

# CLINICAL STUDY OF PATIENTS WITH PERSISTENT OROFACIAL PAIN

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**ABSTRACT - Objective:** To evaluate a sample of patients with persistent facial pain unresponsive to prior treatments. **Methods:** Hospital records of 26 patients with persistent facial pain were reviewed (20 female and 6 male). **Results:** Patients were classified into three groups according to their presenting symptoms: a) Group I, eight patients (30.7%) with severe, diffuse pain at the face, teeth or head; b) Group II, eight patients (30.7%) with chronic non-myofascial pain and; c) Group III, ten patients with chronic myofascial pain (38.4%). We find 11 different diagnoses among the 26 patients: pulpitis(7), leukemia(1), oropharyngeal tumor(1), atypical odontalgia(1), Eagle's syndrome(1), trigeminal neuralgia(4), continuous neuralgia(1), temporomandibular disorders (9), fibromyalgia (2), tension-type headache(1), conversion hysteria(2). After the treatment program all patients had a six-month follow-up period with pain relief, except the patient with tumor. **Conclusion:** The wide variability of orofacial pain diagnosis (benign to life-threatening diseases) indicates the necessity to reevaluate patients presenting recurrent pain that is refractory to the usual treatments.

**KEY WORDS:** orofacial pain, trigeminal neuralgia, tumor, temporomandibular disorders, atypical facial pain

## Estudo clínico de pacientes com dor orofacial persistente

**RESUMO - Objetivo:** Avaliar uma amostra de doentes com dor facial persistente. **Método:** Foram revisados 26 prontuários de doentes com dor facial persistente (20 mulheres e 6 homens). **Resultados:** Classificação dos doentes, após o diagnóstico: a) Grupo I, oito pacientes (30,7%) com dor facial difusa de fortíssima intensidade; b) Grupo II, oito pacientes (30,7%) com dor crônica de natureza não-miofascial e; c) Grupo III, dez pacientes com dor crônica miofascial (38,4%). Foram encontrados 11 diagnósticos diferentes entre os 26 pacientes: pulpites(7), leucemia(1), tumor de orofaringe(1), odontalgia atípica(1), síndrome de Eagle(1), neuralgia idiopática do trigêmeo(4), neuralgia atípica(1), distúrbios temporomandibular (9), fibromialgia(2), cefaléia tipo-tensão(1), histeria de conversão(2). O acompanhamento dos doentes, após receberem a respectiva terapia, foi de seis meses, com alívio da dor, exceto para o doente com tumor de orofaringe. **Conclusão:** A variabilidade das fontes da dor facial inclui doenças benignas e doenças graves, sendo indispensável a reavaliação de doentes que não respondem aos tratamentos convencionais para a dor.

**PALAVRAS-CHAVE:** dor orofacial, neuralgia trigeminal, tumor, articulação temporomandibular, dor facial atípica.

The complex innervation and function of facial structures makes the diagnosis of facial pain and its treatment very difficult and frustrating<sup>1,2</sup>. Patients with chronic facial pain, even after receiving multiple treatments, should be carefully reassessed and clinically re-examined. Myofascial pain syndromes, temporomandibular disorders (TMD), neuralgias, ENT diseases, dental pain, tumors, neu-

rovascular pain or psychiatric diseases frequently present with overlapping signs and symptoms<sup>3,4</sup>. Referred, severe, acute pain frequently makes the diagnosis difficult.

It is known that dental pain can radiate to the face and simulate other sources of pain due to sensitization of neurons in the central nervous system<sup>5,6</sup>. This can cause other phenomena including

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secondary adjacent muscle hyperactivity. Patients can present with muscular hyperactivity resulting from persistent acute or chronic pain, and elicit secondary muscle pain<sup>7-9</sup>. Therefore, the elimination of the primary source of pain is essential but, in chronic pain, is not always enough for control of pain. An incorrect and ineffective treatment may perpetuate or generate chronic pain. The understanding of secondary pain mechanisms of craniofacial pain is necessary for the formulation of an accurate diagnosis<sup>10</sup>.

The goal of this study is to demonstrate the variability of possible diagnoses in a sample of patients with persistent facial pain and how the orofacial pain specialty team was able to assist in their diagnosis and management.

