

# The Scope of TMD/Orofacial Pain (Head and Neck Pain Management) in Contemporary Dental Practice

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*The Dental Practice Act Committee of the American Academy of Orofacial Pain was convened in 1995 for the purpose of studying the scope of temporomandibular disorders (TMD)/orofacial pain and dental practice acts. The committee concluded that the scope of clinical practice of TMD/orofacial pain is expanding beyond the teeth and oral cavity to include the diagnosis and treatment of disorders affecting the entire head and neck. The expansion of clinical practice is consistent with historical precedent in dentistry and within the scope of current dental practice acts. The present report represents the position of the American Academy of Orofacial Pain.*

The original disciplines of dentistry were oral surgery, prosthodontics, restorative dentistry, orthodontics, and periodontics.<sup>1</sup> These disciplines were limited to the diagnosis and treatment of diseases affecting the teeth and their supporting structures. Newer disciplines such as oral diagnosis/oral medicine, dental anesthesiology, and temporomandibular disorders (TMD)/orofacial pain are focused on the diagnosis and treatment of diseases affecting the entire head and neck. The evolution from disciplines that were primarily focused on teeth to those that are concerned with the entire head and neck is an indication of the expanding scope of contemporary dental practice.

The expansion of dental practice is not new. It represents a trend that has been present throughout dental history.<sup>2</sup> Initially, the profession focused on teeth because there was a need to treat tooth pain caused by dental decay. With the advent of dental amalgam, the thinking in dentistry changed from an extract-and-replace mentality to one in which restoring and saving teeth was the primary goal. The new goal required that diseases in the supporting structures of teeth also be treated. Although it may seem unremarkable to contemporary dentists, periodontology first expanded dental practice by focusing on structures around teeth rather than on the teeth themselves. In doing so, the profession took the first step toward expanding dental practice to include the diagnosis and treatment of tissues and structures other than teeth.

As the dental profession matured, diagnosis and treatment expanded to include treatments for tissues and structures that were once thought to be outside the scope of dental practice. Contemporary periodontists and oral surgeons graft bone in the maxillary sinus in preparation for placing dental implants. Before implant dentistry, operating in the maxillary sinus was primarily in the province of otolaryngologic surgery. Oral surgeons perform orthognathic surgery; temporomandibular joint (TMJ) surgery; head and neck tumor surgery; bone grafts using donor sites from the calvaria, ribs, hips, and knees; nerve grafts using donor sites from the sural nerve in the foot; and plastic surgery, such as rhinoplasty and blepharoplasty. In the past, these procedures were performed primarily by otolaryngologic surgeons, orthopedic surgeons, neurosurgeons, and plastic surgeons. Maxillofacial prosthodontists make prosthetic eyes, ears, and other facial structures. Orthodontists influence growth and development of the entire facial skeleton, and they have renamed their discipline *orthodontics and dentofacial orthopedics*. These examples illustrate the trend in dental history in which each discipline has grown to include techniques that increased the scope of dental practice.

A significant contribution made by oral diagnosis/oral medicine, dental anesthesiology, and TMD/orofacial pain toward the growth and maturation of dental practice is the expansion beyond the teeth and oral cavity to include diagnosis and treatment of disorders affecting the entire head and neck. Practitioners of oral diagnosis/oral medicine diagnose and treat local and systemic disorders in the head and neck. Curriculum guidelines for oral diagnosis/oral medicine recommend that diagnosis and treatment of all diseases (both primary and secondary) affecting the head and neck be taught in postgraduate programs.<sup>3</sup> Based on these recommendations, medical conditions affecting the head and neck, such as Lyme disease,<sup>4</sup> acquired immunodeficiency syndrome (AIDS), and cancer, are in the scope of oral diagnosis/oral medicine. Dental anesthesiologists provide general anesthesia and sedation for patients undergoing medical or dental surgery. In addition, curriculum guidelines for anesthesia and pain control in dentistry recommend that postgraduate programs educate dental anesthesiology residents about acute and chronic pain affecting the head and neck.<sup>5</sup> Practitioners of TMD/orofacial pain diagnose and treat intraoral and extraoral head and neck pain. The curriculum guidelines for TMD and orofacial pain<sup>6</sup> state that educational programs should teach the "diagnosis and management of pain and dysfunction associ-

ated with temporomandibular and related musculoskeletal disorders as well as other orofacial pain disorders." Conditions such as intraoral, musculoskeletal, neurovascular, and neuropathic pain, as well as cancer pain affecting the head and neck, are within the scope of contemporary TMD/orofacial pain practice.

