



Reflection/Review

Feline Tooth Resorption

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Abstract:

Feline tooth resorption is one of the most common dental disorders in cats, characterized by a progressive loss of tooth substance. The aetiology of this disease is not completely understood. Multiple factors may play a role in etiopathogenesis of this disease, such as: age, diet, chronic oral inflammation, metabolic and endocrine diseases, anatomical abnormalities. Based on radiographic appearance, resorptive lesions are classified into three types. Several symptoms accompany this disease, including anorexia, dysphagia, halitosis and oral discomfort. Tooth resorption can be detected with a combination of visual inspection, examination under general anesthesia with a sharp dental explorer and intraoral dental radiography. Treatment of option is extraction of the affected teeth, and crown amputation in teeth with type 2 lesions.

Keywords: Teeth; Cats; Resorptive lesions



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1. Introduction

Feline tooth resorption is one of the most common dental disorders in cats with a prevalence ranging from 30% to 60% (Ingram et al., 2001; Niemiec, 2012). This disease is characterized by a progressive loss of tooth substance (Girard et al., 2008). Mandibular third premolar teeth (307 and 407) are most commonly affected, but these lesions can occur in all types of teeth (Ingham et al., 2001; Gorrel, 2015). Age seems to be an important risk factor, along with diet and presence of other dental diseases. However, the aetiology of this disease is not understood completely (Niemiec, 2012; Pistor et al., 2023). What is known is that the resorption is caused by odontoclasts, cells responsible for the resorption of dentine and cementum. The resorption begins on the root surface, and then reaches the dentine (Niemiec, 2012). As the disease progresses, the pulp gets involved. Eventually, the enamel is affected and it either gets resorbed or it fractures off (Gorrel, 2015). Other factors that may play a role in etio-pathogenesis of this disease include: chronic oral inflammation, metabolic and endocrine diseases, systemic acidosis, local hypoxia, anatomical abnormalities, low urinary specific gravity, viral diseases (Reiter et al., 2005; Booij-Vrieling, 2009; Mestrinho et al., 2013). According to the American Veterinary Dental College (AVDC), there are three types of tooth resorption based on radiographic appearance. In type 1 lesions, focal or multifocal lucencies are present in the tooth, whereas the periodontal ligament space is normal and there is no bony replacement of the lost tooth structure. The radiopacity is also normal. In type 2 lesions, the periodontal ligament space is narrowed, radiopacity is decreased and the lost tooth structure is replaced with bone. Type 3 represents a combination of types 1 and 2, with certain parts of a tooth showing type 1 lesions, and other parts showing type 2 lesions (Niemiec, 2012) (**Figure 1**).