## METHOD

This is a retrospective study of a sample of patients with persistent facial pain unresponsive to previous treatments who were referred to an orofacial pain team

of a large teaching hospital. The study was approved by the Ethics Commission of the hospital.

The records of 26 consecutive patients, 20 female and 6 male, were analyzed. Patients were selected according to the description of their chronic pain symptoms and classified in accordance with the criteria of the International Association for the Study of Pain<sup>11</sup> and references of the American Academy of Orofacial Pain<sup>12</sup>. This sample represents 4% of all new patients with orofacial pain complaints admitted to the Orofacial Pain Clinic during the period of this study (August 1992 - December 1996). In order to ensure consistency in interview methods, the diagnoses were confirmed by clinical examination performed by members of a trained and calibrated interdisciplinary pain team.

The standardized diagnostic protocol was applied to all patients equally. It consists of a standardized interview and systematic evaluation of cervical, cranial, facial, oral and dental structures. The general characteristics for differential diagnosis of the diseases are presented in Table 1. Diagnoses were:

*Pulpitis* – History of daily, throbbing, diffuse pain, trigger by hot or cold and waking the patient during the

Table 1. Differential diagnosis in pain frequently observed in the orofacial region<sup>1,2,7,12,14</sup>.

	Idiopathic trigeminal neuralgia	Pulpitis (referred dental pain)	Orofacial neoplasia	Temporo mandibular disorders	Fibromyalgia	Eagle's syndrome
Pain	Electric shock-like	Trobbing	Variable (atypical)	Dull, stabbing	Dull	Dull
Pain duration	Seconds	Minutes to hours	Variable	Minute to hours	Constant	Short-duration
Intensity	Severe	Slight to severe	Severe	Moderate	Moderate	Middle
Localization	Good	Diffuse	Diffuse	Good, Diffuse	Diffuse	Diffuse
Characteristics	Trigger zone, diurnal	Diurnal or nocturnal dental sensitivity, look for dental problem	Referred pain frequently neurological signs, WBC abnormalities	TMJ or muscle, pain to movement, limited open mouth	Generalized body pain, spontaneous	Usually pain is in the throat / mouth floor
Local treatment	No	Dental treatments, local anesthesia blocks the pain	Surgical	Physical therapy, splints, anesthetic injection,	Physical therapy	Corticoid injection, surgery
General treatment	Anti-convulsivants	NSAIDs, analgesics	Chemotherapy, radiotherapy HSCT	NSAIDs	TAD, myorelaxants	NSAIDs
Trigger	Non-noxious stimulus	Mechanical, foods, cold, heat, suit	Jaw movement	Palpation, jaw function	Palpation, function	Swallowing

TMJ, temporomandibular joint; NSAIDs, nonsteroidal antiinflammatory drugs; TAD, tricyclic antidepressants; WBC, white blood count; HSCT, hemopoietic stem cells transplantation.

Table 2. General characteristics of the sample (n = 26).

