

CASE REPORT: CANINE FOSSA ABSCESS; A RARE ETIOLOGICAL FACTOR: THE LOWER CANINE TOOTH

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Abstract

Odontogenic infection may be dangerous; especially when life-threatening complications occur. Infection spreads through the bone and periosteum toward nearby or more distant structures and spaces. Canine fossa abscess is an odontogenic infection that can lead to life-threatening complications. Successful treatment requires early recognition, determination of etiological factors, and proper medical and surgical management. The aim of this paper is to emphasize different and rare etiological factors that can play a role in odontogenic abscesses that can lead to complications.

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Introduction

Odontogenous infections may develop from teeth damaged by caries, pulpal disease, acute periodontitis¹ or, in rare cases, trauma of the lower tooth. Owing to their anatomical and topographic location at the roots, oral pathogens or inflammatory mediators can quickly infiltrate adjacent sites (e.g. the trigonum submandibulare or the fossa canine).² This can result in tissue liquefaction and abscess formation. These can expand cranially, as in the case of canine fossa abscess. Obstruction of the upper airways, necrotic fasciitis³, periorbital abscess⁴ and intracranial abscess are familiar severe sequelae of ascending infections.⁵ Modern antibiotic therapy is useful in preventing such serious sequelae.⁶

However, as these complications pose

special demands in managing illness, such diagnoses must be taken seriously, and the patient usually requires inpatient treatment.⁷ In particular, canine fossa abscesses and cellulitis require expeditious treatment to control further bacteremia (for example, via the angular vein).⁸ We describe a case of canine fossa abscess occurring after trauma to the lower canine tooth and provide a comprehensive explanation of the pathogenesis and surgical procedure involved.⁹

Case Report

A 54-year-old man presented to our clinic (Department of Maxillofacial Surgery, Dentistry Faculty Dicle University, Diyarbakir, Turkey) with massive swelling and redness in the area of the right canine fossa. This had worsened over the previous two days and become critical in the preceding few hours (Figure 1). Clinically, we observed a swollen, reddened and pressure-sensitive right cheek. The canine fossa area was extremely sensitive to pressure, and the nasal sulcus was flattened.

Intraoral examination revealed a marked intraoral swelling of the superior vestibule extending to the canine region. The right canine root was present in the maxilla. During mastication the lower canine teeth caused

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damage to the upper canine tooth and soft tissues (Figure 2). The patient also reported pain during mastication.



Figure 1. Facial view of canine fossa abscess



Figure 2. Intraoral view traumatic mastication.

Radiographically, cone beam computed tomography showed an apical lesion (Figure 3). In addition, panoramic radiographs showed complete shadowing of the right maxillary canine tooth (Figure 4). Based on the patient's history, we diagnosed an odontogenous fossa canine abscess. We decided to perform drainage under local anesthesia to avoid further cavernous sinus thrombosis (CST).

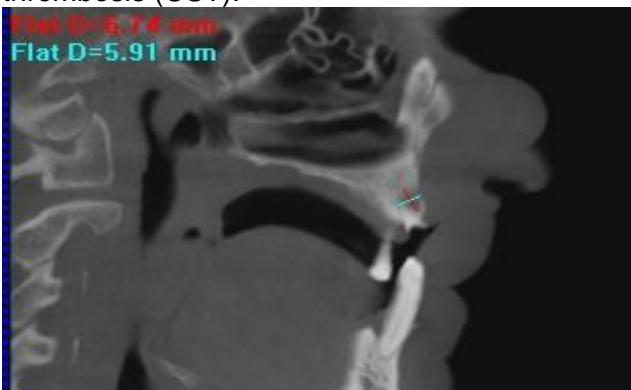


Figure 3. View of size of apical lesion in cone beam computed tomography



Figure 4. Panoramic view

Following anesthesia of the infraorbital nerve and infiltration anesthesia in the medial region of the right fossa canine and the right maxillary vestibule, intraoral incision was performed. The left maxillary canine tooth was extracted. The canine fossa abscess cavity opened spontaneously, releasing a large quantity of pus. After rinsing the abscess cavity, a drainage tube was inserted. Subsequently, we created an iatrogenic fistula. During surgery, the patient reported a marked improvement of symptoms after the release of pressure from the fossa canine abscess (Figure 5).



