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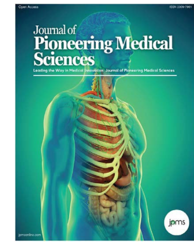

Resolving Mental Nerve Paraesthesia Secondary to Apical Periodontitis Following Nonsurgical Endodontic Retreatment: A Clinical Case Report

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Abstract: Because inflammatory lesions may involve the adjacent mental neurovascular bundle, mental nerve paraesthesia represents an uncommon complication of apical periodontitis affecting the mandibular premolars. In this case study, we meet a 27-year-old female patient who, four weeks after having root canal treatment for tooth no. 45, complained of continuing numbness in her right lower lip. Radiographs revealed an insufficient root filling, an apical radiolucency next to the mental foramen, and sinus tract tracing verified that the numbness was endodontic in origin. The patient had a conservative nonsurgical endodontic retreatment while isolated by a rubber dam and seen under a dental operating microscope. Intracanal medicine of calcium hydroxide and supplementary vitamin B complex were also administered. After one week, patients reported a marked improvement in their subjective sense of touch. Three weeks later, they claimed that all symptoms had disappeared, and radiographs taken at 18 months showed that the periapical area had healed completely and that the cortical bone had grown back. Early nonsurgical retreatment seems to be a good tooth-preserving alternative for mental nerve paraesthesia due to apical periodontitis, according to a subjective neurosensory evaluation and one clinical instance.

Key Words: Apical Periodontitis, Mental Nerve Paraesthesia, Mental Foramen, Nonsurgical Endodontic Retreatment, Decision Support

INTRODUCTION

In most cases, nerve irritation or damage is the underlying cause of paraesthesia, a neurosensory disturbance that manifests as unusual sensations as tingling, burning, numbness, or altered touch perception [1] It may happen in the dentistry field as a result of trauma, infections that started in the mouth, trauma from local anesthesia, too much instrumentation in the root canals, the extrusion of filling materials or irrigants, or surgery near the inferior alveolar or mental nerve.first to third Root apices, mental foramen, and terminal branches of the inferior alveolar neurovascular bundle have a strong anatomical link in the premolar area, making it an especially significant site among mandibular teeth.Direct mechanical pressure, inflammatory edema, local ischemia, or the neurotoxic effects of bacterial by-products are some of the sensory complaints that may result from periapical inflammation in this area [1,2,3]. It is crucial to get a correct diagnosis after comparing clinical and radiographic results in order to rule out non-odontogenic causes of lip numbness before beginning therapy. Conservative treatment of mental nerve paraesthesia caused by a persistent apical abscess connected to a previously treated mandibular right second premolar is detailed in this report. The purpose of this case study was to record the results of the diagnostic evaluation, the steps taken during the retreatment procedure, and the sensory recovery that followed the nonsurgical endodontic retreatment.

CASE REPORT

A woman who was referred for examination was 27 years old and had recurrent apical periodontitis, which was causing numbness on the right side of her lower jaw. Paraesthesia on the bottom right lip has been plaguing her for almost four weeks. With no known allergies or frequent medicines, her medical history was non-contributory. According to the patient, the right mandibular second premolar received root canal therapy in June 2020 due to pulp exposure caused by caries. She started nonsurgical re-entry with calcium

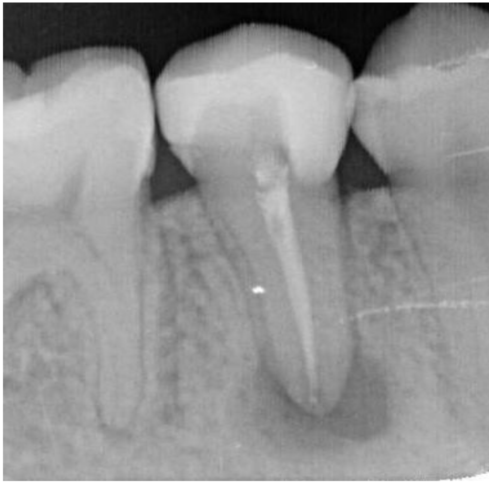

Figure 1: Preoperative Periapical Radiograph Showing Apical Periodontitis Associated with Inadequate Previous Root Canal Treatment