P	A	G	N	Pain side	Pain intensity	Pain duration (months)	Descriptive terms (before the final diagnosis)
1	13	M	4	L	M/S	3	Dental and TMJ constant pain, generalized dental mobility, paresthesia of the left lower lip.
2	35	F	3	R	S	30	Jaw and facial throbbing pain; diurnal/nocturnal; dental generalized sensitivity to percussion.
3	41	F	4	R	S	10	Dental and facial pulsating pain; headache; diurnal/nocturnal; dental sensitivity to percussion of #47; cold water provoked the severe attack.
4	39	F	5	L	S	60	Dental and facial constant pain; diurnal/nocturnal; NSAIDs, TAD, splint, antibiotics, root therapy (teeth: 33,34,35), tooth extraction (#35) without relief of the pain; she had been a 3 years history of TMD that was controlled totally; tenderness of the masticatory muscles.
5	60	M	2	R	S	10	Headache and dental constant pain; diurnal/nocturnal; pain beginning during flying; presence of subgingival decay at distal face of tooth #43. The pain was referred to superior teeth and temporal region. An attack was caused by air flow of the dental equipment into the dental cavity (#43).
6	50	F	2	L	S	20	Facial and dental pulsating pain; paresthesia of the left lower lips; history of the jaw fracture 1 year before this complaint.
7	40	F	3	R	S	30	Facial jabbing pain; diurnal/nocturnal; subgingival decay at the tooth #18.
8	31	M	5	R	S	7	Cervical and facial jabbing pain; diurnal/nocturnal; NSAIDs, TAD, benzodiazepines, codeine and physical cervical therapy without relief of the pain; he had been one day hospitalization due the intensity of the pain.
9	22	M	15	L	S	12	Left TMJ pulsating pain, diurnal/nocturnal, complete dentition, dislocation of the left TMJ disc, painful jaw movement.
10	18	F	3	R	M	24	Constant dental and facial pain, tooth extraction of #18 without relief of the pain, history of chronic throat pain.
11	55	F	3	L	M	24	Jaw episodic pain, cancerophobia
12	35	F	7	B	M	72	TMJ constant pain; had been carried out 4 TMJ surgery, multiple tooth extraction, complete denture, physical, and pharmacological treatments without any relief of the pain. Epilepsy.
13	38	F	3	L	S	6	Facial electric shock-like episodic pain and dull pain; during the first appointment she had 15 attacks lasting from 15 to 40 seconds each one. Masseter muscle tenderness.
14	40	F	1	B	M	60	TMJ constant pain; oral rehabilitation procedures, dental splints and physical therapy with improvement of jaw movement, without relief of the pain. Pain started after a spinal anesthesia.

Continues

## Continuation

15	57	M	3	R	S	48	TMJ and facial electric shock-like pain during jaw movements and tooth brushing; tenderness of masseter muscle; 2 periapical surgery of the tooth #14, with partial and temporary relief of the pain.
16	54	M	11	R	M	24	Dental pain (#14); constant; root therapy of four teeth twice; periapical surgery of 2 teeth twice (#a4,15), oral rehabilitation, sonotherapy; without relief of the pain.
17	64	F	3	L	M	120	TMJ pain during jaw movement; edentulous; inadequate complete dentures.
18	43	F	5	B	M	48	TMJ constant pain; headache; jaw locking during eating; sleep bruxism, oral breath, severe periodontal disease, tenderness of the masticatory muscles.
19	62	F	5	R	M	300	Cervical and facial constant/dull pain; dental sensitivity of multiple teeth; tenderness of the masticatory muscles; generalized body pain under control (Fibromyalgia).
20	49	F	5	R	M/S	60	Dental, facial and cervical constant/dull pain; generalized gingivitis; tenderness of the masticatory muscles; generalized body pain (Fibromyalgia).
21	42	F	3	B	M	120	Constant headache; upper inadequate denture; reduced dimension of the face.
22	62	F	3	L	M	24	Constant facial pain; episodic facial electric shock-like pain; tenderness of the masticatory muscles.
23	70	F	6	R	M	36	Gingival and facial constant/burning pain; 3 oral bone surgeries; 10 complete dentures without relief of the pain; the pain began after the first dental surgery.
24	56	F	4	B	M	48	Facial episodic/jabbing pain beginning 3 months after a maxillary sinus surgery; pain was worse when she eats bread; multiple tooth extraction (9 teeth) without pain relief.
25	51	F	4	B	M	36	Facial constant/jabbing/burning pain; the pain began after an oral surgery; inadequate complete dentures, tenderness of the masticatory muscles.
26	47	F	7	B	M	24	Facial constant/dull pain; headache, history of idiopathic trigeminal neuralgia, migraine and TMD; inadequate upper complete denture; depressed; mother of two neural disabilities children. Lives in another city; seeking for several health professionals.

Group I – 1 to 8; Group II – 9 to 17; Group III– 18 to 26. P, patient; A, age; G, gender; N, number of professionals previously involved in assistance; R, right; L, left; B, both; M, moderate; S, severe; NSAIDs, nonsteroidal antiinflammatory drugs; TAD, tricyclic antidepressants; TMD, temporomandibular joint; TMD; temporomandibular disorder.

night. The dental source of pain was identified by a clinical evaluation and diagnostic anesthetic block<sup>12</sup>.

