

CASE REPORT

Management and Dental Treatment of Facial Palsy due to Inferior Alveolar Nerve Block in Multiple Sclerosis Patient

¹Humayun Siddiqui, ²Kashif Ikram, ³Sana Maqbool, ⁴Tooba Zafar Khan, ⁵Aaila Jamil Qazi

ABSTRACT

Facial palsy, a common cranial nerve disorders, results in a characteristic facial distortion has an association with multiple sclerosis but precise clinical vignette is lacking. During dental treatment, facial nerve palsy is rare and may be confederate with local anesthesia. We present a case of facial palsy following inferior alveolar block in an attempt to remove lower third molar, occurred 24 hours after the administration of anesthesia showed right side facial weakness, difficulty in eye closure and minimal swelling on the buccal surface of right side and subside within 2 to 4 weeks in a 24-year-old female patient having multiple sclerosis reported to a private clinic are discussed.

Keywords: Facial palsy, Multiple sclerosis, Inferior alveolar nerve block.

How to cite this article: Siddiqui H, Ikram K, Maqbool S, Khan TZ, Qazi AJ. Management and Dental Treatment of Facial Palsy due to Inferior Alveolar Nerve Block in Multiple Sclerosis Patient. *J Orofac Res* 2014;4(3):183-185.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Facial palsy is relatively a common clinical feature which explicit at the onset or during the course of multiple sclerosis.¹ As multiple sclerosis is an idiopathic inflammatory disease of central nervous system characterized by demyelination of myelin sheath due to progressive neurological dysfunction effecting young adults.² According to literature review, frequency of facial paralysis is variable during the course of disease while apparently facial paralysis frequency at onset is 1 to 5%.¹

Multiple sclerosis has high prevalence rate in northern hemisphere.³ According to study conducted by Mr Fukazama on 107 Japanese patients in 1997, it evaluates the prevalence of facial paralysis with multiple sclerosis 24.3%.¹ Thomke et al study revealed an isolated cranial nerve palsy in 1489 multiple sclerosis patients (estimated 1.6% of patients).⁴ In a literature review, report only one case of central facial nerve palsy as presenting symptoms of multiple sclerosis, in addition to right hand weakness.⁵ In dental practice, few authors have been reported the cases of facial nerve injury. Numerous cases by Gray et al on peripheral facial nerve paralysis were published, one of them was ostensibly associated with delayed attempt to remove lower third molar and subsequent infection. His three cases were cited based on local anesthetic technique that had a recovery period of maximum 7 hours.⁶ Patient having human immunodeficiency virus has also been reported facial nerve palsy.⁷ A review article published in Greece revealed that in determining the onset of multiple sclerosis (disease) latitude does not play a vital role. Patients of multiple sclerosis have deprived quality of life, more common in women than men. Disease during the most productive years of life is at its peak. Onset and course of disease may influence by pregnancy, postpartum status and vaccines.⁸

In the current report, we describe a case of facial palsy due to inferior alveolar nerve block in multiple sclerosis patient undergone dental treatment. This has not been previously discussed in the literature.

CASE REPORT

A 24-year-old female patient reported to private clinic with a complain of pain in lower right wisdom tooth. A systematic review revealed no medical problems except she was a known case of multiple sclerosis. According to history, patient had no muscle weakness, auditory or visual problems. Because of multiple sclerosis, she had initial root canal treatment of lower right wisdom tooth to relieve pain and restored it temporarily. Patient could not follow-up for the treatment.

The orthopantogram was done before treatment showed a mesioangular impacted lower right wisdom tooth (Fig. 1). The patient also had a history of orthodontics a year prior to the pain in lower right wisdom tooth.

¹Assistant Professor, ²Principal and Head, ³Demonstrator
^{4,5}House Officer

^{1,2}Department of Oral and Maxillofacial Surgery, Baqai Dental College, Karachi, Pakistan

³Department of Dental Education, Baqai Dental College Karachi, Pakistan

^{4,5}Department of Prosthodontics, Baqai Dental College Karachi, Pakistan

Corresponding Author: Sana Maqbool, Demonstrator Department of Dental Education, Baqai Dental College Karachi, Pakistan, Phone: 0092-331-2214201, e-mail: drsana.maqbool@gmail.com

The patient was given inferior alveolar nerve block on right side of mandible. Gingiva was elevated with Howarth's periosteal elevator. Slow speed bur and drill was used to remove the bone and tooth. This made space for the tooth to be extracted successfully. Patient was given postoperative instructions and medications for pain relief.

After 24 hours of surgical extraction, patient called the dentist and discussed right side facial weakness, difficulty in eye closure and minimal swelling on the buccal surface of right side.

