

# Facial Pain Followed by Unilateral Facial Nerve Palsy: A Case Report with Literature Review

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## ABSTRACT

Peripheral facial nerve palsy is the commonest cranial nerve motor neuropathy. The causes range from cerebrovascular accident to iatrogenic damage, but there are few reports of facial nerve paralysis attributable to odontogenic infections. In majority of the cases, recovery of facial muscle function begins within first three weeks after onset. This article reports a unique case of 32-year-old male patient who developed facial pain followed by unilateral facial nerve paralysis due to odontogenic infection. The treatment included extraction of the associated tooth followed by endodontic treatment of the neighboring tooth which resulted in recovery of facial nerve palsy. A thorough medical history and physical examination are the first steps in making any diagnosis. It is essential to rule out other causes of facial paralysis before making the definitive diagnosis, which implies the intervention. The authors hereby, report a case of 32-year-old male patient who developed unilateral facial nerve paralysis due to odontogenic infection with a good prognosis after appropriate treatment.

**Keywords:** Bell palsy, Cranial nerves, Infection, Neurologic, Odontogenic, Orofacial pain

## CASE REPORT

A healthy 32-year-old male patient reported to the Department of Oral Medicine and Radiology with a complaint of pain on left side of face that was severe, continuous and sharp shooting since 2 - 3 days. Pain was radiating to left auricular region on chewing food and was relieved on taking analgesics over the counter. The facial pain was later preceded by regional facial numbness with left sided 'droopy face' since one day [Table/Fig-1a] and drooling of saliva from left corner of mouth [Table/Fig-1b]. The patient denied for any history of trauma, surgery or other recent infections (viral and ear infections). His medical, family, personal and previous dental history was unremarkable. Extra orally facial asymmetry was evident with tender and palpable left submandibular lymph node.

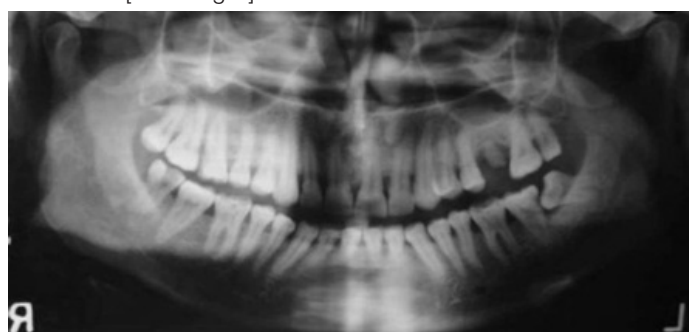
On close inspection of his palsy, there was loss of action of all muscles of facial expression on the left side, was unable to lift his eyebrow, close his left eye completely, wrinkle his forehead, blow his left cheek and to smile [Table/Fig-1c]. On intraoral examination, he had decayed left mandibular second molar which was moderately tender on percussion with partially erupted left mandibular third molar and generalised poor periodontal status [Table/Fig-1d]. A provisional diagnosis of facial nerve paralysis associated with tooth

infection was agreed. In differential diagnosis, Idiopathic facial nerve paralysis or Bell's palsy and unilateral facial nerve paralysis due to tumours were encompassed.

The Intra oral periapical radiograph and Orthopantomograph [Table/Fig-2] revealed distoproximal radiolucency involving pulp in relation to left mandibular second molar with mesioangular impacted left mandibular third molar and generalised moderate bone loss. Patient was started with Prednisolone 10mg, Gabapentine 250mg with Methylcobalamin upto 1000mcg/day and recalled after five days for re-evaluation. Magnetic resonance imaging (MRI) and Contrast Enhanced Computed Tomography of the brain did not show any gross abnormality. Routine blood investigations were normal except for leukocytosis. The patient then underwent the specific dental procedures like endodontic treatment with left mandibular second molar and extraction of mesioangular impacted third molar which were presumed to be the cause for the facial pain. After dental treatment he showed gradual resolution of facial palsy with improvement in his regional numbness [Table/Fig-3].



