIC CONDITIONS
Three orofacial pains, their presentation, and management will be discussed. Read through the three case notes presented below and then answer the following questions on each of the cases before reading the answers at the end of the article. Alternatively you could use these problem solving cases as a basis for a training session and invite an expert to facilitate the session.

1. List the main characteristics of each of the pains.
2. What measurements have you been given and how useful are they?
3. What other factors has the clinician given you that may help in management?
4. What is the differential diagnosis for each case, how would the list differ if you were in primary or secondary care sector?
5. Are there any diagnostic tests you could perform which would help?
6. What details in the history will help you determine whether the patient is going to adhere to treatment and whether it will be successful?
7. How would you start managing the patient?

Case 1
Mrs Willis is 40 years old and presents with a two year history of preauricular pain. The pain began gradually and she has had periods of weeks when the pain disappeared. The rest of the time she has pain which fluctuates in severity from 2–7 on a visual analogue scale (VAS) of 1–10, with an average score of 4. On the MPQ she chooses the following words: drilling, pressing, hurting, tender, annoying, nagging. The pain begins preauricularly and then radiates behind and into the ear as well as partially down the muscles of the face. It is bilateral but worse on the left. It is worse when eating hard things or biting into food and is helped by rest and analgesics. It is associated with some limitation in opening, a clenching habit, and clicking of the left joint. She suffers from headaches, has occasional tinnitus, back pain, and premenstrual pain, and does not sleep well. On the HAD she shows evidence of mild depression and anxiety. The BPI shows mild impact of the pain on her quality of life. She was recently divorced and is now bringing up a 12 year old girl on her own. Her parents help her out while she goes out to work as a computer programmer. She thinks the pain is caused by a disease of the joint and would like some surgery for it. On examination there is some limitation in opening and an audible click on opening wide is heard. The muscles of mastication are tender on palpation. Introraicularly there are signs of frictional keratosis (white lines) in the buccal mucosa in line with the occlusal plane.

Case 2
Mr Jones is 57 years old and presented complaining of a sharp, shooting pain on the left side of his face. The pain began two months ago but he had a similar episode one and a half years ago when it lasted for six weeks and disappeared completely.

Table 1 Classification of orofacial pain

<table>
<thead>
<tr>
<th>Musculoligamentous/soft tissue</th>
<th>Dentoalveolar</th>
<th>Neurological/vascular</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporomandibular joint (TMJ)</td>
<td>Dentinal</td>
<td>Trigeminal neuralgia</td>
</tr>
<tr>
<td>Facial arthralgia, myofascial</td>
<td>Periosteal</td>
<td>Glossopharyngeal</td>
</tr>
<tr>
<td>Pain</td>
<td>Cracked tooth syndrome</td>
<td>Nerve compression</td>
</tr>
<tr>
<td>Salivary gland disease</td>
<td>Maxillary sinus</td>
<td>Cluster headache</td>
</tr>
<tr>
<td>Optic neuritis</td>
<td>Thermal sensitivities</td>
<td>Postherpetic neuralgia</td>
</tr>
<tr>
<td>Internal derangements TMJ</td>
<td>Atypical odontalgia</td>
<td>Cranial arteritis</td>
</tr>
<tr>
<td>Burning mouth</td>
<td>Cluster headache</td>
<td>Trigeminal neuralgia</td>
</tr>
<tr>
<td>Candidiasis</td>
<td>SUNCT</td>
<td>Ramsay Hunt</td>
</tr>
<tr>
<td>Cancer, sinuses, nasopharynx</td>
<td>Salivary gland disease</td>
<td>Tolosa Hunt syndrome</td>
</tr>
<tr>
<td>brain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SUNCT, short lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing.
until recently. Each bout of pain lasts for a few seconds but the bouts seem to merge together and so it can seem like several minutes of pain. He may be free of pain for several hours. The pain begins in the left nasolabial fold and then spreads across the whole cheek up to the ear. He grades an average 7/10 on a VAS with a range of 4–10. The words chosen on the MPQ are shooting, stabbing, sharp, stinging, tender, exhausting, terrifying, gruelling, wretched, unbearable, and torturing. It appears to be made worse when eating, shaving and talking. He is terrified of brushing his teeth. He has lost weight and has stopped going out, as he cannot get through a meal. Sleep brings him relief. The HAD shows mild anxiety and severe depression. On the BPI five out of the seven quality of life parameters score above 5/10. Mr Jones has had time off work as he works as a telephone operator. He is married and has two grown up children. Mr Jones thinks he has a nerve pain and wants his nerve cutting. Examination shows that touching the skin in the area of the infraorbital nerve provokes pain. There are no other abnormalities.