Extraoral examination of facial nerve revealed pain on affected side and around the ear, slight impairment of taste on anterior 2/3 of the tongue. Marked unilateral facial weakness. Loss of wrinkling on affected side. Smile is deviated toward the affected side. Prominent bell's sign was positive. Nasolabial fold was more prominent on the affected side.

Intraoral examination showed no lesion on oral mucosa. The oral soft tissues responded normally to sensory stimulation. Tongue had a normal range of motion. Trismus due to post-extraction swelling of lower right wisdom tooth.

On investigation, inflation test was positive. Magnetic resonance imaging (MRI) was done to exclude any lesion. A clinical diagnosis of facial palsy was made.

Primary physician was consulted. In this case for the first 3 days, patient was given tablet methyl prednisolone 500 mg I/V to relief symptoms. On the fourth day, patient was prescribed prednisolone on tapering dose, omeprazole and carbamazepine was also given. Symptoms were relieved after 2 weeks of the event.

DISCUSSION

Paralysis occurs as a result of specific disease process known as 'facial nerve paralysis' and it has multiple associations, including stroke, acoustic nerve tumors, diabetes mellitus, multiple sclerosis, pregnancy, trauma and viral infection.⁹ Throughout the world, prevalence of multiple sclerosis varies: high-risk areas, include Europe, Canada and northern part of US, whereas low-risk areas are the new commonwealth countries of Asia, Africa and America (the West Indies).³

In most cases, onset of peripheral facial palsy occurs immediately after injecting local anesthesia is an uncommon complication of dental procedure and it resolves within 12 hours. Recurrent facial palsy with dental manipulations has been reported in one study.¹⁰ In UK, ratio is 1 in every 2 years of Bell's palsy patient seen by general practitioner (GP). Coordination is necessary between specialist and GP for improving outcomes so that patients are treated during the critical first 72 hours.

Pregnant women have higher Bell's palsy incidence in UK (45 cases per 100,000).¹¹ One study suggests idiopathic Bell's palsy is difficult to differentiate through MRI from multiple sclerosis-associated facial palsy although casual lesions of facial palsy related with multiple sclerosis can be detected easily by MRI.¹ Baird et al showed that people with multiple sclerosis face barrier to dental care, which can have an impact on their oral hygiene, e.g. by compromising patient ability to brush their teeth. Effects are required to increase awareness of oral health importance and quality of life among multiple sclerosis patients. Ensure access to dental services for individuals with physical disability.¹²

Herpes simplex virus is responsible for idiopathic facial palsy, first suggested by Mc Cormick in 1972.¹³ Virus mainly herpes zoster could lead to facial palsy; dental treatment could cause reactivation of the virus. Ramsay-Hunt syndrome is caused by reactivation of varicella-zoster virus (a herpes family virus) in the facial nerve, leading to facial paralysis on the involved side. This is accompanied by formation of vesicles and pain in the ear (zoster oticus), which clinically distinguishes this condition from Bell's palsy. Recent work suggests, many Bell's palsy cases may be due to herpetic viral infection-particularly herpes simplex type 1, or varicella. Reoccurrence rate is 7%.⁹

It has also been suggested that injection during dental treatment causes sympathetic vasoconstriction in the vessel supplying the facial nerve. Stimulus for this vasospasm could be the adrenaline used as vasoconstrictor in the local anesthetic or direct damage from needle. Swelling, ischemia and nerve compression could follow.⁹

Unilateral facial weakness, patient inability to close the eye due to denervation of orbicularis oculi muscle are the utmost alarming symptoms of Bell's palsy. Less common symptoms include hyperacusis, decreased production of tears, altered taste, numbness or pain around the ear of the affected site.¹³ Factor like early recognition, diagnosis and treatment are important in managing multiple sclerosis disease. Individuals are at an increased risk of developing multiple sclerosis if at a time of presentation of an isolated neurological

