Orofacial pain refers to pain and dysfunction affecting motor and sensory transmission in the trigeminal nerve (TN) system. The pain source may arise directly from tissues innervated by the TN, such as the eyes, nose, ears, or mouth, or indirectly from tissues innervated by other nerves but perceived by the brain as coming from the tissue of the TN system. Lipton et al reported that almost 22% of the US population has experienced some form of orofacial pain. Prerequisites for successful diagnosis and treatment of patients with orofacial pain largely depend on a universally accepted, valid, and reliable diagnostic classification system. The International Research Diagnostic Criteria for Temporomandibular Disorders (RDC-TMD) consortium committee has published several questionnaires, including the Diagnostic Criteria for Temporomandibular Disorders Symptom Questionnaire (RDC-TMD Consortium Network), the Jaw Functional Limitation Scale, the Graded Chronic Pain Scale, and the Oral Behavior Checklist to assist in formulating the differential diagnosis. Using inclusion and exclusion criteria, the pain can then be divided into categories suggested by the International RDC-TMD Consortium Network and the Special Interest Group on Orofacial Pain. These categories are helpful in evaluating, communicating, and locating the origin of orofacial pain, which can then be treated and managed accordingly.

A patient with edentulism presenting with orofacial pain and unserviceable removable complete dentures presents a challenge to diagnosis and treatment. As the prosthesis-supporting tissues remodel and the prosthetic materials deteriorate, the oral environment becomes susceptible to damage through soft tissue abrasion, microbial colonization, compression of anatomic structures such as the incisive papilla and metal foramen, and pathology such as papillary hyperplasia, epulis fissuratum, and angular cheilitis associated with poor oral hygiene and the ill-fitting denture. Pain emanating from the temporomandibular joint could also be the result of loss of vertical dimension and malocclusion. However, referred pain from undiagnosed systemic diseases such as trigeminal neuralgia can mimic the oral pain typically associated with the sequelae of an unserviceable denture.

Trigeminal neuralgia is a neuropathic disorder characterized by paroxysmal, shock-like pain attacks in the muscles and soft tissues innervated by the maxillary (V2), mandibular (V3), and, less often, the ophthalmic (V1) branches of the fifth cranial nerve. The pain is often unilateral and more common in women and those 50 years of age and older. A recent classification accepted by the American Academy of Neurology recognizes 3 distinct categories of trigeminal neuralgia: idiopathic,
Classical trigeminal neuralgia presents with neurovascular compression and morphologic changes of the trigeminal root. It is confirmed with magnetic resonance imaging. Secondary trigeminal neuralgia, associated with major neurologic disease such as a tumor or multiple sclerosis, is confirmed with conclusive magnetic resonance imaging or other diagnostic tests. Idiopathic trigeminal neuralgia refers to neurologic pain without a definitive cause. Despite the distinction, 99% of patients with trigeminal neuralgia can experience pain through nonpainful stimuli such as touch, smiling, or shaving. These trigger zones can be small, with targeted areas most commonly present in the central portion of the face and around the nose and mouth.

The taxonomy committee of the International RDC-TMD Consortium Network and the Special Interest Group on Orofacial Pain in conjunction with the American Academy of Orofacial Pain offer an evidence-based approach for the assessment, diagnosis, and management of orofacial pain. The purpose of the present clinical report was to emphasize an evidence-based approach to the diagnosis and treatment of orofacial pain in a patient with edentulism and a history of prolonged denture wear.

CLINICAL REPORT

A 76-year-old white woman was referred to the Department of Prosthodontics, University of Tennessee Health Science Center, Memphis, School of Dentistry, for evaluation of orofacial pain and replacement of unserviceable complete dentures. The patient’s chief complaint was recurrent and severe “electric shock-like” pain radiating from the left ear to the chin for approximately 5 weeks. She reported that the pain occurred every night at around 11:00 PM and persisted with high intensity for 5 to 20 minutes, followed by a lingering ache until she fell asleep. Massaging the area, change in bodily position, application of heat or cold, or removal of dentures did not alleviate or decrease the intensity of the pain. The patient did not experience the pain while sleeping, and it was not reproducible while awake during the day. Nothing of note precipitated or aggravated the pain. She had been given a prescription of ibuprofen (Motrin 800 mg; Johnson & Johnson Consumer, Inc) 3 times a day by the referring dentist for the pain. She said the medication would “take the edge off,” but did not alleviate the pain. She had taken the analgesic medication sporadically for 2 to 3 weeks. A thorough medical, dental, and psychosocial history was documented, followed by a clinical and radiologic examination.

Her medical history revealed that the patient was in good health with no known allergies. She reported a negative history of orofacial trauma, sleeping disorders, substance abuse, surgery, or hospitalization. The patient’s current social and financial circumstances created a significant amount of personal stress. The patient was widowed and was in a long-term cohabitation relationship with her current partner, who was kind and supportive. However, he had end-stage renal disease and was undergoing dialysis. The patient also reported strained family relationships and a planned relocation. Nevertheless, the patient had a pleasant and gracious demeanor.