**Case 3**

Mr Hinds is 30 years old and has had facial pain for four years. The pain began in his upper left jaw in his teeth and he had extensive dental treatment leading to root canal therapy and finally extraction of his upper molar. He had limited pain relief after each of the procedures. There have been periods of no pain after dental treatment, but since this finished a year ago the pain has been continuous. The pain scores on VAS range from 3–8 with an average of 4 out of 10. It does fluctuate in intensity and he may not be aware of it during the day, but it is worse in the evenings. The pain is described on the MPQ as boring, sharp, gnawing, tugging, aching, tender, tiring, wretched, miserable, radiating, and nagging. The pain is now located both externally and intraorally on the left maxilla and radiates as far as the forehead and down to the neck, remaining mainly left sided. Nothing seems to help and he has stopped using all analgesics as they do not help. Mr Hinds reports headaches, neck and back pains, as well as occasional pruritus. The HAD shows pronounced anxiety but no depression. The BPI shows five out of seven quality of life measures scoring above 5. Mr Hinds is married and has two children. He reported an unhappy childhood with frequent bullying. He had an authoritarian father whereas his mother was sympathetic towards his problems and ill health. He left school at 18 and did a course in social sciences. He has had a series of jobs in the civil service working on population surveys. He enjoys his job but finds it stressful at times. Four years ago a very close school friend died in an accident and he moved house five years ago. The lack of diagnosis has been very frustrating and he now wonders whether he may have a brain tumour. Examination reveals no abnormalities and cranial nerve testing is normal.

For answers to questions 1–7 on these cases, see box at the end of the article.

**TEMPOROMANDIBULAR DISORDERS**  
**Definitions, aetiology, diagnostic criteria, and investigations**

The most common names are temporomandibular pain and dysfunction syndrome, oromandibular dysfunction, and facial arthromyalgia (FAM). The first two are by definition associated with some form of temporomandibular joint (TMJ) dysfunction whereas the third is a chronic pain condition not necessarily associated with dysfunction.

The aetiology is unknown. One theory suggests psychogenic factors such as depression, other bodily pains, and being female are risk factors. Other suggested factors include muscle hyperactivity, parafunctional habits, anxiety, stressful adverse life events, and vulnerable personality types (table 2). Occlusal factors and traumatic (meniscal displacement) have both been proposed, but the evidence is weak and there are no controlled studies.

The principal findings are tenderness of the TMJ and associated muscles of mastication, trismus, limited or jerky jaw movements, and evidence of bruxism—tooth wear, and frictional keratosis of the buccal mucosa and the tongue. Signs of internal derangement of the TMJ (subluxation) include clicking noises and lateral displacement of the meniscus.

Although radiography, arthroscopy, and magnetic resonance imaging are routinely used for investigation, none have both been proposed, but the evidence is weak and there are no controlled studies.

**Evidence based evaluation of management**

The American Dental Association recommends that only conservative, reversible treatments are used. There is no randomised controlled trial of surgical intervention. One systematic review has been done of the use of occlusal appliances and rehabilitation. Currently antidepressant therapy and psychological treatments seem the best approaches (table 3). The prognosis for TMJ disorders is good, but pain is likely for 2–3 years.

**TRIGEMINAL NEURALGIA**

**Definition, aetiology, diagnostic criteria, and investigations**

Trigeminal neuralgia is defined by the IASP as a sudden, usually unilateral, severe, brief, stabbing, recurrent pain in the distribution of one or more branches of the fifth cranial nerve. The aetiology of this neuropathic pain remains unknown although it is postulated that the pathophysiological mechanism is that of compression of the trigeminal nerve by blood vessels such as the cerebral arteries in the root entry zone of the pons. In a minority of cases the trigeminal neuralgia is secondary to benign or malignant tumours. Table 4 lists the IHS criteria for trigeminal neuralgia.
Computed tomography is useful to exclude tumours, whereas magnetic resonance imaging is used to assess whether compression of the trigeminal nerve has occurred. Although greater specificity and sensitivity is claimed for the latter, the evidence is not of high quality.

Evidence based evaluation of management

All patients are started on drug treatment. If this either fails to control pain or produces unacceptable side effects, surgery is then offered. The medical treatment of trigeminal neuralgia has been published in Clinical Evidence and is kept updated; it includes two systematic reviews. The results are summarised in table 5. Many drugs used in trigeminal neuralgia have not been evaluated in randomised controlled trials (RCTs), and their use has been based on single case reports. Tocainide was used in an RCT but found to be too toxic to recommend its use. Proparacaine eye drops, when used in an RCT, proved to be ineffective. All antiepileptic drugs have side effects and a survey among patients has shown that all have side effects with a mean report of three. Drowsiness, inability to concentrate,
ataxia, and diplopia are the most commonly reported ones. I encourage patients to keep a pain diary to note how and when they took their medication and record the outcome, including side effects.

There is no high quality evidence in the surgical field and the only RCTs on peripheral treatments showed no improvement. Unfortunately most of the data have not even been analysed objectively and only a small percentage of the papers report their findings using Kaplan-Meier analysis. A summary is provided in table 6. A discussion of the techniques can be found in books on trigeminal neuralgia.

### Patient information and support
Patient information and support is provided by the US and UK trigeminal neuralgia associations who also have excellent web sites (www.tna-support.org and www.tna-uk.org.uk).

### IDIOPATHIC OR ATYPICAL FACIAL PAIN

#### Definitions, epidemiology, diagnostic criteria, investigations

The definition for this condition is very unclear and remains a subject of controversy according to the IASP. The IHS considers it a diagnosis of exclusion. Many patients suffer from facial pain as shown on epidemiological surveys, but because of lack of diagnostic criteria it is impossible to determine whether it is all the same condition. The characteristics as used in trials are listed in table 7 and the case described is very typical of those presenting in the secondary care system.

