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Therapeutic approach to advanced periodontal disease associated with feline chronic gingivostomatitis: case report

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ABSTRACT

Feline chronic gingivostomatitis (FCGS) is a severe inflammatory condition affecting multiple tissues of the feline oral cavity, frequently associated with advanced periodontal disease and type I tooth resorption. These disorders share common pathogenic mechanisms, particularly those involving the host's inflammatory response to bacterial plaque. This study reports the diagnostic and therapeutic management of a case of FCGS with concurrent periodontal lesions and multiple resorptions, highlighting the importance of an integrated clinical management strategy. A domestic cat presenting signs of chronic oral inflammation underwent clinical examination, laboratory evaluations (hematological, biochemical, and FIV/FeLV testing), and intraoral radiography. The images revealed lesions consistent with type I resorption, guiding the decision for selective extraction and periodontal prophylaxis. The treatment resulted in significant short-term clinical improvement. This case underscores the importance of a comprehensive diagnostic approach, emphasizing intraoral radiography for the identification of hidden alterations. Selective extraction, when properly indicated, can promote symptomatic relief and inflammation control, making postoperative follow-up essential to prevent recurrence.
Keywords: selective extraction, oral inflammation, feline dentistry, intraoral radiography.

Abordagem terapêutica de doença periodontal avançada associada a gengivoestomatite crônica felina: relato de caso

RESUMO

A gengivoestomatite crônica felina (GECF) é uma condição inflamatória severa que afeta diversos tecidos da cavidade oral dos gatos, frequentemente associada à doença periodontal avançada e à reabsorção dentária tipo 1. Essas afecções compartilham mecanismos patogênicos comuns, especialmente relacionados à resposta inflamatória do hospedeiro frente à presença de placa bacteriana. Este estudo relata a abordagem diagnóstica e terapêutica em um caso de GECF com lesões periodontais e reabsorções múltiplas, destacando a

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importância de uma conduta clínica integrada. Um gato doméstico apresentou sinais de inflamação oral crônica e foi submetido a exame clínico, avaliações laboratoriais (hematológica, bioquímica e FIV/FeLV) e radiografias intraorais. As imagens revelaram lesões compatíveis com reabsorção tipo 1, orientando a decisão por exodontia seletiva e profilaxia periodontal. O tratamento resultou em melhora clínica significativa no curto prazo. O caso reforça a importância do diagnóstico completo, com ênfase na radiografia intraoral para identificação de alterações ocultas. A exodontia seletiva, quando bem indicada, pode promover alívio sintomático e controle da inflamação, sendo essencial o acompanhamento pós-operatório para prevenir recidivas.

Palavras-chave: exodontia seletiva, inflamação oral, odontologia felina, radiografia intraoral.

INTRODUCTION

Feline oral inflammatory conditions, such as periodontal disease, chronic feline gingivostomatitis (FCGS), and tooth resorption, are highly prevalent and often coexist, sharing pathogenic mechanisms associated with the host inflammatory response and bacterial plaque (O'Neill *et al.*, 2023; Perry & Tutt, 2015; Winer *et al.*, 2016). The interrelationship among these processes complicates diagnosis and treatment, requiring a thorough understanding of their clinical particularities and overlaps.

Periodontal disease results from the interaction between subgingival plaque microorganisms and the host immune response (O'Neill *et al.*, 2023). This condition is characterized by inflammation of the periodontal tissues, triggered by microbial byproducts such as lipopolysaccharide endotoxins, organic acids, protein toxins, and chemotactic peptides (Harvey, 2022; Rossa & Kirkwood, 2012).

In cats, periodontal disease is classified as gingivitis (initial and reversible) or periodontitis (irreversible and destructive), involving the supporting tissues (Perry & Tutt, 2015; Soltero-Rivera *et al.*, 2023). The progression of periodontal disease may include periodontal pocket formation, gingival recession, tooth mobility, and furcation involvement in multi-rooted teeth (Perry & Tutt, 2015). Additionally, areas of active inflammation are often associated with tooth resorption, characterized by the loss of cementum and dentin, particularly in advanced stages (Lommer & Verstraete, 2001; Perry & Tutt, 2015). Several studies suggest that local inflammatory processes play a central role in the development of type 1 dental resorption, highlighting a significant correlation between periodontal disease and the structural deterioration of dental tissues (DuPont & DeBowes, 2002; Girard *et al.*, 2009).

