Unusual presentation of more common disease/injury

Accessory mental foramen: a rare anatomical finding

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Summary

Accessory mental foramen (AMF) is a rare anatomical variation with a prevalence ranging from 1.4 to 10%. Even so, in order to avoid neurovascular complications, particular attention should be paid to the possible occurrence of one or more AMF during surgical procedures involving the mandible. Careful surgical dissection should be performed in the region so that the presence of AMF can be detected and the occurrence of a neurosensory disturbance or haemorrhage can be avoided. Although this anatomical variation is rare, it should be kept in mind that an AMF may exist. Trigeminal neuralgia was diagnosed. On the basis of diagnostic test results, peripheral neurectomy of mental nerve was planned. Failure to do neurectomy of mental nerve branch in the reported case, coming out from AMF, would have resulted in recurrence of pain and eventually failure of the procedure.

BACKGROUND

Multiple mental foramen is a rare anatomical finding, which, if not recognised, can lead to unexpected surgical outcome.

CASE PRESENTATION**Introduction**

The mental foramen is located on the anterolateral aspect of the mandible, 13–15 mm superior to the inferior border of the mandibular body. The direction of the opening of the mental foramen is outward and upward in a posterior orientation.¹ The mental foramen is most usually single in human beings; when it is double or multiple, the additional foramen is termed accessory foramen. An AMF is reported to be rare, with a prevalence ranging from 1.4 to 10%.²

Case report

A male patient aged 40 years was referred to the Department of Oral and Maxillofacial Surgery, People's College of Dental Sciences and Research Centre with symptoms of paroxysmal pain on right side of the face since 2 years.

On examination, pain was sudden in onset. A severe, electric shock-like, stabbing pain was typically felt on right side of the face. The attacks of pain, which generally lasted several seconds, were recorded thrice in an entire day. Pain was localised to right side of the face, lower lip, and corner of mouth and over the inferior border of the mandible. Contact to lower lip, corner of mouth and lower border of mandible resulted in precipitation of pain. Diagnostic block was given for right mental nerve block using 3.5 cc lignocaine hydrochloride, after which the patient was free of

Figure 1 Panoramic view of mandible.

Figure 2 Accessory mental nerve.

symptoms. Examination of oral cavity, temporomandibular joint and paranasal sinuses was otherwise unremarkable.

Patient was diagnosed as having trigeminal neuralgia. Medical treatment was planned; patient was prescribed gabapentin 200 mg three times a day. Patient did not respond to this therapy after even increasing the dose to 600 mg three times a day.

Patient was advised CT scan for further evaluation, which he refused.

Peripheral neurectomy of right mental nerve of mandibular division procedure was planned and performed. Following standard vestibular incision, mental foramen and AMF were discovered during subperiosteal dissection. AMF was observed 5 mm inferior and posterior to existing mental foramen with a branch of mental nerve coming out of it. Peripheral segment including accessory and main branch of mental nerve was dissected out and cut. Both the foramen were packed by bone wax (figures 1–4).

Patient was followed up over a period of 1 year; he had no fresh complaints of pain.

Conclusion

Accessory mental foramina have been reported to be detected by macroscopic investigations on dry skulls, investigations with plane radiography, periapical radiography and CT. Unbiased radiological interpretation of an AMF is possible only on CT images since the disadvantages of low-image quality, low magnification and distortion on the panoramic and periapical radiographs are of concern.³ If the mental foramen cannot be clearly identified on panoramic radiographs under ordinary exposure and viewing conditions, a 3D-CT should be utilised to determine the extent and location of the mental foramen prior to surgical procedures. However, if only a panoramic

radiograph instead of a CT scan can be obtained, in order to improve visualisation of the mandibular canal, the patient's head should be tilted 5° downward with reference to the Frankfort horizontal reference bar of the machine.⁴

Failure to do neurectomy of mental nerve branch in the reported case, coming out from AMF, would have resulted in recurrence of pain and eventually failure of the procedure.

Utmost care to the AMF and nerve is essential during dental implant surgery and any surgical procedure involving the mandibular molar and premolar region. This care may reduce the rate of haemorrhage and paresis in the mental region, lower lip and gingiva of the ipsilateral side and recurrence of neuralgic pain in this case.

The probability of the existence of an AMF should be kept in mind.

INVESTIGATIONS

Routine blood investigations were done for minor oral surgery.

TREATMENT

Mental nerve peripheral neurectomy was performed under local anaesthesia.

OUTCOME AND FOLLOW-UP

The patient was relieved of the complaint and recovered well.

DISCUSSION

The mental foramen is incomplete until the 12th gestational week, when the mental nerve separates into several

Figure 3 Sectioned mental nerve showing accessory mental nerve segment.

Figure 4 Mental and accessory mental foramen.

fasciculi at that site. It has been suggested that separation of the mental nerve earlier than the formation of the mental foramen could be a reason for the formation of the AMF.⁵

The incidence of AMF varies between ethnic groups, and is reported as follows: 2.6% in French; 1.4% in American

Whites; 5.7% in American Blacks; 3.3% in Greeks; 1.5% in Russians; 3.0% in Hungarians; 9.7% in Melanesians and 3.6% in Egyptians.⁶ Studies performed in a Japanese population showed that AMF is less rare, with a prevalence ranging from 6.7 to 12.5% in Japan.⁷ In a study, unilateral

Learning points

- ▶ Failure to do neurectomy of mental nerve branch in the reported case, coming out from AMF, would have resulted in recurrence of pain and eventually failure of the procedure.
- ▶ Proper radiographic evaluation is to be performed before commencing peripheral neurectomies to rule out the presence of AMFs.
- ▶ During routine surgeries involving the chin region, the surgeon has to exercise utmost care to avoid damage to accessory nerves.

AMF was found in 45 dry mandibles (2.22%).⁸ These reports reveal that non-Caucasians may have a higher incidence of AMF than Caucasians.

Previous studies reported no gender differences.^{7 8} This case report is on a male patient.

In the case reported here, the foramina were located under the second premolar. This finding is consistent with the findings of a previous study in which the highest percentage (42.3%) of mental foramen were found under the second premolar.⁸

Absence of mental foramen has also been reported in 3 cases out of 2870 sides of 1435 dry skulls.⁹ Published reports on the absence of mental foramen, apart from the two cases cited by de Freitas *et al*,⁹ have not been found.

Second Department of Oral Anatomy, Fukuoka Dental College, examined the range of the AMF and its accessory mental nerve in three Japanese cadavers. The diameters of the AMF were relatively small: 0.74, 0.80 and 0.89 mm. The distances between the mental foramen and AMF were 0.67, 2.1 and 5.74 mm. The distribution of the accessory mental nerve was different in the three cases. These nerves

communicated with the branches of the facial and buccal nerves.⁷

Reports of neurosensory disturbances during surgical procedures involving the mandible are not rare; for instance, neurosensory disturbances are reported to range up to 12% in genioplasty.^{3 10}

Surgeons should always dissect carefully to avoid neurovascular complications during implant placement, regional anaesthesia, surgical correction of jaw deformities and periapical surgery.

Competing interests None.

Patient consent Obtained.

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