Examination shows no abnormalities. There are no appropriate investigations.

#### Evidence based management

Three trials, two of which were RCTs, have shown that antidepressants are effective in this condition. Treatment needs to be continued for between nine weeks and two years. Treatment of orofacial pain has been included in a systematic review on the use of antidepressants in pain.

Reassurance that nothing is wrong does not help, and if the following factors are gone through during the consultation management is optimised:

- Clear statement that examination and investigations are negative
- Acknowledgment of the reality of pain
- Agreement that the patient is ill
- Allowing ventilation of patient’s beliefs and attributions
- Educating the patient that stress plays a role, but introducing it gradually
- Non-illness behaviours and communications are reinforced with written material.

### CONCLUSION

There remains a need for considerable research in this field if we are to improve our diagnosis and management of facial pain.

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**Table 6** Surgical management of trigeminal neuralgia

<table>
<thead>
<tr>
<th>Type of surgery</th>
<th>Procedure</th>
<th>Mortality</th>
<th>Morbidity</th>
<th>Recurrence rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripheral therapies</td>
<td>Cryotherapy, neurectomy, alcohol injections</td>
<td>Low and local, mainly sensory loss</td>
<td>Mean 10 months</td>
<td>Very low</td>
</tr>
<tr>
<td>Gasserian ganglion</td>
<td>Gasserian ganglion is subjected to temperature varying from 60–80°C</td>
<td>Low</td>
<td>Unknown at present</td>
<td>Recurrence rate at 2 years 22%</td>
</tr>
<tr>
<td>Glycerol injection</td>
<td>Meckel’s cave is filled with glycerol</td>
<td>Very low</td>
<td>Less likely to cause eye problems or sensory loss</td>
<td>Recurrence rate at 5 years 65%</td>
</tr>
<tr>
<td>Microcompression</td>
<td>The Gasserian ganglion is compressed by a balloon for a few seconds</td>
<td>Very low</td>
<td>Minimal effects on sensory loss or eye problems, surgeon dependent</td>
<td>Recurrence rate at 2 years 22%</td>
</tr>
<tr>
<td>Posterior fossa</td>
<td>Full general anaesthesia used</td>
<td>Up to 0.4%</td>
<td>Recurrence rates at 5 years 60% and 80%</td>
<td></td>
</tr>
<tr>
<td>Gamma knife</td>
<td>Using stereotactic techniques the posterior fossa is identified and 75 G beam directed at the trigeminal nerve</td>
<td>Unknown at present</td>
<td>Long term effects of radiation unknown, takes up to 6 months for an effect</td>
<td>Recurrence rate at 2 years 22%</td>
</tr>
</tbody>
</table>

**Table 7** Characteristics of idiopathic or atypical facial pain

| 1. Site | Deep non-muscular areas of face, unilateral or bilateral, does not follow nerve distribution |
| 2. Radiation | Poor localisation |
| 3. Character | Throbbing, deep, diffuse, boring, nagging |
| 4. Severity | Moderate to severe |
| 5. Duration | Weeks to years |
| 6. Periodicity | Continuous, but can have prolonged pain free periods |
| 7. Provoking factors | Stress, fatigue |
| 8. Relieving factors | Rest, tricyclic drugs |
| 9. Associated factors | Anxiety, depression, other bodily pains |
Answers to the three case studies: general comments that apply to all cases

1. Pain history should be taken using Ryle’s classification. You can look up the diagnostic criteria of all orofacial pain conditions in IASP2 or IHS3 systems.
2. Review section on diagnosis. Epidemiological studies have shown that up to 70% of patients with orofacial pain will report psychological impact.
3. The histories show disability and widespread effects. They stress the importance of ascertaining whether the patient has whole body pains or not and a social history or life events that may contribute to initiating or potentiating the pain.
4. Case 1: temporomandibular pain; case 2: trigeminal neuralgia; case 3: chronic idiopathic or atypical facial pain. In primary care, ear problems and TMJ are far more common. Patients with atypical facial pain are likely to have more disability among the secondary care sector; trigeminal neuralgia is the rarest.
5. There are no diagnostic tests. Computed tomography is helpful to eliminate a cancer.
6. Patients’ beliefs are fundamental and must be clarified before treatment is initiated. One of the most important ones is reassurance that there is no cancer. Severity of disease, impact on quality of life, insight, and chronicity will impact on adherence as well as how the family views it.
7. Patients want reassurance that their pain is real and that it is not caused by mental illness. Showing patients the interaction between mental and somatic factors using the gate control theory of pain helps patients come to terms with their diagnosis and treatment.

REFERENCES

4. This classification system, which is currently under revision, provides clear criteria for all head and neck pains.
6. This is the definitive book on pain, recently updated and due to appear in a shortened version as Handbook of pain management in August 2002. Contains chapters on measurement of pain, etc, as well as specific pain of the orofacial region and trigeminal, ear, and eye pain.

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