Figure 5. Intraoral view of abscess

In addition to surgery, we started the patient on antibiotic and anti-inflammatory therapy to prevent further spread of the inflammatory infection into the soft tissues and to prevent continued damage as a result of the edema. The patient received 1 g of amoxicillin/clavulanate acid and 0.5 g of metronidazole, both intravenously three times a day. He also received 75 mg of diclofenac sodium intravenously three times a day to

prevent swelling. The intravenous therapy was maintained for one week. We rinsed the patient's abscess cavity daily, and local symptoms consequently improved noticeably. In radiographs, we observed a complete repneumatization of the apical lesion at this time. At an outpatient visit two weeks after surgery, the patient's condition had healed without complication (Figure 6).



Figure 6. Appearance two weeks postoperatively

Discussion

The cause and diagnosis of serious odontogenic infections and their tendency to spread has been described extensively in the literature.^{10, 11} The anatomical proximity of the root apexes to the surrounding soft tissues favors pathogen transmission into the periodontal ligament¹², since pathogens will take the path of least resistance.¹³ Dental infections that spread beyond the tooth socket can initiate an infection in adjacent muscles and in connective tissue structures. According to this theory, a primary odontogenic infection of the maxillary canine tooth can be transferred to the fossa canine. The most commonly described route is fossa canine; in the case we present. A rare complication is cavernous sinus thrombosis; access to the pterygoid vein plexus. CST is a rare, albeit potentially life-threatening, complication of paranasal sinusitis.¹⁴ It is most often associated with sphenoid or ethmoid disease and is spread

through afferent and efferent venous extension via a network of valveless veins and also by direct extension.¹⁴ Signs and symptoms include fever, headache, ptosis, proptosis, chemosis, external ophthalmoplegia and decreased corneal reflex.¹⁵ A high index of suspicion and emergent imaging are crucial to early and accurate diagnosis.

We retrospectively confirmed the patient's typical symptoms when taking his history: sensitivity to pressure and percussion in the region of the maxillary teeth, swelling and pain on pressure in the cheek region. To determine the etiological factor involved we evaluated the patient's occlusion. We observed that upper canine abrasion was caused by scraping against the lower canine. This atypical scraping trauma led to canine fossa abscess.

Radiographic examination is an essential component of the management of dental problems. Periapical, occlusal and panoramic radiographs are usually able to provide the required information. However, these modalities do not always provide sufficient information concerning the 3-D relationship between healthy bone or not. As a result, more advanced imaging techniques may, on occasion, be required.

In recent years, a new method, cone beam computed tomography (CBCT) has been introduced specifically for dental applications. In addition to the use of CBCT technology in dentomaxillofacial imaging, it offers a number of potential advantages compared with computed tomography, such as X-ray beam collimation to the area of interest, reduced effective dose and fewer artifacts.¹⁶

Antibiogram revealed typical periodontal pathogens in the form of *Peptostreptococcus*, *Prevotella*, *Porphyromonas*, *Fusobacterium* and *Streptococcus viridians* (*S. viridans*).^{17, 18} Murakami et al.¹⁹ proved that *Porphyromonas endodontalis* (*P. endodontalis*) led to abscess formation in the maxillofacial region. With the help of monoclonal antibodies against a lipopolysaccharide of this black-pigmented anaerobe, they demonstrated a significant increase of this pathogen in odontogenic abscesses. *P. endodontalis* usually occurs in periapical lesions, radicular cysts and periodontal abscesses²⁰, and influences the inflammatory effect of cytokines. Therefore, when dealing with a canine fossa abscess, clinicians should select an additional supportive antibiotic therapy that

affects such typical periodontal pathogens as oral anaerobes and *S. viridans*.

To avoid such traumatic fossa canine abscesses caused by scraping against the lower canine, the general dentist should examine the case carefully and treat the malocclusion.

Conclusions

A severe and sometimes life-threatening infection with abscess formation in surrounding tissue structures can occur as a result of tooth trauma. It is therefore essential that general dentists be aware of the possible ways in which odontogenous infections can spread and that they know how to manage such complications in the case of emergency.

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