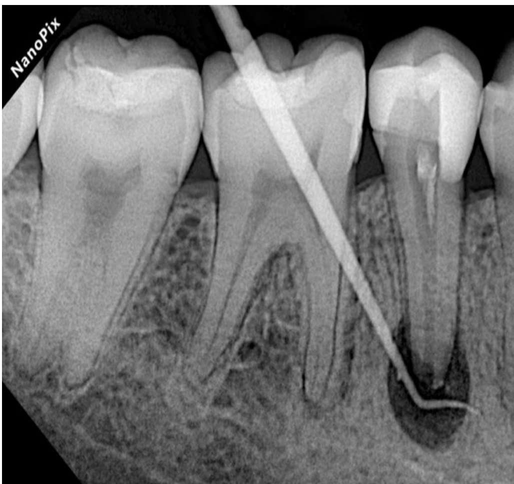

Figure 2: Preoperative Periapical Radiograph with a Gutta-Percha Cone Tracing the Sinus Tract to the Root Apex

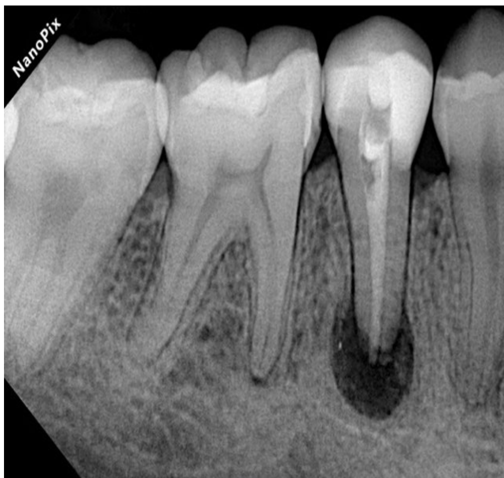

Figure 3: Placement of Calcium Hydroxide as an Intracanal Medicament During Nonsurgical Retreatment

hydroxide medication on March 15, 2022, after returning to her regular dentist due to lip numbness. The patient was sent to a specialist for further care as the sensory issues did not go away.

The extra oral examination did not reveal any signs of facial asymmetry. There is a numb spot on the right lower lip that starts at the middle of the jaw and goes all the way to the second premolar; it involves the chin skin and the oral mucosa. When the gingiva and tongue were explored during the intraoral examination, no abnormalities were detected. The afflicted tooth had typical periodontal probing, however there was a sinus tract on the buccal side.

Upon radiographic inspection, it was found that the gap between the apical periodontal ligament and the right mandibular second premolar had widened, there had been apical root resorption, and there had been a brief root canal filling that ended coronal to the radiographic apex. The apical radiolucency seemed to be mesial and coronal to the lesion, and it was situated near the mental foramen. A fresh preoperative periapical radiograph was performed before treatment, and the original radiograph that the referring dentist had taken was evaluated (Figure 1). Figur 2 shows that the source of the sinus tract infection was determined to be the root apex of the right mandibular second premolar by the use of a gutta-percha cone. A restriction that was recognized was the lack of cone-beam computed tomography. As a result, the anatomical connection was evaluated using standard intraoral radiography.

The patient presented with paraesthesia of the mental nerve, a persistent apical abscess connected to tooth no. 45, and a history of therapy-induced infection, according to the results of the clinical and radiographic evaluations. As a first line of defense, a cautious nonsurgical endodontic retreatment was chosen as the tooth may be saved and the symptoms were likely caused by a chronic apical infection. Nonsurgical retreatment with review, periapical surgery (in case healing does not improve), and tooth extraction and replacement were all discussed with the patient. The patient gave their informed agreement for retreatment because they wanted to keep their natural tooth.

The patient might choose between nonsurgical endodontic retreatment, extraction, and replacement of the lost tooth, or periapical surgery with or without assessment. Nonsurgical endodontic retreatment was started once the patient gave her assent, driven by her desire to keep her natural tooth.

