

Case Report

ANATOMICAL VARIATION OF MENTAL NERVE AND FORAMEN IN AN OVERDENTURE PATIENT: A CASE REPORT

Ravi B.¹, Sudhindra Kulkarni², *Divya S.¹ and Sheela Kumar Gujjari¹

¹Department of Periodontology, JSS Dental College, Mysore

²Department of Oral Implantology, SDM Dental College, Dharwad

*Author for Correspondence

ABSTRACT

Mental nerve is the terminal branch of inferior alveolar nerve. It innervates chin, lower lip and gingiva. Anatomical variations of this nerve were reported previously. Nerve could be damaged during elective surgical procedures involving this region especially during installation of implants in completely edentulous mandible. Hence surgeon should be cautious while performing surgeries in the premolar region in the mandible to prevent damage to the mental nerve.

Key Words: Mental Nerve, Inferior Alveolar Nerve, Dental Implants

INTRODUCTION

The mental nerve is a somatic afferent sensory nerve and corresponds to the terminal branch of the mandibular nerve, which is the third division of the trigeminal nerve. In the premolar region, the inferior alveolar nerve, a branch of the mandibular nerve, usually splits into two branches, the mental nerve and the incisive nerve. The mental nerve emerges through the mental foramen. Any foramen in addition to mental foramen (MF) in the body of the mandible is known as accessory mental foramen. Accessory mental foramen transmits the accessory branch of mental nerve (Snell, 2004).

The absence and variation of accessory mental foramina has been reported in dry human mandibles and on radiographs previously, and can range from (0.2%) to (10.6%) on one side (Katakami *et al.*, 2008).

In Indian population, the incidence of accessory mental foramina (AMF) was found to be 6.6% and mostly unilateral in position (Sumit and Jagdish, 2012). Highest incidences of AMF were reported in Negros and Maori mandibles (Gershenson, 1986). The position of MF was observed below the apex of 2nd premolar in 68.8% and 75.8% on mandibles in Indian race by Singh and Srivastav (2011) and Sumit and Jagdish (2012) respectively.

Recently a case has been reported wherein accessory mental nerve and foramen were accidentally identified during guided bone regeneration procedure during placement of dental implant in a dentulous mandible (Kulkarni *et al.*, 2011).

The aim of this article is to report a case of double mental foramen which was seen accidentally during the installation of implant in an overdenture patient.

CASES

A 55year old female reported with complaint of completely edentulous maxilla and mandible and desired the replacement of her teeth. A thorough medical history including complete blood investigation to rule out any systemic illness was carried out. Intra oral periapical radiographs and orthopantomographs taken for assessing the inter-foramina distance and assessing the quality and quantity of available bone After thorough clinical and radiographic examination, replacement of teeth with implant-supported overdenture was planned for the patient. Pantomographic view revealed ill-defined radiolucency in the right side of mandible in the premolar region. This raised the suspicion of accessory mental foramina on the right side of mandible (Figure A, B).

The patient was given a 0.2% chlorhexidine rinse for 2 minutes and local anesthesia was secured on both buccal and lingual sides (1:80000 lignocaine HCl). A mid-crestal incision was placed on the mandibular ridge extending bilaterally from the first molar to the opposite side first molar region. A vertical relieving

Case Report

incision was made at the canine region. Blunt dissection was carried out to raise a full thickness mucoperiosteal flap, with caution to expose the mental foramen bilaterally in order to prevent mental nerve damage. The flaps were reflected both buccally and lingually to expose the alveolar ridge. On the right side in the premolar –molar region 2 mental nerves emerging from 2 different mental foramina was observed. In Figure C the two nerves were almost of the same diameter.

One of the mental foramina was located more anteriorly and inferiorly. The interforamina distance was assessed and it was decided that 2 implants (biohorizon internal hex 4.6* 10.5mm) be placed at the B and D position. The alveolar crest was visualised and osteotomy was started with a pilot drill for a depth of 10.5mm. Sequential drilling was done to enlarge the osteotomy to facilitate the placement of 4.6mm diameter implant (Figure D). Following installation of implants, cover screws were placed and the flaps were closed with 4-0 vicryl (Ethicon, Johnson and Johnson, Aurangabad, India) sutures and primary closure was attained. The patient was advised not to take any analgesics till the anesthetic effect had worn off, and was continuously monitored to check for any signs of nerve injury till 6 hours after surgery. An OPG was taken to view the placement of implant. Once it was ascertained that no nerve damage has occurred the patient was discharged from the clinic. Patient was reviewed the next day and at an interval of 1 month till the 3rd month.

After 12 weeks, surgical re-entry was done and gingival former was placed. After 3 weeks, primary stability was assessed; gingival former was removed, and replaced by ball abutments following which appropriate relining of the denture base was done. Patient is kept on periodic recall visits.

DISCUSSION

Mental foramen, through which the mental nerve exits, is usually located inferior to the second premolar tooth. Inferior alveolar nerve divides into terminal incisive and mental branches. Mental nerve after emerging out from mental foramen divides into three branches. Two branches form an incisor plexus and innervate the gingiva. There are some communications between lingual and mylohyoid nerves with this incisor plexus. The third branch innervates the lower lip and skin over the chin. These branches communicate freely with the mandibular branch of facial nerve (Standring, 2005). The relation of MF to the mandibular teeth may show variations among ethnic groups and its location changes with age. In adults it is located in the middle of upper and lower borders of the mandibular body. During childhood it is located near to lower border and located close to the upper border in the edentulous mandible (Sumit and Jagdish, 2012).

