

# The Differential Diagnosis of Temporomandibular Disorders

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Patients and practitioners often embrace the diagnosis of a temporomandibular disorder (TMD) for patients presenting with unexplained orofacial pain or dysfunction, without adequate consideration of other possible diagnoses. Further, once this diagnosis has been made, only the arthritides and musculoskeletal and mechanical intra-articular disorders may be considered. What is presented here is not intended as yet another classification for either orofacial pain or TMD. Rather, an orderly, practical, and scientifically based process for the development of a reasonable differential diagnosis is suggested for the practitioner confronted with a patient presenting with a primary complaint of pain involving the orofacial complex.

## The Differential Diagnosis of Orofacial Pain

Treatment must be based on an appropriate working diagnosis and the practitioner must be prepared to change the diagnosis as signs and symptoms change or new information becomes available. The possible general sources of a patient's oral or facial symptoms include the following:

- Dental pain
- Referred pain—sinuses, ear, nose, cervical disease, systemic
- Neuralgias, neurologic pain disorders
- Central lesions
- Somatoform disorders
- Disorders of the temporomandibular apparatus

Intraoral and dental diseases are by far the most common cause of orofacial pain. In all cases, diseases of the dental pulp, periodontium, and mucosa must be ruled out. The possibility of pain referred from adjacent structures must also be considered, and although management of most of these disorders is not within the expertise of the dental practitioner, he or she must be aware of the signs and symptoms associated with these conditions. Evidence of a demonstrable hearing loss suggests that otologic disease should be considered and appropriate referral made. Pain that originates in the neck or occipital region may suggest that primary cervical disease should be considered. Exertion-related pain, particularly on the left side, may suggest a cardiac basis.

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A neurologic basis for pain should be considered, particularly when there is an associated alteration of sensation or when the patient's symptoms are not necessarily associated with jaw function. Trigeminal neuralgia can mimic a TMD if the trigger point is intraoral or facial and overlies the temporomandibular joints or muscles of mastication. A patient complaining of pain on eating, may, in fact, be describing pain on swallowing rather than chewing, and the possibility of a glossopharyngeal neuralgia must be considered. Multiple sclerosis can initially manifest with only migratory facial pain, mimicking temporomandibular or dental disorders. Deafferentation syndromes or neuropathic pain must be considered when there is continuous pain associated with a traumatic episode.

Intracranial lesions can result in orofacial pain and even mandibular dysfunction, depending on the structures affected. Systemic symptoms such as weight loss, ataxia, altered sensation, paralysis, vertigo, or seizures are all signs suggesting that a central lesion should be considered. When the patient's symptoms and the local signs are incongruous, neurologic investigation is warranted.

Psychosocial factors can be either the cause of, or more often, a contributing factor to, a patient's orofacial complaint. Axis II disorders and somatoform disorders must be considered when there is evidence of depression, anxiety, or over-concentration on physical changes.<sup>1</sup> Symptoms such as loss of appetite, energy, memory, and/or concentration; anhedonia; or loss of libido suggest that a psychologic or psychiatric consultation would be appropriate.

## Disorders of the Temporomandibular Apparatus

A pathologist's perspective of disorders of the temporomandibular apparatus includes:

- Congenital and developmental disorders
- Posttraumatic disorders
- Degenerative and inflammatory disorders
- Muscular and musculoligamentous disorders
- Disc displacements (internal derangements)
- Neoplasms

Most of these are discussed elsewhere in this issue and will not be dealt with here. Still, when considering the arthritides, septic arthritis is usually overlooked. Although rare, septic arthritis can result from direct, invasive trauma; spread of infection from a contiguous site; or hematogenous dissemination.<sup>2,3</sup> Some have suggested that many cases of



Fig 1 Tomogram showing a fracture of the roof of the glenoid fossa, with a loose portion of the temporal bone displaced superiorly.

ankylosis of the temporomandibular joint are the result of an end-stage of septic arthritis.<sup>4</sup>

### Posttraumatic Disorders

The possible injuries of the temporomandibular apparatus resulting from direct trauma include joint dislocation, luxation, soft tissue injuries, and fractures. Condylar dislocation rarely occurs with voluntary mandibular movement, but it is not uncommon when a patient is under general anesthesia. It can also occur as a result of direct trauma or, uncommonly, after a prolonged dental appointment with manual pressure to force increased mandibular opening. It is an acute injury, and once the dislocation is reduced, any ongoing symptoms are most often muscular. Similarly, direct soft tissue injuries are acute in nature and usually self-limiting, such that recovery requires only supportive care.

Fractures involving the temporomandibular apparatus can result from a direct blow to the joint or mandible. The fracture can involve the condylar neck, condylar head, or fossa, the latter a temporal bone fracture. A blow to the body of the mandible can result in a subcondylar fracture on the contralateral side, the most common site for mandibular fractures.<sup>5</sup> Fractures involving the condylar head or the fossa are uncommon but often overlooked.<sup>6</sup> Patient signs and symptoms are suggestive of an intra-articular disorder such as a disc displacement or inflammatory or degenerative disease.