**Acute leukemia** – Diagnosis is made with laboratory examination of the peripheral blood (WBC) and bone marrow. WBC is usually elevated, but some case present with normal or decreased counts. Anemia (pallor, shortness of breath and fatigue) and thrombocytopenia

are other frequent clinical findings<sup>13</sup>. Oral signs and symptoms frequently lead to a diagnosis of the leukemia; i.e., looseness and mobility of the teeth and paresthesia of the lips is reported during the leukemic cellular infiltration in the periodontal membrane and peripheral trigeminal nerve, respectively<sup>13</sup>.

**Trigeminal neuralgia** – History and clinical evaluation

and the presence of paroxysmal and electric shock-like pain with a trigger zone<sup>11</sup>.

**Tumor (Oropharyngeal)** – Based on computed tomography (CT) and magnetic resonance image (MRI) of the cranial and facial region. The clinical characteristics of the pain are variable and atypical<sup>14</sup>.

**Temporomandibular disorders** – The diagnosis is by history and clinical exam. Inclusionary criteria include the presence of limited opening, tenderness of the masticatory muscles and joint sounds during mandibular function. CT is used in degenerative process of the temporomandibular joint (TMJ)<sup>12,14</sup>.

**Eagle's syndrome** – Characterized by pain in the oropharyngeal region during mandibular activities, mainly swallowing. Image exams usually show a styloid process elongated and the inflammation is the cause of the pain. Palpation of the posterior and medial region of the mandible angle is painful. The precise diagnosis is made with clinical examination<sup>14</sup>.

**Fibromyalgia** – Characterized by widespread pain, decreased pain threshold, sleep disturbance, fatigue, psychological distress and chronic headache. Patients thought to have fibromyalgia were diagnosed based on the demonstration of multiple tender points. These tender points were bilaterally, symmetrical but did not refer pain when provoked. Diagnosis in this condition is clinical<sup>15</sup>.

**Diagnosis of mental health disorders** was made by a psychiatric examination according to the diagnostic criteria for hysterical conversion, or pain associated with depression<sup>11,16</sup>.

**Radiographic and laboratory evaluation** - Panoramic radiography of the jaw was performed for all patients. CT scan of the craniofacial region with contrast, MRI and hematological examination (complete blood count) was performed in those cases with recurrent pain without clinical evidences of benign pain if a structural lesion was suspected. CT, MRI and hematological tests were made for patients with clinical diagnostic of trigeminal neuralgia for differential diagnostic between idiopathic and symptomatic trigeminal neuralgia.

**Treatment** – Patients received appropriate treatment after achieving an accurate diagnosis. Pulpitis was treated with conventional dental management. Trigeminal neuralgia was treated with carbamazepine. Patients with systemic disorders, oropharyngeal tumor and leukemia, were referred for specific treatment, according to the diagnosis. No further commentary regarding treatment of systemic diseases is included in this study as these patients were referred out of the study. A pain assessment was performed immediately after the treatment program and after a six-month follow-up period. A subjective scale was used for this evaluation included five items: SD (Pain free), O (Optimum), S (Satisfactory), PM (Poor improvement) and SM (Without improvement).

**Statistical analysis** – Patients were separated into groups and comparisons were conducted for general characteristics of the sample. The data was analyzed in the SPSS 10 for Windows program.

## RESULTS

In 80.7% of the patients the previous diagnosis was incorrect and the average number of health professionals consulted was 4.7.

Patients were classified into three groups according to their final diagnoses: Group I - Acute pain: Eight patients (30.7%) with severe, diffuse pain referred to the ipsilateral face, teeth or temporal region; Group II - Chronic non-myofascial pain: Eight patients (30.7%) with chronic non-myofascial pain and; Group III - Chronic myofascial pain: Ten patients with chronic myofascial pain (38.4%) associated with other painful comorbidities such as fibromyalgia, trigeminal neuralgia and continuous neuralgia.

Acute and chronic pain conditions were classified according to the IASP<sup>11</sup> classification of chronic pain. Throbbing pain during the day or the night was more common in dental lesions; paroxysmal pain was the most common expression of trigeminal neuralgias; and constant, pressure and burning pain were the most common complaints in chronic musculoskeletal pain.

