Bifid mandibular canal: Report of 2 cases and review of literature

Sir,
The mandibular canal runs from the mandibular foramen to the mental foramen and contains the inferior alveolar artery, vein, and nerve. In medical imaging, its appearance has been described as “a radiolucent dark ribbon between two white lines.”[1] White and Pharoah defined it as “dark linear shadow with thin radiopaque superior and inferior borders cast by the lamella of bone that bounds the canal.”[2] Recognition of the mandibular canal variations is very important because of its clinical implications. Here, we represent incidental findings of the same in our 2 cases [Figures 1 and 2].

The term “bifid” is derived from Latin, meaning a cleft into two parts or branches. Bifid mandibular canals originate at the mandibular foramen and might each contain a neurovascular bundle. The various types of bifid mandibular canals have been classified according to anatomical location and configuration. Smaller accessory canals might be seen in association with normal or bifid mandibular canals.

Results of previous anatomical and radiological studies demonstrate significant variation in the course of the mandibular canal. According to Chávez-Lomeli et al., during embryologic development, the three inferior dental nerves innervating the three groups of mandibular teeth fuse together and form a single unified nerve in one canal. This theory would explain the existence of accessory canals resulting from lack of fusion of these canals.[3]

In 1973, Kiersch and Jordan annotated that an osteocondensation image produced by the insertion of the mylohyoid muscle into the internal mandibular surface, with a distribution parallel to the dental canal, may mimic a bifid mandibular canal.[4] The imprint of the mylohyoid nerve on the internal mandibular surface, where it separates from the inferior alveolar nerve and travels to the floor of the mouth, may also be a cause for confusion.[5] A two-dimensional

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Figure 1: Case 1

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radiograph, such as a panoramic view, cannot completely rule out the possibility of a deep mylohyoid groove on the medial aspect of mandibular surface as the image on these two-dimensional representations can be confused with the second mandibular canal. The incidence of bifid mandibular canal seems to be very low. Recently, there were two reports of bifid mandibular canals (6 cases in all) being diagnosed with the use of volumetric imaging (multislice helical computed tomography [CT] and cone-beam CT). It seems that for accurate observation of the location and configuration of the mandibular canals, it is necessary to use cross-sectional images, taken perpendicular to the axis of the canals. However, CT scan, due to its high cost and radiation exposure, cannot be performed for all patients.

The clinical relevance of this issue is to remind clinicians of the variable anatomy of the mandibular canal. Inadequate anesthesia may be possible with any bifurcation type, but especially when there are two mandibular foramina. It may lead to complications while performing an inferior alveolar nerve block for obtaining mandibular anesthesia. The location and configuration of mandibular canal variations have important implications in surgical procedures involving the mandible such as dental implant treatment, sagittal split ramus osteotomy, and orthognathic and reconstructive surgeries; displacement of the third molar into the nerve canal during surgery, bleeding, and traumatic neuroma are some of its other complications. In patients wearing prostheses, this condition can cause pain and discomfort due to bone resorption. Using implants in these patients can also cause damage to the second canal. Therefore, it is of considerable interest for dentists to identify the presence of bifid canals on the panoramic radiographs to provide better patient care.

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Conflicts of interest
There are no conflicts of interest.

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