In this context, FCGS is the second most common oral condition in clinical practice (Allemand *et al.*, 2013), with global prevalence rates ranging from 0.7% to 12% (Healey *et al.*, 2007; Winer *et al.*, 2016). It presents as a severe inflammatory condition affecting multiple oral tissues, primarily involving the caudal region and potentially extending to the gingival margin, glossopalatine arch, fauces, lips, and tongue (Barbosa *et al.*, 2018; Perry & Tutt, 2015; Winer *et al.*, 2016).

Retrospective studies have shown that periodontitis is frequently observed in these cases, often accompanied by alveolar bone loss in a semi-generalized or generalized pattern (Farcas *et al.*, 2014). Thus, bacterial plaque serves as a common factor in the etiopathogenesis of both periodontitis and

the exacerbated inflammatory response that characterizes FCGS, underscoring the need for an integrated management approach to these conditions.

Therefore, this case report aims not only to describe the therapeutic approach applied to a patient with advanced periodontitis, multiple dental resorptions, and chronic feline gingivostomatitis, but also to highlight the strong interrelationship among these inflammatory processes and their clinical significance. By presenting this case, we seek to contribute to the understanding of the complexity of these conditions in cats and to emphasize the importance of an integrated diagnostic and therapeutic approach, reinforcing the central role of inflammation in the progression of feline oral diseases.

CASE DESCRIPTION

Anamnesis

A 2-year-old male Persian cat weighing 4 kg was presented to the Animaniacs Veterinary Clinic in São Paulo, Brazil, for medical evaluation. According to the caregiver, the animal exhibited halitosis, marked gingival redness, and spontaneous oral bleeding. No changes in appetite or behavior were reported.

Clinical examination findings

During the general physical examination, all physiological parameters were within normal limits. However, the oral evaluation revealed severe gingivitis, characterized by marked gingival hyperemia, intense halitosis, and substantial dental calculus accumulation, necessitating a comprehensive therapeutic approach. Images illustrating the oral alterations were obtained during the surgical procedure performed under general anesthesia, which allowed better visualization of the lesions (figures 1a and 1b).

Complementary examinations

A complete blood count, liver biochemical profile (GGT, ALT), renal profile (urea, creatinine, and urinalysis), chest radiograph, Doppler echocardiogram, and electrocardiogram were performed, revealing no clinically relevant abnormalities. The animal tested negative for feline immunodeficiency virus (FIV) and feline leukemia virus (FeLV) using the SensPERT™ FeLV Ag/FIV Ab Test Kit (Dechra Veterinary Products).

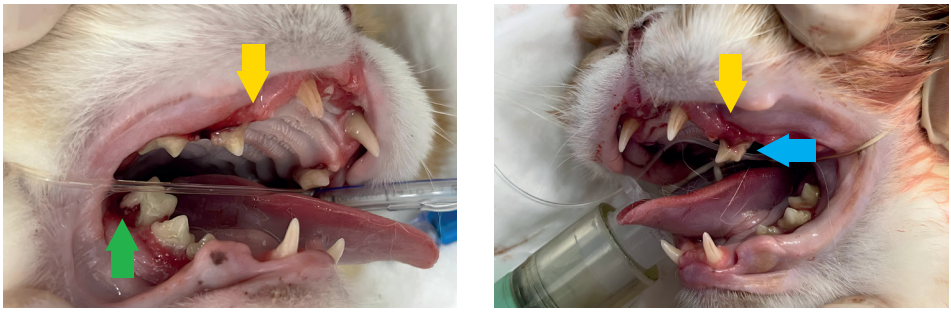

FIGURE 1. A. Right side. Grade III furcation exposure on tooth 409 (green arrow); B. Left side. Severe gingival recession on tooth 207 (blue arrow), along with hyperemia and severe gingivitis (yellow arrow).

Source: own elaboration.

A complete intraoral radiographic study was then performed under general anesthesia to identify periodontal bone alterations, even in teeth that appeared clinically intact (López-Paredes *et al.*, 2024). Parallel and bisecting techniques were employed to obtain detailed visualization of the dentition (Carvalho *et al.*, 2019; Hennet & Girard, 2005; Nepomuceno *et al.*, 2013). Dental resorption and bone lysis lesions were identified in tooth 407, absence of roots in tooth 409, and bone lysis around the left maxillary teeth and upper incisors (figures 2a and 2b).

Based on the radiographic findings and specific oral examination, a diagnosis of stage VI periodontal disease (Bread, 1989, as cited in Camargo *et al.*, 2015) was established, along with dental resorption and suspected FCGS, the latter subsequently confirmed by histopathological examination of a gingival tissue sample collected from ulcerated areas representing the most active lesions. Given this condition, a comprehensive periodontal treatment was planned, including prophylaxis of all dental arches and extractions as indicated by the radiographic findings.