The expansion of dental practice is consistent with recommendations made by the Institute of Medicine in a document<sup>7</sup> published in 1995 pertaining to dental education in the United States. This document<sup>7</sup> contains analyses of past and present trends as well as recommendations for the future. The Institute concluded that dental education in the United States should be patterned after medical education, and that dentistry should be practiced more like medicine is practiced. Incorporating oral diagnosis/oral medicine, dental anesthesiology, and TMD/orofacial pain into dentistry is consistent with these recommendations. The present report traces the evolution of TMD/orofacial pain from a time when TMD was the primary extraoral pain treated by dentists to the contemporary era, in which a broad range of musculoskeletal, neurovascular, and neuropathic pains are within the scope of dental practice.

## The Evolution of TMD/Orofacial Pain

Initially, TMD was thought to be a dental disorder caused by occlusal factors best treated by occlusal adjustment, prosthetic rehabilitation, and orthodontic treatment.<sup>8</sup> However, occlusion has since been shown to play a secondary role as an etiologic factor.<sup>9,10</sup> In addition, stress was considered an important cause of TMD,<sup>11,12</sup> but recently the relationship between the stress-prone personality and TMD has been questioned.<sup>13,14</sup> Temporomandibular disorders is now thought to be a medical disorder in which diagnosis and treatment is based on principles used to diagnose and treat other joints and muscles in the body.<sup>15</sup>

Reclassifying TMD as a medical disorder led to methods of diagnosis and treatment similar to those used for comparable medical conditions. Diagnostic methods expanded from evaluating the occlusion to include a thorough medical history, a pain history, and a head and neck evaluation. Guidelines<sup>15(19-44)</sup> published by the American Academy of Orofacial Pain state that a head and neck evaluation includes inspection of the head and neck; screening examination of the cranial nerves; musculoskeletal assessment of the masticatory and cervical systems; an ear, nose, and throat evaluation; an intraoral evalu-

ation; and a psychosocial evaluation. Diagnostic anesthesia of the masticatory muscles, cervical muscles, TMJ, upper cervical region, and autonomic ganglia is indispensable in assisting the diagnostic process.<sup>16</sup> Reclassifying TMD as a medical disorder also caused a shift from oculally oriented treatment to reversible multidisciplinary treatment including dental orthopedic appliances, physical therapy, stress reduction, and medications.<sup>15(113-184)</sup> In rare instances, surgical treatment of the TMJ is indicated, and in patients who are completely refractory to treatment, long-term management may include narcotic and/or nonnarcotic medications. Multidisciplinary treatment typically calls for a team approach consisting of a dentist, a psychologist or a psychiatrist, and a physical therapist, but it may involve any medical or dental discipline.

The evolution of TMD as a medically oriented discipline also led to the recognition that practitioners needed to be familiar with other types of pain affecting the head and neck. Initially, the significance of other head and neck pains was appreciated because some patients did not respond to TMD treatment. Reevaluation of patients refractory to treatment led to the conclusion that patients with symptoms of TMD may present with comorbid neurovascular and/or neuropathic pain. In these cases, combinations of treatments proved to be more effective than TMD treatment alone. Sometimes reevaluation led to the conclusion that patients did not have TMD at all. Patients who are refractory to treatment may have other types of musculoskeletal, neurovascular, or neuropathic pain that cause symptoms similar to, but are not, those of TMD. Because there are multiple types of pain that affect the head and neck, TMD expanded into a comprehensive discipline known as *TMD/orofacial pain*.

The discipline of TMD/orofacial pain consists of disorders that are classified as intracranial pain disorders, primary headache disorders (neurovascular disorders), neurogenic pain disorders, intraoral pain disorders, temporomandibular disorders, and Axis II, mental disorders.<sup>15(113-184)</sup> Temporomandibular disorders encompasses disorders of the TMJ, the masticatory muscles, and associated structures (eg, cervical spine and cervical muscles). Neurovascular pain encompasses disorders caused by complex interactions between the central and peripheral nervous systems with cranial and cervical blood vessels. Examples of neurovascular pain are migraine headaches, migraine variants, cluster headache, paroxysmal hemicrania, cranial arteritis, and carotidynia. Neuropathic pain encompasses disorders resulting from pathology in the central and/or peripheral