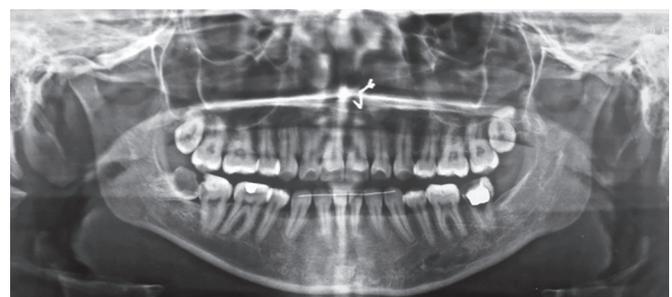


Fig. 1: Preoperative orthopantogram of the patient

syndrome, MRI shows white matter lesion. Patient with greater number and volume of lesion at baseline have been noted worse clinical outcomes.¹⁴ A study conducted on eight patients by Yasushi Furuta suggest that reactivation of varicella-zoster virus was detected in 75% (6 of 8) of patient is the leading cause of delayed facial palsy after orofacial surgery or dental treatment.¹⁵ A study conducted in Iran on 400 patients showed oral and facial manifestation 89.2% in which prevalence of facial palsy was 15.3%.⁵ Lingual nerve injury occurs more frequently after injecting mandibular block analgesia than inferior alveolar nerve injury. All category of loss of neurosensory and gustatory functions were found, and an array of continuous neurogenic malfunctions was reported. Subjective complaints and neurosensory function tests indicate that lingual nerve lesions are more incapacitating than inferior alveolar nerve lesions.¹⁶ One study conducted on 500 multiple sclerosis patients in UK showed the frequency of oral facial manifestations which was 88.6% in which facial palsy (19%). Patients having longer period of multiple sclerosis disease (>7 years) had a significant correlation with oral manifestations as compared to patients with shorter duration (<7 year; $p < 0.005$).¹⁷

Prednisolone treatment in patients with Bell's palsy greatly improves the chances of complete recovery at 3 and 9 months. Widely used drugs to treat idiopathic facial paralysis are corticosteroids and antiviral agents. One study showed that recovery rate was 94.7% in idiopathic facial palsy patient when drug given in combination, i.e. prednisolone and acyclovir while prednisolone given alone had a recovery of 87.3%. Minnirop et al performed a subgroup analysis of patient who presented with severe facial muscle paralysis establish the fact that patient who received famciclovir plus steroids had 72% facial muscle recovery than steroids alone 47%. In current practice, Numthavaj P et al recommended that treating Bell's palsy with antiviral plus corticosteroids have slightly higher recovery rate compared to prednisolone alone. Thayer GM suggested the same in his study as well.¹³

CONCLUSION

In this presented case, facial nerve palsy could be due to previous patient history of multiple sclerosis or caused

by postoperative edema in the region of parotid gland after injecting local anesthesia. Early treatment with prednisolone significantly improves the recovery process.

REFERENCES

1. Fukazawa T, Moriwaka F, Hamada K. Facial palsy in multiple sclerosis. *J Neurol* 1997;244:631-633.
2. Kieseier BC, Hartung HP. Current disease-modifying therapies in multiple sclerosis. *Semin Neurol* 2003 Jun; 23(2):133-146.
3. Chemaly D, Lefranwis A, Perusse R. Oral and maxillofacial manifestations of multiple sclerosis. *J Can Dent Assoc* 2000; 66:600-605.
4. Thomke F, Lensch E, Ringel K, et al. Isolated cranial nerve palsies in multiple sclerosis. *J Neurol Neurosurg Psychiatry* 1997 Nov;63(5):682-685.
5. Lassemi E, Sahraian MA, Motamedi MHK. Oral and facial manifestations of patients with multiple sclerosis. *Dentistry* 2014;4:194.
6. Gray RLM. Peripheral facial nerve paralysis of dental origin. *Br J Oral Surg* 1978;16:143-150.
7. Chilla R, Booken G, Rascha H. Bell's palsy as the initial symptoms of HIV infection. *Laryngol Rhinol Otol Stuttg* 1987;66:629-630.
8. Koutsouraki E, Costa V, Baloyannis S. Epidemiology of multiple sclerosis in Europe: a review. *Int Review of Psychiatry* 2010;22(1):2-13.
9. Cousin GCS. Facial nerve palsy following intraoral surgery performed with oral anesthesia. *JR Coll Sug Edinb* 2000 Oct; 45:330-333.
10. Shuaib A, Lee MA. Recurrent peripheral facial nerve palsy after dental procedure. *J Oral Surg Oral Med Oral Pathol* 1990 Dec;70(6):738-740.
11. Holland NJ, Weiner GM. Recent development in Bell's palsy. *Clinical Review. BMJ* 2004;329:553.
12. Griffiths J. Dental attendance and oral health for multiple sclerosis patients. *BDJ* 2007;202:40-41.
13. Khan A, Ali Z. Bell's palsy management: acyclovir in combination with prednisolone versus prednisolone alone—a comparative study. *Gomal J Med Sci* 2012 Jan-Jun;10(1):144-118.
14. Brex PA, Ciccarelli O, O' Riordan JI. A longitudinal study of abnormalities on MRI and disability from multiple sclerosis. *N Engl J Med* 2002 Jan 17;346(3):158-164.
15. Furuta Y, Ohtani F, Fukuda S. Reactivation of varicella-zoster virus in delayed facial palsy after dental treatment and orofacial surgery. *J Med Virol* 2000;62(1):42-45.
16. Hillerup S, Jensen R. Nerve injury caused by mandibular block analgesia. *Int J Oral Maxillofac Surg* 2006 May;35(5): 437-443.
17. Danesh-Sami SA, et al. Clinical assessment of orofacial manifestations in 500 patients with multiple sclerosis. *J Oral Maxillofac Surg* 2013 Feb;71(2):290-294.