



AN INSIGHT INTO A DISAPPEARED MENTAL FORAMEN IN AN EDENTULOUS OLD AGE MANDIBLE

Anatomy

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ABSTRACT

Introduction: In old age the teeth in the alveolar sockets of mandible is lost and is called as edentulous mandible. If the teeth are lost, alveolar bone is resorbed and the mental foramen comes to lie nearer the superior border of the body of the mandible. **Aim:** The aim of the study was to determine the position of mental foramen in an edentulous old age mandible. **Materials and methods:** A total of 50 edentulous old age mandibles were collected from the department of anatomy, Panimalar medical college, hospital & Research institute at Chennai. The position of mental foramen was observed manually based on the criteria whether the foramen lies close to the alveolar border or on the alveolar ridge. **Results:** Out of 50 mandibles, 40 mandibles showed the mental foramen lies close to the alveolar border, 9 showed on the alveolar ridge and one mandible showed a unique feature of disappeared mental foramen with exposed mandibular canal. Since the mandibular canal is exposed along the anterior part of the body of the mandible the mental nerve may be covered by the oral mucosa alone. **Conclusion:** The knowledge of the exact position of the mental foramen in edentulous mandibles is important due to its position close to the alveolar border which may lead to high risk of mental nerve injury intraoperatively.

KEYWORDS

Edentulous old age mandible, Alveolar border, Alveolar ridge, Mental foramen, Inferior border of mandible.

INTRODUCTION:

The mandible, or the lower jaw, is the largest, strongest and movable bone of the face. It develops from the first pharyngeal arch. It has a horse shoe- shaped body which lodges the teeth, and a pair of rami which project upwards from the posterior ends of the body. The body of the mandible is somewhat U- shaped, and has external and internal surfaces separated by upper and lower borders. The upper or superior border of the body of mandible is called as alveolar part which contains alveolar sockets for the lower teeth. The alveolar part contains 16 alveoli for the roots of the lower teeth. It consists of buccal and lingual plates of bone joined by interdental and inter-radicular septa¹.

The mental foramen lies along the body of the mandible just below the interval between the premolar teeth. Through this foramen the mental nerve and vessels emerges out. The mental foramen changes its position according to the age changes. At birth the mental foramen lies closer to the inferior border of the mandible. In adults, it opens midway between the superior and inferior borders because the alveolar and subalveolar parts of the bone are equally developed. In old age the teeth fall out and the alveolar border is absorbed, so that the height of body is markedly reduced and the mental foramen lies close to the alveolar border².

The mental nerve is the branch of inferior alveolar nerve³ which is sensory, originates from the mandibular division of the trigeminal nerve. It arises from the same within the inferior alveolar canal of the mandible. As it exits from the mental foramen, it divides into three branches the mental branch, labial branch, and gingival branch, which supply the chin, lower lip and gingiva, respectively.

In the present study the position of mental foramen in an edentulous old age mandibles were examined and studied.

MATERIALS AND METHODS:

The present study was designed as a descriptive study. A total of 50 edentulous old age mandibles were collected from the department of

anatomy, Panimalar medical college, hospital and Research institute at Chennai. The criteria of selection of edentulous old age mandibles were no teeth and atrophy of the alveolar border. The mandibles are placed on a plane table covered with asbestos sheet. The investigator examined the position of mental foramen which lies close to the superior border of the alveolar border and on the alveolar ridge. The damaged mandibles and bones with pathological conditions were excluded from the study.

RESULTS:

Out of 50 edentulous old age mandibles, 80% (40/50) of mandibles showed the mental foramen close to the alveolar border, 18% (9/50) lies on the alveolar ridge (Fig:1) and 2% (1/50) showed a unique feature of disappeared mental foramen with exposed mandibular canal (Fig:2). Since the mandibular canal is exposed in the anterior part of the body of the mandible, the mental nerve may be covered by the oral mucosa alone.

DISCUSSION:

Mandible forms the contour of the lower face. In old age the contour of the face is lost, one of the reasons for it is mandible where resorption of alveolar bone occurs due to loss of teeth and their periodontal membranes⁴. The resorbed alveolar ridge reduces the height of the body of the mandible which changes the position of mental foramen to lie near the superior border of the alveolar bone. Initially, the resorption takes place on the alveolar crest, while the inferior border of the mandible remains unchanged. The resorption process increases during the first year after teeth loss then after two years the bone loss gradually gets stabilized. This process is faster in the labial and buccal parts of the alveolar crest and is particularly increased in mandible than maxilla⁵.

In the present study the position of the mental foramen was close to alveolar border in 80% and on the alveolar ridge in 18% of the edentulous old age mandibles which corroborates with the study of Charalampakis.A⁶. The rare feature found in the present study was

absence of mental foramen with the exposed mandibular canal where the nerve may be covered by oral mucosa alone. The exposed canal was observed in the anterior part of the body of the mandible, the mental nerve and its branches may be compressed while masticatory movement of the jaw. This may cause transitory or permanent sensitive, thermal and tactile changes⁷.

Depending on the amount of pressure exercised on the mental nerve, the neural injury could be classified as neurapraxia or as axonotmesis⁸. Lower lip numbness is a common symptom that occurs due to damage, injury or irritation of the mental nerve. It usually causes unilateral loss of sensitivity of the lower lip and gums, numbness, a tingling sensation, and dryness of the affected mucosa. It is often preceded by intense pain and burning sensation in the affected area⁹.

Prosthetic rehabilitation treatment with Osseo integrated implants has increased in recent scenario. It makes patients to improve their quality of life, thereby restoring self-esteem and social reintegration. Also, to restore both function, masticatory and the anatomy of the mouth. Several factors guide the clinicians to choose the most suitable prosthesis¹⁰. The area between mental foramina in the anterior mandible region is commonly chosen to install the implants that retain the fixed complete denture in the mandibular arch¹¹. One of the reasons for such choice is the fact that human mandible presents a complex bio-mechanical behavior when subjected to functional load. Additionally, implants need to be connected so as to form a rigid bar not extended to the posterior region full of vital structures¹². Careful preoperative evaluation of bone and anatomical structures to be preserved is essential to yield satisfactory results.

CONCLUSION:

The knowledge of the exact and rare position of the mental foramen are important especially in edentulous old age mandibles which may cause mental nerve injury during implant of the teeth.



FIG:1 POSITION OF MENTAL FORAMEN



FIG:2 MENTAL FORAMEN – ABSENT WITH EXPOSED MANDIBULAR CANAL

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