Clinical conduct

Ten days after the initial consultation, the patient was referred for surgery, performed by the Amico Dentale team at the Animaniacs Clinic. Upon admission, the cat was alert but exhibited pain and discomfort during oral manipulation. Cranial symmetry was preserved, and enlargement of the submandibular lymph nodes was observed.

After sedation with acepromazine (0.02 mg/kg) and methadone (0.15 mg/kg) administered intramuscularly, venous access was established via the cephalic vein using a 22G catheter. Anesthetic induction was achieved with propofol (3 mg/kg) and ketamine (1 mg/kg), and anesthesia was maintained with inhaled isoflurane.

During the oral examination under anesthesia, severe gingivitis with generalized gingival recession and inflamed, reddened mucous membranes was observed (Loe & Silness, 1963, as cited in Camargo *et al.*, 2015), along with grade 3 dental calculus accumulation (Lascala & Moussalli, 1980, as cited in Camargo *et al.*, 2015), varying degrees of tooth mobility, oropharyngeal

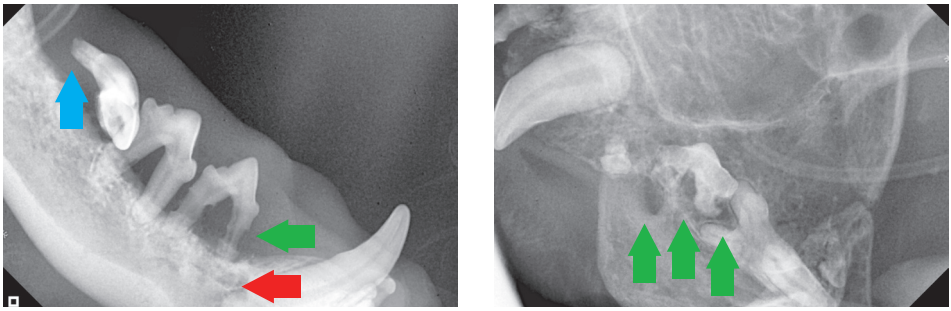

FIGURE 2. A. Bisecting technique radiograph showing a tooth resorptive lesion on tooth 407 (green arrow), absence of a dental root on tooth 409 (blue arrow), and adjacent bone lysis around tooth 407 (red arrow); B. Parallel technique radiograph revealing bone lysis adjacent to the left maxillary teeth (green arrows).

Source: own elaboration.

ulcers, and grade 3 furcation exposure on tooth 409.

Surgical procedure

The first stage of treatment consisted of a complete dental prophylaxis, involving ultrasonic scaling followed by polishing with a low-speed Robinson brush and the application of prophylactic paste to all remaining teeth. The oral cavity was then irrigated with pressurized water using a triple syringe.

Topical antisepsis was performed with 0.12% chlorhexidine, followed by local anesthetic blocks. The first regional block targeted the left mandibular nerve, using a 24-gauge needle inserted into the pterygomandibular fossa to administer 2% lidocaine (5 mg/kg) in a volume of 0.2 ml. Additional blocks were subsequently performed on the right mandibular, right maxillary, and left maxillary nerves using the same technique, drug, and dose. Local infiltrative blocks were also applied to the gingiva adjacent to the teeth designated for extraction, according to the surgeon's discretion.

Tooth extraction began with tooth 409. Gingival separation was performed using a Freer elevator (figure 3a), followed by odontosection with a bur attached to a high-speed handpiece, positioned perpendicular to the tooth axis (figure 3b). To facilitate extraction, the periodontal ligament was severed using dental elevators of various sizes inserted on the mesial and distal aspects (figure 3c). Finally, dental forceps were used to apply gentle rotational movements of up to 180° until the tooth was completely extracted (figure 3d).