**Group I - Acute pain** – Eight patients (5 women and 3 men) in otherwise good oral health, aging 13 to 60 years old (median 39.50±13.74) described diffuse and severe pain during the day and at night with pain referring to the facial or cranial region. On average, pain was of one-month duration. Prior diagnoses were trigeminal neuralgia, TMD, myofascial pain, and atypical facial pain. A re-evaluation led to the correct diagnosis of leukemia in one patient and pulpitis in seven others. Pulpitis arose in the following teeth: an inferior canine (#43), two inferior pre-molars (#34, #35), two superior molars (#17, #18) and two inferior molars (#46, #47). Two patients reported referred pain to the adjacent teeth and to ipsilateral face; one patient had referred pain to all ipsilateral teeth, face and temporal area; one patient had referred pain of the opposing teeth, ipsilateral face and temporal area; and three patients had referred pain to the ipsilateral face. In six patients, the teeth were painful to vertical and/or horizontal percussion and in three, airflow stimulation of the teeth triggered the pain. Pulpitis was treated with conventional dental therapy. The patient with leukemia was

Table 3. Previous and final diagnosis of the three groups (n=26).

Case	Group I (n = 8)		Group II (n = 8)		Group III (n = 10)	
	PD	FD	PD	FD	PD	FD
1	TMJ; Periodontitis	Leukemia	TMD; AFP	Neoplasm	TMJ	TMJ
2	TN; Myofascial pain	Pulpitis	TMD	Conversion hysteria	TMD	TMD; Bruxism
3	TN; Myofascial pain	Pulpitis	TMD	Eagle's syndrome	Fibromyalgia	TMD; Fibromyalgia
4	TN, Myofascial pain; AFP	Pulpitis	TMD	Conversion hysteria	Fibromyalgia	TMD; Fibromyalgia
5	TN	Pulpitis	TMD	TN	TMD	TMD
6	TN; TMD	Pulpitis	TMD	TTH	TMD	TMD
7	TN; CH	Pulpitis	TMJ	TN	TMD	TMD
8			TMD	AO	TMD	TMD; TN
9					TMD	TMD; CTN
10					TMD	TMD; CTN

PD, previous diagnosis; FD, final diagnosis; TMD, temporomandibular disorders; TMJ, temporomandibular joint; TN, trigeminal neuralgia; AFP, atypical facial pain; CH, cervicogenic headache; TTH, tension-type headache; AO, atypical odontalgia; CTN, continuous trigeminal neuralgia.

referred to a hematologist and received chemotherapy and a bone marrow transplant.

In summary, in the Group I, seven patients presented with diffuse unilateral craniofacial pain from dental causes (pulpitis), and one patient had dental pain and general dental mobility because of a systemic disorder. Two patients in this group received either dental extractions or oral surgery for the treatment without any improvement prior to receiving a final diagnosis.

All the patients of this group were pain free after an accurate diagnosis and correct treatment and remained so at six months of follow-up evaluation.

*Group II - Chronic non-myofascial pain* – Eight patients (3 men and 5 women), ranging in age from 18 to 57 years old (median  $36.50 \pm 13.59$ ) reported unilateral (6) and bilateral (2) localized pain which was diurnal and moderate to severe in the facial or cranial region. The duration of pain was on

average 31.2 months. The previous diagnosis was TMD for all patients. A final diagnosis and respective treatments were provided. For Eagle's syndrome (1) the patient received a styloidectomy. Oropharyngeal tumor (1) was treated with chemotherapy. The patient with tension-type headache (TTH) (1) was treated with tricyclic antidepressants (TCAs). Trigeminal neuralgia (2) was treated with carbamazepine (1) and trigeminal percutaneous radiofrequency rhizotomy (1). Psychiatric disorders (2) received psychotherapy. Atypical odontalgia (1) was treated with TCAs. All, except for the patient with tumor, reported relief.

In summary, this group presented with different diagnosis for their chronic pain. Six patients previously received some form of oral surgery (dental extractions or periapical surgery), without improvement.