**[Table/Fig-1]:** (a) The clinical picture of the patient depicting left sided droopy face, (b) drooling of saliva from left corner of mouth, (c) unable to lift his eyebrow and forehead. (d) The intraoral picture showing partially erupted mandibular third molar and poor periodontal status



**[Table/Fig-2]:** The orthopantomograph revealed mesioangular impacted left mandibular third molar and generalized moderate bone loss

## DISCUSSION

Orofacial pain is a complaint that around the world affects millions of people on a daily basis [1]. It constitutes any symptom that occurs from a large number of disorders and diseases that result in a sensation of discomfort or pain felt in the head and neck region [2]. Orofacial pain, like pain elsewhere in the body, is usually the result of tissue damage and the activation of nociceptors [3]. However, due to the rich innervation of head, face and oral structures,



**[Table/Fig-3]:** The gradual resolution of facial palsy with improvement in his regional numbness after dental treatment

orofacial pain entities are often very complex and can be difficult to diagnose [4]. In this century, the concept of pain has evolved from that of a one-dimensional sensation to that of a multidimensional experience encompassing sensory, discriminative, cognitive, motivational and affective qualities [5]. Facial nerve paralysis is one such common cranial nerve disorder. Idiopathic facial paralysis is the most common cause of unilateral facial paralysis, accounting for approximately 50% of the cases. The second most common cause of facial paralysis is infection (15%), may be odontogenic followed by neoplasms (13.5%) [6].

Facial nerve paralysis is the most common cranial nerve disorders and it results in a characteristic facial distortion that is determined in part by the nerve branches involved with added numerous aetiologies [6]. It affects people of all ages, but, most commonly, individuals 15 – 45 years of age with equal sex prediction. Its onset is sudden, with facial muscle weakness progressing over hours to days. Approximately 70% of all patients recover completely [7]. Teeth are a common and obvious source of orofacial pain. After ruling out dental problems, musculoskeletal and neuropathic pain conditions are the most common causes of facial pain [8]. Causes of unilateral facial nerve paralysis are varied and include multiple possibilities like idiopathic, infectious, traumatic and neoplastic [9]. Facial nerve paralysis may be central or peripheral in origin, complete or incomplete and results in a characteristic facial distortion that is determined in part by the nerves branches involved [10]. Neuropraxia of the facial nerve caused by nerve compression is the most likely cause of the patient's hemi-facial paralysis. This minor compression causes temporary conduction block without axonal degeneration and the recovery is full and rapid [11].

The review of literature confirms that lower motor neuron palsy of the facial nerve in conjunction with infections of dental origin is rarely reported [Table/Fig-4]. Hamlyn et al., reported a case of 12-year-old child who developed acute hemiplegia attributable to a fractured infected lower incisor tooth. The mechanism was unclear but the possibility of local infection crossing internal carotid arteries and subsequent central nervous system appeared most likely [11]. Bobbitt TD et al., reported a case with an infected lower third molar

and palsy of the frontal branch of the left facial nerve. According to the authors the exact mechanism was likely to be a mixed picture of toxicity and compression neuropraxia [12]. Al-Muharraqi MA et al., noted that the removal of offending tooth with endodontic treatment of involved tooth resulted in improvement, confirming that a temporary conduction block is more likely than axonal disruption [11].

S No.	Authors	Year	FNP followed by
1.	Vasconcelos BC [6]	2006	Third molar surgery
2.	Al-Muharraqi MA [11]	2010	Infected lower third molar
3.	Bobbitt TD [12]	2000	Infected third molar
4.	Cakarar S [13]	2010	Upper third molar extraction
5.	Burke RH [14]	1987	mandibular third molar extraction
6.	Gray RL [15]	1978	Dental Origin

**[Table/Fig-4]:** Some of the reported cases (in PubMed) of Facial nerve palsy following dental origin

## CONCLUSION

The present case emphasises the importance of thorough history and examination, as the patient gave a clear account of dental pain which was localised prior to the development of unilateral facial paralysis. Though odontogenic infection rarely presents with facial nerve paralysis and it should be considered, particularly before more significant complications of submandibular or sub-masseteric abscess formation becomes established.

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