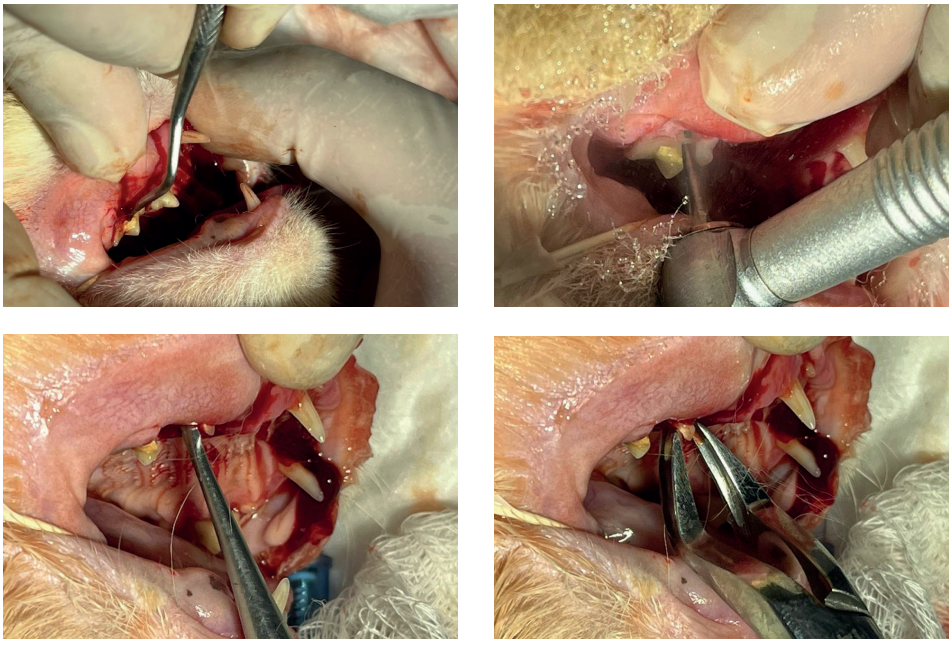

FIGURE 3. A. Gingival flap reflection; B. Odontosection performed with a dental drill; C. Periodontal ligament rupture using a dental elevator; D. Tooth extraction using dental forceps.

Source: own elaboration.

These steps were repeated for all teeth indicated for extraction, resulting in the removal of a total of 16 teeth (figure 4). At the end of the procedure, a complete postoperative radiographic evaluation of the dental arches was performed to confirm the absence of any remaining root fragments.

Subsequently, an incisional biopsy of the gingival tissue was performed for histopathological analysis. The surgical wounds were closed using mucosal flaps and sutured with 5-0 monofilament synthetic absorbable material in a combination of simple continuous and interrupted patterns (figures 5a and 5b).

During the intraoperative period, a single intravenous bolus of metronidazole (15 mg/kg) and dexamethasone (0.1 mg/kg) was administered. At the end of the surgery, inhalation anesthesia was discontinued, and the patient was transferred to the recovery area for postoperative monitoring.

Postoperatively, tramadol hydrochloride (1.5 mg/kg, twice daily for 4 days), dipyrone (25 mg/kg, once daily for 4 days), and 0.12% chlorhexidine mouthwash (four times daily for 7 days) were prescribed. In addition, prednisolone 4 mg tablets were administered, beginning with one tablet once daily on the third postoperative day, then reduced to ½ tablet once daily for an additional 7 days, followed by gradual withdrawal according to the recommendations of Hofmann-Appollo *et al.* (2010), specialists in feline medicine.

A postoperative check-up was scheduled for 4 to 7 days after surgery to allow follow-up evaluation, treatment adjustment, and specialist referral.

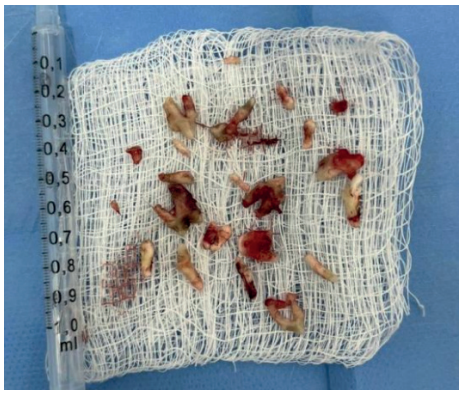

FIGURE 4. Extracted dental elements: 102, 106, 107, 108, 109, 202, 203, 206, 207, 209, 307, 308, 309, 407, 408, and 409. Source: Authors' own.

Source: own elaboration.

FIGURE 5. A. Suture in the upper right premolars; B. Suture in the upper incisors and left upper premolars.

Source: own elaboration.

DISCUSSION

FCGS can affect cats of all ages but tends to be more severe in older individuals. Certain breeds, including Abyssinians, Burmese, Persians, Siamese, and Himalayans, have a recognized genetic predisposition (Healey *et al.*, 2007). In the present case, the animal belonged to one of these breeds, underscoring the importance of clinical surveillance in predisposed populations.

The etiology of FCGS remains uncertain, although its multifactorial nature is well established, involving microorganisms, viruses, nutritional disorders, and, most importantly, immunological alterations in the host (Allemand *et al.*, 2013). The intense inflammation observed appears to be directly associated with bacterial biofilm accumulation, particularly in cats with pre-existing periodontal disease.

