Is there a "safety zone" in the mandibular premolar region where damage to the mental nerve can be avoided if periapical extrusion occurs?

Abstract

The mandibular premolars are located close to the mental foramina (Fig. 1). As such, various events affecting these teeth, such as odontogenic infection1 and orthodontic, endodontic, periodontal or surgical misadventure, may result in neurosensory disturbance of the mental nerves.2-4 In one retrospective study, the incidence of mental paresthesia resulting from periapical infection or pathology was 0.96%. In another 0.24% of cases in the same study, mental paresthesia was a complication of root canal treatment (caused by severe overfill in one case and iatrogenic perforation of mechanical instrumentation through the root and into the mental nerve in the second case).1 The incidence of mental paresthesia resulting from orthodontic, periodontal and surgical misadventure cannot be determined but is presumably low, as most such cases have been reported as individual case reports.

In endodontology, elimination of infection from the pulp and dentin followed by adequate intracanal preparation and proper sealing constitute the basic principles of root canal treatment. Ideally, mechanical preparation and filling should be limited to the root canal, as overinstrumentation or extrusion of chemical fillings beyond the apical foramen to the adjacent nerve may give rise to neurosensory disturbances such as anesthesia, paresthesia or dysesthesia.5 Unfortunately, cases of endodontic extrusion of various filling or irrigation agents continue to be reported, despite recent advances in endodontology.

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