nervous systems. Examples of neuropathic pains are paroxysmal neuralgias (trigeminal neuralgia, glossopharyngeal neuralgia, nervus intermedius neuralgia, superior laryngeal neuralgia) and continuous neuralgias (deafferentation pain syndromes, peripheral neuritis, postherpetic neuralgias, posttraumatic and postsurgical neuralgia, sympathetically maintained pain). Cancer pain resulting in noxious stimulation of various tissues and structures in the head and neck is also within the scope of TMD/orofacial pain. Diagnosis and treatment of all orofacial pains are consistent with current standards of care as defined in the medical and dental literature.

Disorders within the scope of TMD/orofacial pain may be expressed extraorally as headaches, neckaches, and facial pain, or intraorally as toothaches of nondental origin.<sup>17</sup> It is well known that a healthy tooth can experience pain that has been referred to it from a diseased tooth<sup>18</sup> or from cardiac pain.<sup>19</sup> It is not well known that toothaches can occur secondary to neuromuscular, neurovascular, and neuropathic pain. Toothaches can be caused by myofascial trigger points,<sup>20</sup> neurovascular disorders such as migraine with and without aura,<sup>21</sup> cluster headache,<sup>22</sup> chronic paroxysmal hemicrania,<sup>23</sup> cough headache,<sup>24</sup> and carotidynia.<sup>25</sup> Toothaches can also arise from neuropathic disorders such as pretrigeminal neuralgia,<sup>26</sup> trigeminal neuralgia,<sup>27,28</sup> atypical odontalgia,<sup>29,30</sup> phantom tooth pain,<sup>31</sup> neuritis, posttraumatic neuralgia, neuromas, and psychogenic causes.<sup>19</sup> Because so many conditions manifest as toothaches of nondental origin, dentists need to be aware of orofacial pains when diagnosing dental pain. Once a toothache of nondental origin has been identified and a specific diagnosis is made, dentists may provide treatment consistent with current standards of care as defined in the medical and dental literature.

## Discussion

Dentistry began as a profession because skilled practitioners were needed to treat orofacial pain caused by diseased teeth.<sup>2</sup> The first dentists were exodontists whose sole objective was to eliminate dental pain. These dentists did not have the opportunity to study orofacial pain with the sophistication that is available today. However, when they extracted a tooth because of pulpal pain, the extraction was as much a treatment for deep somatic pain of the visceral type as it is today. Similarly, when they extracted a tooth because of a periodontal abscess, the extraction was as much a treatment for deep somatic pain of the musculoskeletal

type as it is today. Although the ability of practitioners to classify, diagnose, and treat pain intraorally and extraorally is more sophisticated today than in the past, the treatment of orofacial pain is not new.

As pain management in dentistry expanded, the name of the discipline changed to reflect the nature of clinical practice. Initially, extraoral pain management in dentistry was limited to musculoskeletal disorders of the masticatory system. Names used to describe the discipline reflected the putative etiology and pathology of masticatory disorders. Thus *Costen's syndrome*,<sup>32</sup> *temporomandibular joint pain dysfunction syndrome* (TMJ syndrome),<sup>33</sup> and *myofascial pain dysfunction* (MPD) syndrome<sup>12</sup> were popular at various times. Then it was recognized that symptoms of masticatory disorders do not constitute a syndrome. To reflect this fact, the name *temporomandibular disorders* became widely used because it implies a category of disorders rather than a single diagnosis.<sup>34</sup> When management of neurovascular and neuropathic pain was incorporated into clinical practice, the term *TMD and orofacial pain* became useful to reflect the expanded scope of practice. Some clinicians use the term *orofacial pain* exclusively, with the understanding that it is a broad term that encompasses TMD. Currently there is an emphasis on the fact that dentists treat musculoskeletal, neurovascular, and neuropathic pain in the entire head and neck rather than in the oral and facial regions exclusively. The name *orofacial pain* implies anatomic limitations that are not consistent with the scope of clinical practice. A name that is consistent with contemporary practice is *head and neck pain management*.

