Expansive Nasopalatine Duct Cysts with Nasal Involvement Mimicking Apical Lesions of Endodontic Origin: A Report of Two Cases

Valerie G.A. Suter, Dr. med. dent., Michael Büttner, Dr. med., Dr. med. dent.,† Hans Jörg Altermatt, Prof. Dr. med.,‡ Peter A. Reichart, Prof. Dr. med. dent.,* and Michael M. Bornstein, PD Dr. med. dent.**

Abstract

Introduction: The nasopalatine duct cyst (NPDC) is the most frequent nonodontogenic cyst of the jaws and can be misinterpreted as an apical lesion of endodontic origin. **Methods:** In the first case, a 17-year-old male patient was referred because of a pressure sensation in the anterior maxilla. The teeth #7, #8, #10, and #11 responded to cold sensitivity testing, and on tooth #9 an endodontic treatment had been performed 3 years ago. Only periapical radiographs had been taken, and a radicular cyst was suspected. In the second case, a 42-year-old man reported inconvenience wearing his upper removable partial denture. Suspecting a jaw cyst in the anterior maxilla, the general dental practitioner referred the patient. **Results:** Limited cone-beam computed tomography scans visualized the expansion of the cysts and the involvement of the neighboring structures in both cases. In both patients, the NPDCs were treated first by marsupialization in local anesthesia and second with cystectomy in general anesthesia with reconstruction of the defect areas with bone gained from the iliac crest. The final diagnosis was achieved by histopathological examination. **Conclusions:** If not diagnosed early, the NPDC can expand through the palatal and/or buccal cortical wall and also into the nasal cavity. The more expansive the NPDC is becoming, the more complex the final diagnosis is and the subsequent surgical therapy. *(J Endod 2011;37:1320–1326)*

Key Words

Cone-beam computed tomography scan, differential diagnosis, incisive canal cyst, nasopalatine duct cyst, periapical lesion, radicular cyst

From the *Department of Oral Surgery and Stomatology, School of Dental Medicine, University of Bern, Bern, Switzerland; †Department of Cranio-Maxillofacial Surgery, University Hospital, Bern, Switzerland; and ‡Pathology Länggasse, Bern, Switzerland.

Address requests for reprints to Dr Michael M. Bornstein, Department of Oral Surgery and Stomatology, School of Dental Medicine, Freiburgstrasse 7, 3010 Bern, Switzerland. E-mail address: michael.bornstein@zmk.unibe.ch

0099-2399/$ - see front matter

doi:10.1016/j.joen.2011.05.041

Periapical lesions can be of endodontic or nonendodontic origin and may involve one or multiple adjacent teeth. Periapical lesions of endodontic origin have been classified as periapical abscesses, granulomas, and cysts depending on their histological typing (1). However, extended lesions of endodontic origin are often supposed to be radicular cysts, especially if not responding to endodontic treatment (2, 3). Apical or lateral radicular cysts are the most common cysts of the oral and maxillofacial region (4, 5) and are classified into the group of inflammatory cysts according to the World Health Organization classification (6).

Periapical lesions of nonendodontic origin can develop around the teeth's periapical region and if not diagnosed early and correctly can expand to large lesions. Reports about nonendodontic lesions mimicking apical periodontitis and their misdiagnosis can be found frequently in the literature (7–12). In the anterior maxilla, a nasopalatine duct cyst (NPDC) is one possible periapical lesion of nonendodontic origin and the most frequent nonodontogenic cyst of the jaws, with a reported prevalence between 2.2% and 11.6% of all jaw cysts (4, 5, 13). It is largely accepted that the NPDC arises from the proliferation of epithelial remnants of the embryologic nasopalatine duct (13–15), but the etiological factors and the exact pathogenesis of the tissue proliferation remain unknown. Palatal swelling or a fistula were symptoms found in 13%–50% of the patients with a confirmed NPDC (14–16). However, pain is not reported to be a characteristic symptom of NPDC (14, 15). Many NPDCs are diagnosed incidentally on apical or occlusal radiographs during routine examinations. In most cases, the anterior teeth react positively to pulp sensitivity testing (13). A correct diagnosis is more difficult when pulp sensitivity testing is negative or when endodontic treatment has already been performed in the incisor region. When NPDCs are misinterpreted as periapical lesions, inadequate endodontic treatments may be initiated (12, 17, 18). If the correct diagnosis and treatment of an NPDC are missed, the cysts can expand not only through the palatal or buccal cortical bone walls but also into the nasal cavity. Cases of expanded NPDCs are rare in the English language literature (19–21). The following report presents two cases of large and expansive NPDCs that were misinterpreted as bony lesions of endodontic origin. The complex nature of establishing the final diagnosis and subsequent surgical therapy are outlined and discussed.

Case Reports

Case 1

A 17-year-old white male patient with inconspicuous general health was referred from his general practitioner to the Department of Oral Surgery and Stomatology because of a diffuse pressure sensation in the anterior maxilla for a duration of 3 months. The patient mentioned that breathing through the nose was getting more and more difficult during the last couple of months. The patient had a history of a dentoalveolar trauma of the upper incisors 3 ½ years ago when tooth #8 had a subluxation and teeth #7, #9, and #10 a concussion and enamel fracture. Half a year later, an endodontic treatment had been performed on tooth #9. Pulp sensitivity of teeth #7, #8, #10, and #11 was reported to be intact. Only periapical radiographs had been performed, and a radicular cyst was suspected.

Figure 1. The panoramic view showed an extended radiolucency in the anterior maxilla reaching form the right to the left canine region. The caudal and lateral borders of the lesion could be identified (*arrows*), whereas the cranial limits remained unclear because of superposition of the anatomic structures.