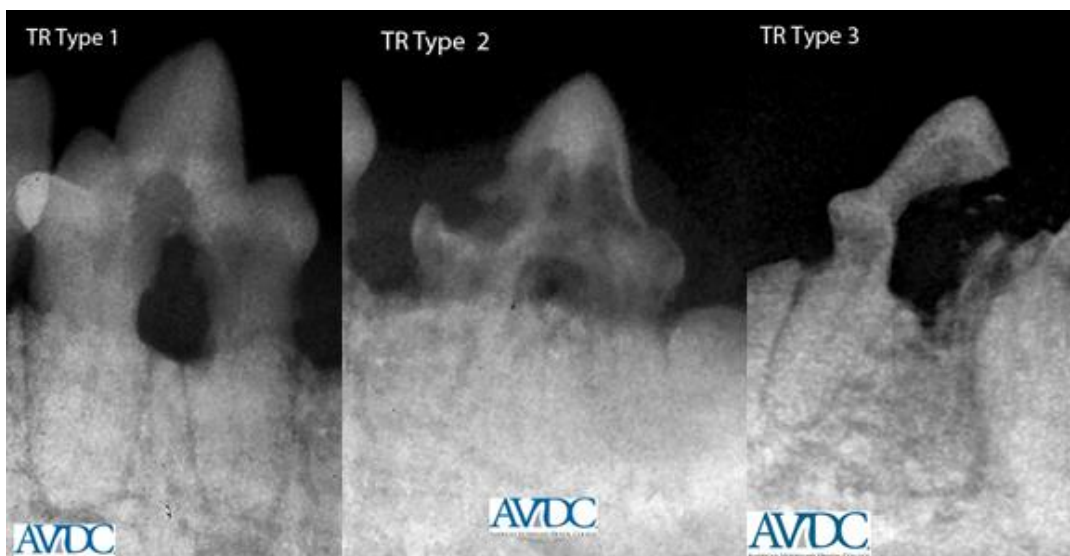


Figure 1. Types 1, 2 and 3 of tooth resorption lesions (Source: Copyright AVDC®, used with permission).

1.1. Clinical presentation

Various symptoms accompany this disease, including anorexia, dysphagia, halitosis and oral discomfort (DuPont, 2005). Tooth defects are first noted at the gingival margin (Niemiec, 2012). Gingivitis is not always present, but when it is, it's recorded as mild, moderate and severe inflammation with redness, edema, bleeding and ulceration (Silness and Loe, 1964; Mestrinho et al., 2013). Many resorptive lesions are usually covered with gingival or granulation tissue which tend to bleed when touched (Debowes, 1994). Otherwise, these cases are often asymptomatic (DuPont, 2005). Type 1 lesions are usually associated with inflammation, whereas type 2 lesions create local gingivitis (Niemiec, 2012). In order to detect any of these lesions, a thorough oral examination under general anesthesia must be performed. Dental explorers are used to detect any irregularities at the surface of the tooth (Harvey et al., 2004) (**Figure 2**).

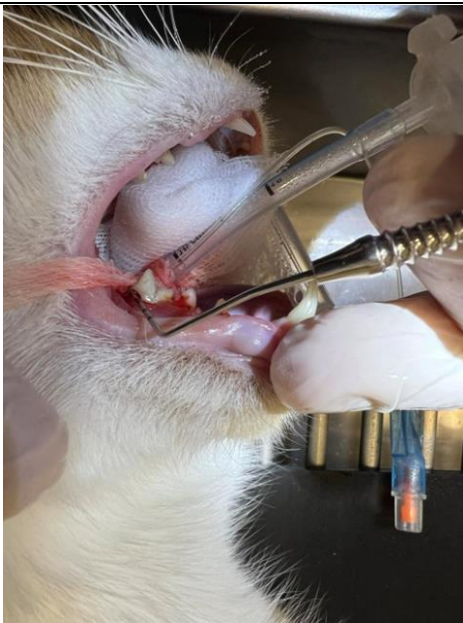


Figure 2. Clinical examination of right mandibular molar (tooth 409) using a dental explorer.

1.2. *Diagnosis and treatment*

Tooth resorption can be detected with a combination of visual inspection, examination under general anaesthesia with a sharp dental explorer and intraoral dental radiography. Visual inspection during an oral examination is the first step in diagnosing tooth resorption. These lesions can appear as tissue filled defects, along with inflamed associated gingiva (Niemiec, 2012). However, this is not always the case, as the tissue may appear normal in early stages of the disease (Reiter et al., 2005). A dental explorer is used by placing it on the tooth and running it across the tooth surface, searching for rough areas. All tooth surfaces must be examined (Niemiec, 2012). Dental radiography is essential in detecting tooth resorption lesions which are located below the gingival attachment, as well as differentiating between the types (Reiter et al., 2019). Full-mouth intraoral radiographs are especially recommended in cats 6 years of age or older (Niemiec, 2009).