The final evaluation of this group was: pain free in six, satisfactory improvement in one (TTH) and without improvement in one (oropharyngeal tumor).

*Group III - Chronic myofascial pain* – Ten patients (women) aging 42 to 70 years old (median  $59 \pm 9$ ) received a prior diagnosis of TMD. The average duration of pain was 6.8 years. Despite the diagnosis of TMD, pain control was unsatisfactory due to inadequate treatment and the presence of other causes. The final diagnoses were, respectively, TMD (5), TMD associated with fibromyalgia (2); TMD associated with traumatic trigeminal neuralgia (2); or TMD associated with trigeminal neuralgia (tic douloureux) (1). Treatment was performed accordingly: a) neuropathic pain<sup>7</sup>; b) fibromyalgia<sup>15</sup> or c) chronic myofascial pain<sup>17</sup>.

Summarizing, in this group, the musculoskeletal facial pain was associated with trigeminal neuralgia, fibromyalgia or non-paroxysmal pain of the oral cavity. Four patients reported the beginning of the pain after facial surgery. Three patients reported oral surgery and one patient changed the dental prosthesis previously as the treatment of pain, without any improvement. The final evaluation of this group was: pain free in six and satisfactory improvement in four.

The Table 2 shows the general characteristics of the sample. The diagnosis of patients with organic pathology was achieved in accordance with the International Association for the Study of Pain<sup>11</sup> (Table 3).

## DISCUSSION

The original diagnosis was incorrect or incomplete in 80.7% of the cases. We find 11 different diagnoses among the 26 patients of this sample: pulpitis (7), leukemia (1), oropharyngeal tumor (1), atypical odontalgia (1), Eagle's syndrome (1), trigeminal neuralgia (4), continuous neuralgia (1), TMD (9), fibromyalgia (2), conversion hysteria (2) and tension-type headache (1). All of the 26 patients were referred to our service with a prior suspect diagnosis of TMD. These patients failed to improve due to misdiagnosis.

The patients in this study were seen by an average of 4.6 dentists or physicians before to arriving at our clinic. Only after appropriate treatment, adequate pain control was achieved in the majority of the patients remained pain free six-month follow up evaluation. The average of 4.88 health care, 70% of the patients saw a general dentist and 30% saw a physician, was found in another study about referral patterns for all types for facial pain<sup>18</sup>.

Dental pain, trigeminal neuralgia and oncolo-

gic conditions may present with similar clinical symptoms<sup>7,13,19</sup>. Tumors can provoke throbbing pain when compressing tissues, such as the patient with an oropharyngeal tumor who reported pain during the mouth opening movement. They cause neurological abnormalities too, as the left lips paresthesia in the patient with leukemia. Trigeminal neuralgia is a sudden, usually unilateral, severe, brief, stabbing and recurrent pain in the distribution of one or more branches of the V cranial nerve<sup>11</sup>; and seldom awakens the patient from sleep<sup>20</sup>. On the other hand, pulpitis can be triggered by cold or hot liquids, and can awaken the patient from sleep causing dental tenderness<sup>6,20</sup>. Therefore, the use of specific diagnostic criteria is important to help in the differential diagnostic process. A simple example is seen in six of the seven patients that presented with pulpitis who described nocturnal episodes of pain. Three of these patients realized an increase in pain with an application of an external stimulus in their teeth (cold air). These pains were interrupted by the local anesthesia block.

This sample included two interesting cases of dental pain of nonodontogenic origin (acute leukemia and atypical odontalgia), and seven patients with craniofacial pain from odontogenic origin. This demonstrated that the location of pain is not always the same as its source<sup>10</sup>. The atypical odontalgia, that is a neuropathic pain, is localized in the tooth or gingival, but the pain of pulpitis can vary greatly in its clinical presentation and intensity<sup>6,20,21</sup>.