The patient was given local anesthesia with an inferior alveolar nerve block with 2% lidocaine and 1:100,000 epinephrine. A rubber dam was used to isolate the tooth, and a dental operating microscope was utilized continuously to enhance visibility. An electronic apex finder (Root ZX mini, Morita, Osaka, Japan) was used to travel the canal and determine the working length after the temporary repair and access cavity were removed. The first appointment included cleaning and shaping with ProTaper Gold files (Dentsply Maillefer, Switzerland) up to size F1. To prevent extrusion beyond the apex, 5.25% sodium hypochlorite was carefully

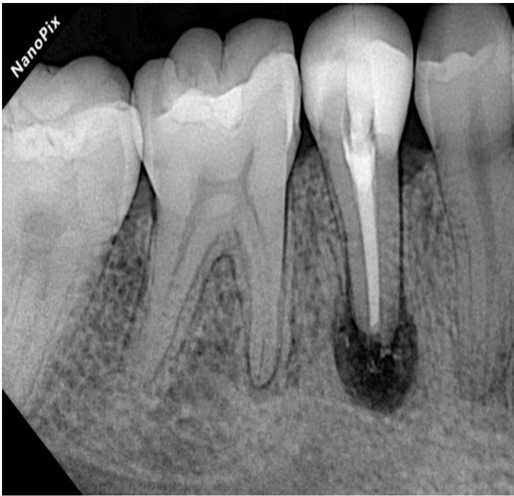

Figure 4: Immediate Postoperative Periapical Radiograph after Obturation

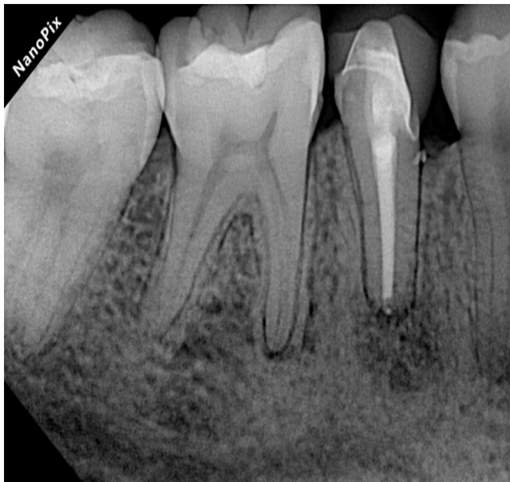

Figure 5: Follow-up Periapical Radiograph at 9 Months Showing Partial Osseous Healing

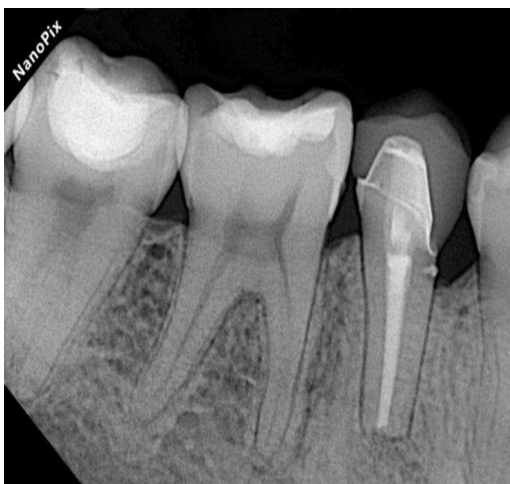

Figure 6: Follow-up Periapical Radiograph at 18 Months Showing Complete Periapical Healing

administered during irrigation using a side-vented needle. After sterilising the canal with paper tips, calcium hydroxide was inserted intracanally for two weeks, and Cavit (3M, USA) was used to temporarily close the access cavity (Figure 3). Although the patient was given a vitamin B complex supplement to take once a day for 14 days, the main reason for the improvement in symptoms was really the removal of the infection's source in the tooth canal, not the supplement itself.

At the 7-day follow-up session, the patient reported feeling somewhat better about the numbness on the right side of their chin and lower lip. After three weeks, she said that her paraesthesia had gone away entirely. Because no official neurosensory tests like light-touch mapping or two-point discrimination were documented, the basis for recovery was the clinical examination and serial patient reports of symptoms. Instrumentation was finished to size F3 on that appointment, which also included reopening the tooth and removing the intracanal medication. Following a trim of 1 mm from the master cone, the canal was obturated using a bioceramic sealer (TotalFill BC Sealer, FKG Dentaire, Switzerland) and a single-cone procedure using an F3 gutta-percha cone. Sterile paper points were used for drying purposes (Figure 4).

The ultimate coronal restoration was scheduled to be placed on the patient. After 9 months, the tooth was found to be symptom-free during the clinical examination. Radiographs revealed that the periapical region, labial cortex, and cortical outline of the mental foramen had partially healed (Figure 5). Radiographs taken at the 18-month follow-up showed full healing, with the cortical bone continuity and typical periapical architecture restored (Figure 6).

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