Various methods of treatment have been used historically. Some of them include: topical fluoride treatment (Lyon, 1990), restorations with glass ionomer or composite (Roes, 1996; Schweighart - Banzhaf and Benz, 1997), and use of alendronate which slowed the progression of tooth resorption (Mohn et al., 2009). Nowadays, the preferred treatment of choice is extraction. Considering that teeth with resorptive lesions are weak and dentoalveolar ankylosis is present, a surgical approach is recommended. In type 2 lesions, crown amputation is an acceptable treatment option, considering that it causes less trauma and faster healing (DuPont, 1995; Niemiec, 2012).

2. Experiences from the Clinic for Veterinary Dentistry at University of Sarajevo

Since 2018, 41 cats with tooth resorption have been admitted to the Clinic for Veterinary Dentistry at University of Sarajevo – Veterinary Faculty. Admitted patients were of various breeds, predominantly domestic shorthair cats, aged 2 to 10 years old. 26 of them were males, and 15 females. All of the cats showed symptoms of halitosis and oral pain and discomfort. Prior to every detailed oral examination, anesthetic induction is performed with intramuscular medetomidine-hydrochloride (80 µg/kg), butorphanol (0.4 mg/kg) and ketamine (5 mg/kg). One perioperative injection of meloxicam (0.2 mg/kg SC) is administered. A complete periodontal probing of each tooth is performed, along with exploration of the tooth surface. Full mouth radiographs are obtained with the Schick intraoral x-ray system (SDX) (**Figure 3**).

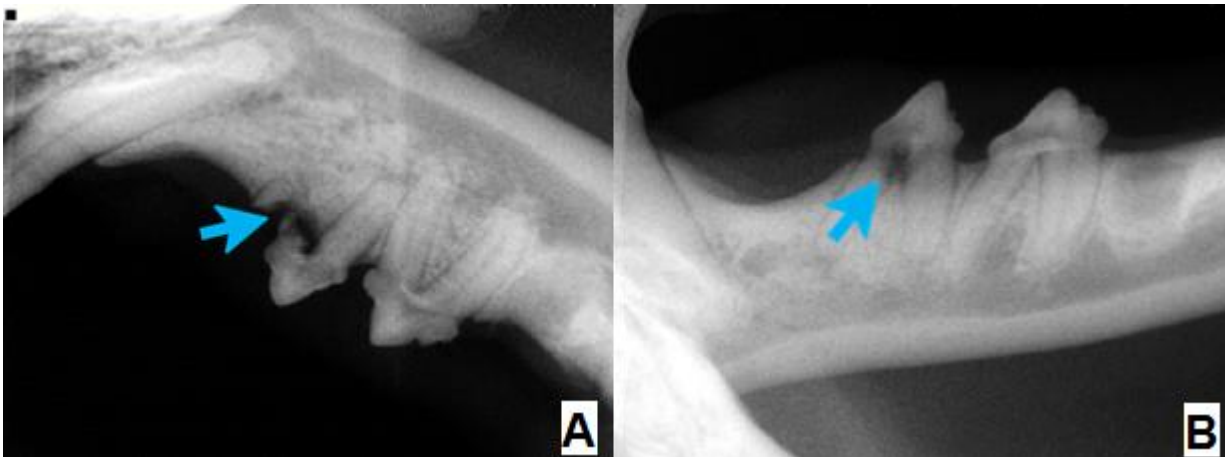


Figure 3. A – Radiograph of the right side of the mandible in a 4-year-old mixed breed cat with a history of gingivitis, halitosis and anorexia. Blue arrow is showing resorptive lesions in tooth 407. B – Radiograph of the left side of the mandible in a 6-year-old mixed breed cat with chronic gingivitis (FIV positive). Blue arrow is showing resorptive lesions in tooth 307.

Depending on the type of lesions, treatment consists of extraction or crown amputation. Dental nerve blocks are performed using 2% lidocaine-hydrochloride (2 mg/kg). Postoperative instructions include the use of analgesics, along with semi-liquid food for the first couple of days after the procedure.

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