In this case, while installing implants in an edentulous patient for overdenture, we found 2 foramina of equal diameter, unilaterally and located away from each other. This enabled us to change our treatment plan and instead of placing the implants posteriorly, we decided to place 2 implants at Band D positions and later if required a third implant at position C.

Thus we could adequately intervene and prevent nerve damage during the procedure. Also, 2 mental nerves of the same diameter and exiting from 2 foramina away from each other is a rare condition. Studies have reported the average size of AMF as 1mm (Sumit and Jagdish, 2012). Owing to edentulousness; we cannot specify the exact location of the MF and hence cannot determine which of the 2 foramina is accessory.

Double mental foramen has an incidence of 1.8-10.6% (Katakami *et al.*, 2008), hence there is an ample risk in non-open surgery or less careful approach to the region to inflict nerve damage.

The knowledge about the anatomical variability of mental foramen not only helps the clinician to avoid nerve damage in connection with surgical procedure and to achieve complete effect of anaesthesia after mental nerve block but also guides him to make appropriate changes in the treatment plan as projected in this case report.

Case Report

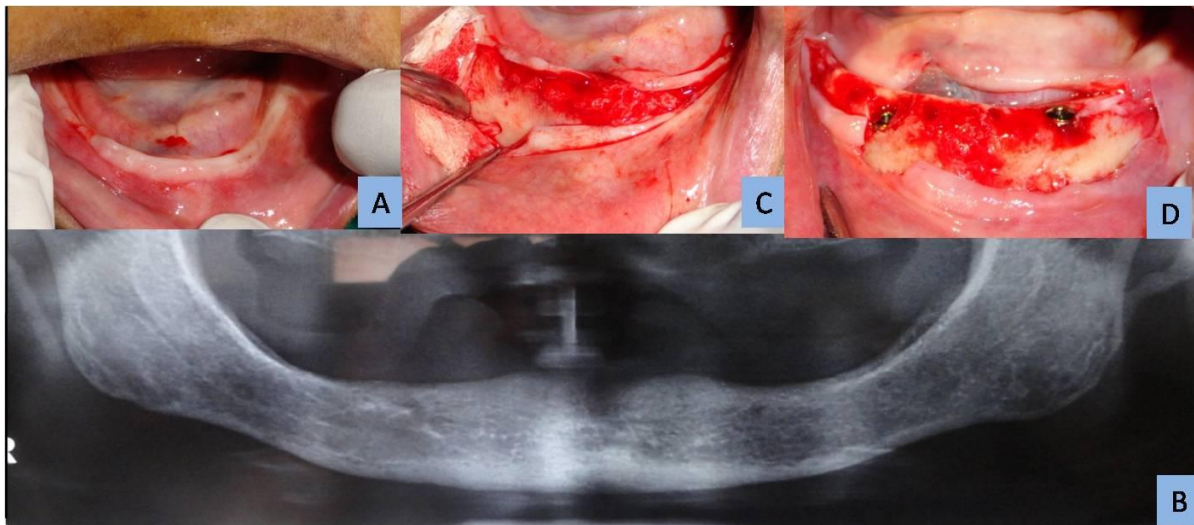


Figure 1: Double mental nerve and foramen in edentulous jaw A- Edentulous mandible before implant installation B- Preoperative orthopantomograph showing ill defined radiolucency on right side of mandible. C- After flap reflection exit of 2 different mental nerves from different foramina D-implants placed in B and D position.

REFERENCES

- Gershenson A, Nathan H and Luchansky E (1986).** Mental foramen and mental nerve; changes with age. *Acta Anatomica (Basel)* **126** 21-8.
- Katakami K, Mishima A, Shiozaki K, Shimoda S, Hamada Y and Kobayashi K (2008).** Characteristics of accessory mental foramina observed on limited cone-beam computed tomography images. *Journal of Endodontics* **34** 1441-5.
- Singh R and Srivastav AK (2011).** Evaluation of position, shape, size and incidence of mental foramen and accessory mental foramen in Indian adult human skulls. *Journal of Experimental and Clinical Anatomy* 1-7.
- Snell R (2004).** Clinical Anatomy for Medical Students. Maryland: Lippincott Williams & Wilkins 7 768- 85.
- Sumit Gupta and Jagdish S Soni (2012).** Study of anatomical variations and incidence of mental foramen and accessory mental foramen in dry human mandibles, *National Journal of Medical Research* 2(1) 28-30.
- Sudhindra Kulkarni, Sampath Kumar, Sujatha Kamath and Srinath Thakur (2011).** Accidental identification of accessory mental nerve and foramen during implant surgery. *Journal of Indian Society of Periodontology* **15** 70-3.
- Standring S (2005).** Gray's Anatomy. The anatomical basis of clinical practice, Elsevier Churchill Livingstone, *American Journal of Neuroradiology* **39** 601-2.