Periodontal disease plays a central role in feline oral inflammatory disorders and may also affect systemic health (Watanabe *et al.*, 2019). As it represents the progression of untreated gingivitis, periodontitis necessarily depends on the prior presence of gingivitis, underscoring the importance of early diagnosis and intervention (Perry & Tutt, 2015).

Given the multifactorial nature of FCGS, the diagnostic approach must be comprehensive. In this case, diagnosis was based on clinical evaluation, laboratory testing, and imaging. Radiography was essential for identifying teeth requiring extraction, and the definitive diagnosis was confirmed by histopathological examination, which revealed epithelial hyperplasia and a diffuse lymphocytic–plasmacytic inflammatory infiltrate (Barbosa *et al.*, 2018; Lee *et al.*, 2020). Testing for FIV and FeLV is crucial in the diagnostic process, as positivity is associated with a poorer prognosis. The immunosuppressive effects of these viruses are thought to contribute to the worsening of the clinical condition (Belgard *et al.*, 2010; Lee *et al.*, 2020).

Treatment of patients with FCGS must be individualized, aiming to alleviate symptoms, control secondary infections, and manage comorbidities or predisposing factors. In this case, the patient exhibited clear signs of periodontal disease associated with heavy plaque accumulation. Considering the polymicrobial nature of dental biofilm, the isolated use of antimicrobials is ineffective, as biofilm confers high resistance to antimicrobial agents and allows rapid bacterial recolonization after treatment (Palmer Jr., 2014). Therefore, the initial therapeutic intervention consisted of periodontal treatment involving tartar removal and complete dental prophylaxis. The main objective of this procedure is to eliminate plaque and dental calculus, removing local factors that perpetuate inflammation and allowing gingival tissue recovery, thereby halting disease progression (Perry & Tutt, 2015).

In general, treatment for FCGS may be clinical (medical) or surgical, with the latter currently regarded as the standard of care due to the limited effectiveness of pharmacological management in achieving long-term remission (Lee *et al.*, 2020). The therapeutic approach with the strongest evidence of efficacy is multiple tooth extraction, including all premolars and molars, with possible extension to the incisors and canines in refractory cases. This procedure results in significant improvement or complete remission in approximately 70%–80% of affected cats (Druet & Hennet, 2017; Jennings *et al.*, 2015).

In this case, selective extraction of teeth with evident lesions was performed,

preserving healthy elements such as the canines, some incisors, and the upper left fourth premolar. However, it is well established that even clinically intact teeth can act as antigenic triggers, perpetuating inflammation (Hennet *et al.*, 2011). Therefore, although the initial decision prioritized the preservation of healthy teeth, the possibility of additional extractions in the event of clinical recurrence was discussed with the owner.

Farcas *et al.* (2014) emphasize that intraoral radiography plays an essential role not only in diagnosis but also in therapeutic planning and postoperative evaluation of cats with FCGS. Its use is critical to ensure the complete extraction of affected teeth, as retained root fragments may perpetuate inflammation and compromise treatment success. Therefore, postoperative radiographs are indispensable, particularly in cases involving pre-existing dental fractures or those occurring during extraction.

In the present case, the diagnosis of dental resorption lesions was made possible precisely through intraoral radiographic examination, which revealed areas consistent with external inflammatory resorption in the premolar teeth, thereby accurately guiding the surgical approach.

Despite therapeutic advances and individualized case management, a significant limitation persists in veterinary clinical practice: the lack of patient follow-up after treatment. This discontinuity hinders the evaluation of medium- and long-term therapeutic responses and limits the accuracy of future clinical decision-making (López-Paredes *et al.*, 2024).

For this reason, it is essential to emphasize to owners the importance of continuous monitoring through regular follow-up visits, which constitute a fundamental component of clinical management and are crucial for maintaining the patient's long-term health.

CONCLUSION

This report underscores the complexity of managing FCGS associated with periodontal disease and tooth resorption, emphasizing the importance of a thorough diagnostic approach, particularly radiographic evaluation. The selective surgical strategy, tailored to the patient's specific condition and complemented by clinical monitoring, proved appropriate; however, the absence of follow-up limits long-term assessment. This case highlights the need for individualized management strategies aimed at achieving early diagnosis, controlling inflammation, and improving the quality of life of affected cats.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

SOURCES OF FUNDING

The surgical procedure was funded by the owner.

USE OF ARTIFICIAL INTELLIGENCE

The authors state that they did not use artificial intelligence in the study.

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