Head and neck pain management evolved into a discipline consisting of elements referred to as the triumvirate of dental history—journal literature, education, and organizational components.<sup>1</sup> The same components catapulted dentistry itself into professional status. Through research, dentists have become leaders in clinical investigations of head and neck pain and basic science investigations of all pain. Head and neck pain is the subject of dental journals, textbooks, and articles in well-regarded medical journals. Dental schools incorporate head and neck pain management into undergraduate and graduate curriculums, and master of science and PhD programs are available. In clinical practice, dentists increasingly limit their practices to head and neck pain management. Appropriately, some professional organizations dedicated to the field of head and neck pain management have been created. Recently, these organizations formed

a federation to propagate topics of interest to clinicians and academicians, not the least of which is achieving specialty status for head and neck pain management.

Dentists are uniquely qualified to evaluate and treat intraoral and extraoral pains, including those emanating from associated structures in the head and neck. Patients with complex head and neck pain may present with headaches, neckaches, and facial pain, including jaw pain and toothaches. Comprehensive evaluation of all patients, and especially complex patients, includes locating the primary source of pain, distinguishing it from heterotopic pain, and classifying the pain as musculoskeletal, neurovascular, or neuropathic in origin. The evaluator of complex pain needs to be knowledgeable about all causes of head and neck pain, including dental causes. Dentists are trained about dental disorders and about head and neck anatomy, physiology, and pathology. In addition, they are experienced in performing various diagnostic and therapeutic injections for the purpose of localizing and classifying pain. These injections include, but are not limited to, trigger-point injections into masticatory and cervical muscles for evaluation and/or treatment of pain referred from musculoskeletal structures; intramuscular or subcutaneous injection of serotonin agonists for evaluation and/or treatment of neurovascular pain; and anesthetic blocks of trigeminal and upper cervical nerves, and autonomic ganglia, for evaluation and/or treatment of neuropathic pain. As a result of the comprehensive nature of dental education and the experience of clinical practice, only the dentist is able to assess whether intraoral pain, jaw pain, and facial pain originate from local causes or as a result of referred pain from cervical musculoskeletal structures, neurovascular pain, or neuropathic pain. Since the pathophysiology and treatment of pain is the same, regardless of whether it is expressed as a toothache of nondental origin, as facial pain, or in associated structures in the head and neck, it is within the province of dental practice to employ accepted medical and dental techniques to treat head and neck pain.

Although dentists may be knowledgeable about all head and neck pain, there are some disorders that dentists do not treat. For example, dentists do not treat diseases that are intrinsic to the eyes and ears, or pains caused by some vascular disorders such as carotid dissection and cerebral aneurysm. Similarly, dentists do not treat brain tumors that cause head and neck pain. In these cases, and others, there are medical specialties that educate physicians to a standard of care that cannot be

attained by dentists who do not have access to similar specialty training. However, pain management, and specifically head and neck pain management, is not a specialty of medicine. Therefore, the same information is accessible to physicians and dentists about musculoskeletal, neurovascular, and neuropathic pains affecting the head and neck. This conclusion is also true for cancer pain affecting the head and neck. A guide to assist dentists in choosing which pains to treat may be valuable. The most appropriate currently used guide for each individual clinician is his/her obligation to practice to the standard of care in the community.

## Conclusion

Because information about head and neck pain is constantly expanding, the scope of clinical practice needs to be reassessed from time to time. The objective of the present report is to present an update of the concepts upon which the diagnosis and treatment of TMD are based, and to define the current scope of clinical practice of head and neck pain management. The report indicates that a reappraisal of TMD has taken place, and TMD is currently viewed as a medical disorder. The TMJ, muscles of mastication, and cervical musculoskeletal structures should be diagnosed and treated in a manner consistent with the diagnosis and treatment of any system of joints and muscles in the body. Since not all jaw pains are caused by TMD and not all toothaches are caused by dental disease, clinicians need to be educated about all types of head and neck pain. Although there is no constraint on which of the head and neck pains dentists treat, certain conditions, such as brain tumors and intrinsic disorders of the ears and eyes, cannot be managed by dentists with the standard of care that can be provided by medical specialists. However, there is no medical specialty dedicated to all aspects of pain control, and specifically there is no medical specialty with expertise in all head and neck pain. Therefore, dentists are able to obtain the same skill level as other health care providers in regard to the management of musculoskeletal, neurovascular, and neuropathic pain affecting the head and neck. The disorders that dentists treat should be based on each individual dentist's ability to practice to the standard of care in the community. In recognition of the expanding scope of pain management in dentistry, there should be a name for the discipline that does not imply a limitation to clinical practice. The term *head and neck pain management* is consistent with the contemporary practice.

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