Although trigeminal neuralgia (TN) has a well-defined diagnosis, it is often confused with other sources of facial pain with similar symptoms<sup>22</sup>. This is due to the great variety of facial pain sources, the relative rarity of TN and the absence of the specific tests for its diagnosis<sup>23</sup>. In this sample, we examined 5 patients with a diagnosis of TN and three of them were associated with TMD. Two patients presented with neoplasias (leukemia and nasopharyngeal tumor). This shows a necessity and importance of a differential diagnosis in orofacial pain<sup>10</sup>, and demonstrated that pain may be an initial manifestation of a tumor<sup>14,19</sup>. These cases also demonstrate the importance of the adjunctive testing such as CT and laboratory testing for diagnosis of pain. This also reinforces the fact that pain is a symptom that must be evaluated, especially when persistent, and despite treatment there is no significant improvement (5% of neuralgias can be symptomatic and secondary to tumor or neuronal diseases such as multiple sclerosis).

sis)<sup>7</sup>. In this study idiopathic trigeminal neuralgia was the prevalent diagnosis.

This sample includes a patient with Eagle's syndrome and another with tension-type headache. These patients also present with symptoms similar to TMD and we need know the diagnostic criteria for these disorders<sup>14,23,24</sup>. Another difficulty is in the differential diagnosis of orofacial pain that involves psychiatric disorders and simulates organic facial pain. This was the case of two patients with psychiatric disturbances who were eventually diagnosed with hysterical conversion disorder. Diagnosis of mental health disorders is a challenge that demands careful examination by specialists<sup>16</sup>. The diagnosis of these cases was possible due the fact of they were seen in a large teaching hospital with great experience in chronic pain.

In Group III, chronic muscle pain was associated with neuropathic pain or fibromyalgia. This justifies the need for multiple therapies in some cases, and the treatment should be adjusted to the etiology. Five patients from Group III presented with musculoskeletal pain associate with other sources of pain (TN, fibromyalgia) and due to this factor, they did not improve with prior treatment. Another important point is the history of the patient's pain. In this sample, two patients with TMD also presented fibromyalgia, a condition frequently found in patients with TMD<sup>25,26</sup>, which requires specific treatment. However, the patients presenting with muscle pain in Group III received therapeutic procedures directed at the removal of contributing factors that acted directly or indirectly to perpetuate the complaint. This included the correction of inadequate dentures, excessive loss of teeth without repositioning and parafunctional habits. The original complaints may worsen in patients with neuropathic pain due to accompanying myogenic disturbances<sup>27</sup>. Invasive procedures should not be repeated when a relief of pain is not achieved (four patients in Group III had oral surgeries). The re-evaluation of the signs and symptoms is an essential step in these cases. Therefore, it is very important to have the ability to identify the various aspects of pain complaints and identify their primary causes when more than one type of pain is present as in the cases presented here.

The knowledge of the diagnostic criteria for facial pain is extremely important in the process of differential diagnosis. An accurate diagnosis leads to an effective therapeutic treatment strategy. Se-

vere and diffuse pain, such as referred dental pain, can confuse the patient and the clinician and make the diagnostic process difficult. This often leads an incorrect diagnosis and treatment. The clinician must be prepared, and not allow the patient to influence the diagnosis, (the patient's report of the intensity of the complaint can confuse the clinician). In this way we can decrease the incidence of iatrogenic disorders and realize a more correct diagnosis, more effective treatment, and decrease the risk for chronic pain<sup>28</sup>.

In conclusion, this study demonstrates a wide variability of different diagnosis for facial pain, including referred dental pain. It is important to remember that some pain conditions are uncommon (for example, tumor) and can be confused with other, more common pain conditions that are present with a typical signs and symptoms (for example, pulpitis), leading to a misdiagnosis, iatrogenesis and chronicity of the pain. In this entire sample, the cause for persistent pain was perpetuated by an incorrect diagnosis and misdirected treatment. This demonstrates that a systematic evaluation, based on specific diagnostic criteria can help to clarify the diagnoses and formulate the treatment strategies for an appropriate therapeutic regimen. Finally, an interdisciplinary team is often necessary for the diagnosis and treatment of many facial painful conditions<sup>29</sup>. The data presented in this study are consistent with data reported in other studies, indicating that while most orofacial pain is benign, there are cases where it may represent serious and even life threatening disease. This study also highlights the responsibility of the general practitioner, dentist or physician, to refer difficult patients for a more detailed and specialized evaluation.

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