Case Report: Aberrant buccal nerve in the retromolar canal

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Abstract

Aberrant buccal nerves arising from the mandibular canal and passing through the retromolar canal into the buccinator muscle is a rarely encountered anatomical variation. This paper will discuss two cases of such variations. In the first, paresthesia developed due to injury to the abnormal nerve during dissection, due to our inexperience. In the second, a cautious dissection based on the experience gained in the first case was performed, and no complication was observed. The related literature suggests that buccal nerve connections can pass through a retromolar canal. We conclude that when anesthesia remains incomplete during mandibular wisdom tooth extraction, an aberrant retromolar nerve passage should be suspected. In such cases, computed tomography should be performed if possible, and a cautious surgical approach should be adopted to preserve functioning of retromolar sensory nerves.

Keywords: aberrant buccal nerve, retromolar canal

Introduction

The retromolar canal is an uncommon formation, defined as being located in the retromolar triangle behind the last molar tooth, and is considered an anatomical variation of the mandible.\(^1\)\(^,\)\(^2\) Retromolar canals consist of neurovascular clusters that contain arteries, various veins, and myelinated nerve fibers.\(^1\)\(^,\)\(^7\) Although it is unclear for which nerve this canal acts as a passage, it may contain a branch of the accessory nerve that innervates mandibular molars\(^3\)\(^,\)\(^4\)\(^,\)\(^7\) or an aberrant buccal nerve.\(^5\)\(^,\)\(^6\) Buccal nerve variation/aberrant buccal nerve is an uncommon condition. To date, only two cases have been reported. In the first case report, Singh mentioned an abnormal nerve that arose from a small foramen in the retromolar region and might have been associated with an iatrogenic paresthesia of the buccal sulcus and inferior buccal gingiva.\(^5\) Jablonski et al. determined an aberrant buccal nerve arising from the retromolar canal in a Chinese cadaver aged 54 years.\(^6\) However, this type of variation of the buccal nerve, which branches off the inferior alveolar nerve in the mandible, was first described in the scientific literature in 1864 by Turner.\(^8\) Much later, Carter and Keen described a neurovascular cluster that could be traced toward the temporalis nerve in the retromolar region.\(^3\)

In the cases presented here, we observed the presence of foramina located in the most anterior aspect of the retromolar triangle, and an aberrant buccal nerve arising from these foramina coursing close to the alveolar crest, which were encountered during surgical intervention for impacted third molar.

Case Reports

Both patients had been admitted to the Yüzüncü Yıl University Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, for surgical removal of an impacted third molar. The clinical and radiological examinations of both patients were unremarkable. However, an abnormal nerve structure was observed...
under the distal aspects of the mucoperiosteal flaps when the flaps were removed under local anesthesia. The structure was traced to the buccal tissue from a small foramen in the retromolar area. In the first case, the nerve that arose from the right retromolar area was injured because of imprecise dissection due to our inexperience, and consequently paresthesia occurred and persisted in the buccal tissue and in the margin of lip. In the second case, a nerve arising from a canal in the left retromolar area was encountered and was photographed (Figure1). Flap dissection preserving the neural structure was performed. No paresthesia or complication was encountered over the course of the healing period in this second case.

Discussion
Conflicting results have been presented by numerous authors on the prevalence of retromolar canals.\(^ \text{(1,9,10,11)} \) Because retromolar canals are too narrow to be detected on conventional radiographs,\(^ \text{(2,12)} \) they are not detected in routine dental radiographic examinations. The aberrant nerves reported by Singh and Jablonski exactly match those observed in the present cases. Paresthesia due to aberrant nerve injury, similar to that reported by Singh, developed in our first case due to our inexperience. A few authors have warned of massive bleeding, paresthesia, and traumatic neuroma that likely develop due to retromolar canal injury during dental surgery.\(^ \text{(4,13,14)} \) In contrast, other authors argue that no sensory loss occurs if buccal nerve branches are cut during extraction of impacted teeth.\(^ \text{(15,16)} \) However, the presence of paresthesia both in our first case and in the case reported by Singh supports the view that cutting branches of the buccal nerve can result in paresthesia.

Some authors argue that the nerve that arises from the mandibular canal and continues as the neural branch of the mandibular molars passes through the retromolar canal.\(^ \text{(3,4,7)} \) Other authors argue that an aberrant buccal nerve that arises from the inferior alveolar nerve passes through the retromolar canal.\(^ \text{(5,6)} \) Recent studies support the view that buccal nerve connections can pass through the retromolar canal.\(^ \text{(2)} \) In our first case, paresthesia persisted in the buccal soft tissues and an area of paresthesia developed in that region. In the second case, the nerve’s passage into the buccinator muscle was observed; the existence of aberrant buccal nerve passages has been verified by others.\(^ \text{(5,6)} \)

Conclusion
The retromolar area is much studied by maxillofacial surgeons and is the area in which routine surgeries are performed the most frequently. Therefore, surgeons should have knowledge about the anatomy and variations of this area for performing surgical investigation safely and for ensuring no complications due to surgery. At the stage of dissecting or designing the flap borders, failure to take aberrant nerves and canals into account can affect postoperative success and lead to complications. One should approach with suspicion any case in which local anesthesia of this region remains inadequate, and should consider the possible presence of an aberrant nerve. The variation must be verified via CT if possible, and incision and dissection in the retromolar area must then be performed cautiously to protect any aberrant anatomic structures.

References