Figure 1 illustrates a fracture of the temporal fossa in a patient previously treated for a number of months with various appliances and medications. The patient received a direct blow to the anterior mandible, with the mouth partially open, in a bicycle accident, such that the impact was



**Fig 2** This plain view of the temporomandibular joint demonstrates a crush fracture of the condylar head that resulted from a severe blow to the anterior mandible while the patient's mouth was wide open. In addition to the distortion of the shape of the condylar head, fragments are noted within the joint.



**Fig 3** Computed tomographic scan showing a radiopaque mass in the floor of the right middle cranial fossa, overlying the temporomandibular joint. Biopsy and subsequent attempts at excision confirmed the diagnosis of osteoblastoma.



**Fig 4** A tumor mass is apparent on this coronal computed tomographic scan surrounding the right body of the mandible. The bulk of the tumor is on the medial aspect of the mandible, extending through it. The tumor was a leiomyosarcoma, apparently originating in relation to a mandibular vessel or one of its branches.

transmitted to the thinnest part of the fossa. In more extreme cases, the condylar head is forced up into the middle cranial fossa. Figure 2 exemplifies a crush fracture of the condylar head that resulted from a similar blow to the anterior mandible but with the mouth wide open.

## Neoplasia

Although neoplastic disease presenting as a TMD is a rare occurrence, the consequence of delayed diagnosis and treatment can be devastating. Tumors, benign or malignant, of the joint itself, associated tissues or the parotid glands can manifest symptoms suggestive of a TMD.<sup>7,8</sup> Signs and symptoms of a possible tumor may include:

- A complaint of altered sensation, including numbness, tingling, and allodynia
- A complaint of motor dysfunction, such as abnormal, uncontrolled jaw or facial movement, loss of movement, or paralysis
- Demonstrable altered sensation, for example, loss of perception of light touch or pin prick and hyperesthesia
- Demonstrable motor dysfunction or asymmetric movement
- Recent, visible physical change, including swelling or asymmetry

Figure 3 demonstrates a tumor of the temporal fossa that resulted in rather classic signs and symptoms of a primary TMD. The patient complained of pain and limitation of mandibular movement. There was demonstrable joint tenderness and limited mandibular opening. The imaging and subsequent biopsy confirmed an osteoblastoma. Although the tumor was benign, resection via a transcranial approach did not result in a cure.



Fig 5 Photograph of a portion of a panoramic radiograph. The right condylar head is almost completely replaced by an osteosarcoma, and there is a pathologic fracture of the condylar neck.



Fig 6 Computed tomographic scan demonstrating the extent of the osteosarcoma shown in Fig 5. The tumor extends from the fossa of the temporomandibular joint to below the orifice of the mandibular canal. It infiltrates tissue on both the medial and lateral sides of the mandible.

Similarly, tumors of the ramus, neck, or condylar head can initially present with fairly innocuous symptoms. Figure 4 shows the radiographic presentation of a leiomyosarcoma, apparently originating in the pterygomandibular region and infiltrating the mandible and masseter muscle. Although most of the signs and symptoms suggested a TMD, the patient also complained of numbness that was confirmed on clinical examination, and a diffuse but firm swelling was noted. Similarly, Figs 5 and 6 are radiographs of an osteosarcoma of the mandibular condyle and neck with a pathologic fracture. The patient's history was one of months of pain and limitation of mandibular movement. After he heard a loud cracking sound while eating, his pain decreased and mandibular movement increased. Obviously, the noise resulted from a pathologic fracture rather than reduction of a displaced disc. Swelling over the right temporomandibular joint again suggested further investigation.

Tumors of the parotid gland can physically obstruct mandibular movement and/or cause both muscle paralysis and altered sensation by involvement of the seventh and fifth cranial nerves. Although metastasis to the temporomandibular joint or adjacent structures is rare, this diagnosis cannot be dismissed when there is a history of malignant disease. Figure 7 depicts a metastasis to the condylar head from a primary lung carcinoma.



Fig 7 The condylar head has been completely destroyed by a metastatic lung carcinoma, which extends into the condylar neck.

## Conclusions

Without refuting the widely quoted diagnostic rule that "common things occur commonly," the clinician cannot forget that the uncommon does occur and that the result of a missed or delayed diagnosis can be devastating for the patient. Therefore, when considering the differential diagnosis for an orofacial pain patient, the clinician's vision must be wide, at least initially. The working diagnosis must also be revisited periodically during treatment, particularly if the patient's symptoms do not improve, or if symptoms change. The clinician must expand his or her consideration when the patient's signs and symptoms are incongruous, or when the degree of disability appears disproportionate to the signs. If the symptoms cannot be explained by the signs or appear unanatomic, further investigation is warranted. Similarly, if there is no response or an unusual response to treatment, a fresh approach to the diagnosis may be preferable to simply considering other treatment modalities.

The orofacial region is complex, and this makes the diagnosis of orofacial pain equally complex. Treatment must be based in a sound diagnosis, and any diagnosis must remain flexible as symptoms and signs change.

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