Her dental history revealed that the patient had had all her teeth extracted at age 22. Complete dentures with an acrylic resin base and porcelain semianatomic teeth were fabricated and delivered shortly after the extraction sites had healed. The patient reported that the dentures out. The patient had worn the same dentures for a period of 55 years, removing them only to clean once or twice daily. The dentures had been relined with a nonresilient lining material 35 years before and a resilient relining material 1 year previously. Remnants of the deteriorated lining material were present in the dentures (Fig. 1). The patient reported using a large amount of denture adhesive.
Clinical examination revealed localized inflammation of the maxillary ridge, especially on the buccal aspect of the left posterior ridge and the corresponding vestibular areas. A 1.5-cm diameter raised papillary lesion (papillary hyperplasia) was seen on the left posterior palate (Fig. 2A). Other areas that demonstrated papillary surface transformation included the rugae, soft palate, and right posterior maxillary ridge. The anterior maxillary ridge appeared to be smooth and exhibited a moderate degree of mobility. The mandibular ridge had undergone severe resorption in width and height (class IV), was knife-edged, pink, and mostly nonkeratinized and exhibited a moderate degree of mobility. A small epulis fissuratum concurrent with the denture flange, measuring 4 mm in length and 2 mm in width, was noted in the anterior mandibular vestibular area (Fig. 2B). No abnormalities were noted in facial reflexes. The mental foramina were located on the crest of the ridge. However, their palpation did not elicit a pain response. No numbness was associated with the lower lip. Intraoral examination of the complete dentures revealed a poor occlusal relationship; however, the porcelain denture teeth displayed minimum wear. In maximum intercuspal position, the dentures were in a pseudo-class III occlusal relationship (Fig. 3). An evaluation of the patient’s profile and interocclusal distance suggested a loss of occlusal vertical dimension due to the resorption of the prosthesis-bearing tissues. The temporomandibular joints exhibited normal mouth opening and no clicking, popping, crepitus, or deviation. Palpation revealed no facial or cervical muscle tenderness or swelling.

The radiographic examination results were consistent with those of the clinical examination, revealing severe alveolar bone resorption in the maxilla and mandible. Cone beam computerized tomography scanning confirmed that the mental foramina were positioned at the crest of the mandibular ridge (Fig. 4). The foramina measured 1 cm at the widest aspects. No overt signs of degenerative joint disease were evident.

A differential diagnosis for the origin of orofacial pain was created by noting specific inclusion criteria and ruling out specific disorders. Three of 8 possible axis I...
criteria were met. The patient’s personal stress level contributed to axis II (psychologic) factors associated with the patient’s pain experience. The differential diagnosis included the following intraoral causes: epulis fissuratum, inflammatory papillary hyperplasia, tissue trauma, ill-fitting complete dentures; the neuropathic causes: trigeminal neuralgia, hyperzincemia, compression of the mental nerve; and the extracranial and systemic causes: coronary artery disease and myocardial ischemia.

The patient was initially advised to discontinue the use of dentures, but she found this unacceptable. She agreed to limit denture wearing to social settings and eating. To improve fit and promote tissue recovery, the dentures were cleaned, disinfected, relined with a resilient material (Trusoft; Bosworth Co), and adequately relieved to ensure that the nerves exiting the mental foramen were not compressed. The occlusal vertical dimension was increased during the relining procedure by approximately 2 mm (Fig. 5). The patient was advised to avoid the use of zinc-containing denture adhesives to avoid hyperzincemia, associated with widespread sensory and motor neuropathies.20 The patient was also instructed to discontinue the use of the ibuprofen to prevent chronic exposure and suppression of symptoms necessary for diagnosis.21 The patient indicated that the pain was relieved after the administration of the first dose of carbamazepine. The patient was maintained on low-dose carbamazepine.

The patient was recalled and evaluated every 2 to 3 weeks for 4 months. She had no recurring painful symptoms, and inflammation and pathology of the oral tissues had resolved. The denture soft liner was reevaluated and replaced as needed. Only after the pain had been diagnosed, treated, and controlled were the definitive complete dentures fabricated (Fig. 6). The patient was given oral hygiene demonstrations, provided with the cleaning aids necessary to maintain hygiene of the prosthesis and the oral cavity, and given a printed copy of detailed home care instructions. She was placed on a biannual recall schedule to reevaluate the oral tissue for signs of trauma and the prostheses for fit and function. She was advised to contact her dental and medical professional immediately if she experienced any recurrence of orofacial pain.

**SUMMARY**

Not all types of orofacial pain disorders can be diagnosed or treated by a dental professional. Although treating intraoral disorders is within the scope of the dental field, additional training is required to diagnose and treat temporomandibular disorders, primary headaches, and sleep disorders. Vascular and nonvascular intracranial pain, neuropathic pain, cervical pain, and extracranial and systemic causes of pain should be referred to an appropriate medical professional. Each differential diagnosis should be pursued until the correct diagnosis is ascertained. Eliminating the existing complete dentures from the list of orofacial pain differential diagnoses may require fabrication of a treatment denture or modification...
or tissue conditioning or relining the existing denture to an acceptable occlusal relationship.

This article demonstrates the importance of a comprehensive, multidisciplinary, systematic approach grounded in evidence-based reports and reliable techniques to diagnose and treat orofacial pain effectively. Use of the Research Diagnostic Criteria methodology represents an organized way for the clinician to develop a diagnostic rubric tree; however, although the methodology provides a systematic and stepwise approach, it has yet to be validated.

REFERENCES


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