Upon extraoral inspection, a protrusion of the upper lip and the nasal alar bases, which were soft on palpation, were noticeable. The skin color was normal, and no enlarged submandibular, submental, or cervical lymph node was found. Intraorally, a prominent buccal swelling was visible, which was painful and resilient on palpation. The mucosa was intact and of normal color, whereas tooth #9 had a grayish color in the cervical part of the dental crown. Periodontal probing was inconspicuous. All teeth, except tooth #9, reacted positively on cold sensitivity testing. On the panoramic view, a large radiolucency extending from the upper left to the upper right canine region and including the nasal cavity was detected (Fig. 1). A cone-beam computed tomography scan ([CBCT] 3D Accuitomo XYZ Slice View Tomograph; Morita, Kyoto, Japan; voxel size of 0.125 mm; limited field of view of 6 × 6 cm; operating parameters set at 80 kV/5 mA) was performed

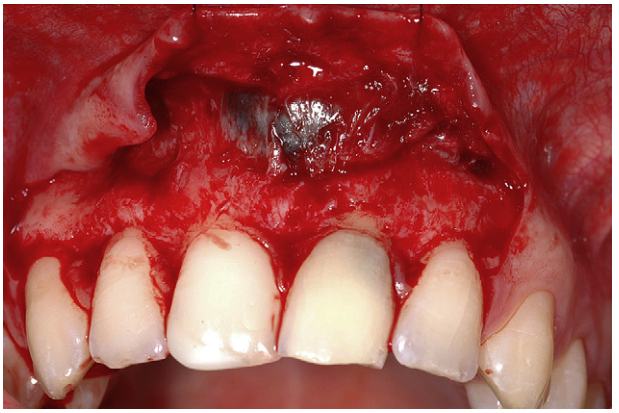

Figure 3. After raising the buccal mucoperiosteal flap, a fenestration of the cortical bone in the region of the teeth #7, #8, #9, and #10 was observed.

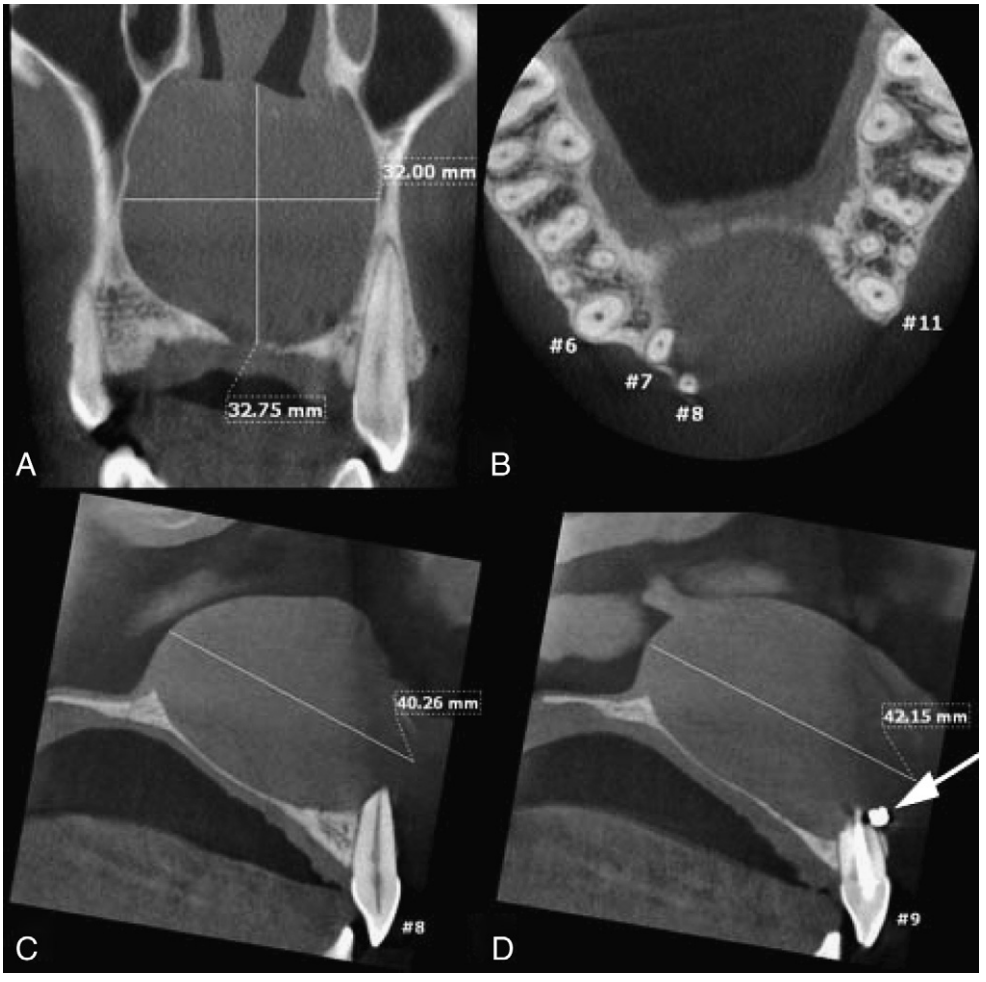

Figure 2. CBCT images of the anterior maxilla: (*A*) the coronal plane showed that the radiolucency was expanding into the nasal cavity up to the inferior concha with resorption of the bone. (*B*) The horizontal plane revealed the buccal cortical perforation. (*C* and *D*) In the sagittal planes, the resorption of the roots of teeth #8 and #9 and the overfilled endodontic material (*arrow*) were visible (orofacial cyst dimensions in millimeters).