EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 7
Issue: 1
70-71
Year: 2020

ROOT CANAL TREATMENT OF THE FELINE CANINE TOOTH

Dr. Tandir F.[1], Dr. Džanković A.[2], Dr. Korać S.[2], Dr. Hadžiabdić N.[3], Dr. Šaljić E.[4], Dr. Bejdić P.[1], Dr. Hadžiomerović N.*[1]

[1]Department of Anatomy and Histology with Embryology, Veterinary faculty, University of Sarajevo, Bosnia and Herzegovina.
[2]Department of Dental Pathology with Endodontics, Faculty of Dentistry, University of Sarajevo, Bosnia and Herzegovina.
[3]Oral Surgery with Dental Implantology, Faculty of Dentistry, University of Sarajevo, Bosnia and Herzegovina.
[4]Internal Medicine Clinics, Veterinary Faculty, University of Sarajevo, Bosnia and Herzegovina.

***Corresponding Author: Dr. Hadžiomerović Nedžad**
Department of Anatomy and Histology with Embryology, Veterinary faculty, University of Sarajevo, Bosnia and Herzegovina.

Article Received on 30/10/2019 **Article Revised on 20/11/2019** **Article Accepted on 10/12/2019**

ABSTRACT
Tooth fractures are very common in dogs and cats. The most commonly fractured teeth are the canines and the fracture occur mostly as the result of trauma. The majority of tooth fractures are accompanied by open canine teeth with the exposure of the pulp. To prevent other problems such as pulpitis it is important to start treatment as soon as possible. In this case treatment plan included root canal therapy followed by direct permanent coronal restoration. The obturation was perform with master gutta-percha cone and the appropriate amount of a sealer. The treatment was successfully completed with composite restoration allowing tissue preservation, enables retention and acceptable esthetic appearance.

KEYWORDS: canine tooth, endodontic, root canal.

INTRODUCTION

Veterinary endodontic treatments are increasing in demand as an option to the extraction of damaged teeth.[1,2] Tooth fractures are the common diagnosis in veterinary dentistry, generally occurring as crown and cup fractures or slab fractures.[3] Especially in cats, canines are important anterior teeth and their loss causes problems in feeding and the upper lip fall inward. These teeth in cats are the most commonly associated with dental fractures as the longest teeth in the jaw.[4] The majority of tooth fractures in cats are accompanied by open pulp cavity and other associated complications.[3] Because of the anatomical structure of the canine teeth, where the pulp cavity is close to the tip of the crown, most of the crown fractures expose the pulp. If left untreated, pulpitis will develop as a consequence of pulp exposure and allow bacteria to travel through the pulp to the periapical tissue, resulting in infection and inflammation of the periapical tissue and development of apical periodontitis.[4]

CASE REPORT

The pet's owner noticed fracture of the right upper canine tooth with unknown etiology. The owner also noticed lack of grooming and rare signs in cat. As for clinical appearance we noticed that the incisal edge of the canine tooth was missing with obvious pulp exposure confirmed by palpation with a dental probe (Figure 1A). As an integral part of the diagnostics, the tooth was evaluated radiographically to exclude possible periapical lesion. It is confirmed that feline intraoral radiographs reveal clinically important pathology in 41.7% without abnormal findings on the initial clinical examination.[5] Radiograph confirmed crown fracture with pulp exposure. Clinical exam revealed gingival sulcus depth of 1mm which considered normal.

The diagnosis was complicated crown fracture of the right upper canine tooth with pulp necrosis. The treatment plan included root canal therapy followed by direct permanent coronal restoration.

After general anesthesia and rubber dam isolation, a chipped fragment of enamel at vestibular part of the crown was removed. The access cavity preparation was performed with a low-speed handpiece and carbide bur, carefully removing tooth structure only as much as necessary. After an initial opening, the access cavity was carefully extended by using Gates-Glidden drill, followed by removal of remnants of the contaminated pulp with barbed broach file ISO size #25. The working length (WL) was determined radiographically by placing an endodontic K-file size #20 (Figure 1B) in the root canal and finally confirmed using an electronic apex

locator (Woodpecker III, Guilin Woodpecker Medical Instrument Co., Ltd., China). The canal debridement was performed with hand files to ISO size #40 using standard technique and copious irrigation with 1.5% sodium hypochlorite (NaOCl).

Master gutta-percha cone with taper ISO-norm standard of 0.02 was selected for obturation. Apical tug-back of a master cone was achieved with size #40. The method used for obturation was lateral compaction with the gutta-percha points and the appropriate amount of a sealer (EndoPlus, President Dental, Germany). Postoperative radiograph recording confirmed the success of the treatment (Figure 1C). Immediately after completion of endodontic treatment, a permanent direct composite restoration using nanocomposite (Evetric, Ivoclar Vivadent, Lichtenstein) was placed to avoid putting the animal through general anesthesia several times (Figure 6D).[6] As there was no evidence of spreading infection, systemic involvement or severe oral infection and feline wasn't immune compromised, there was no need for systemic antibiotics administration.

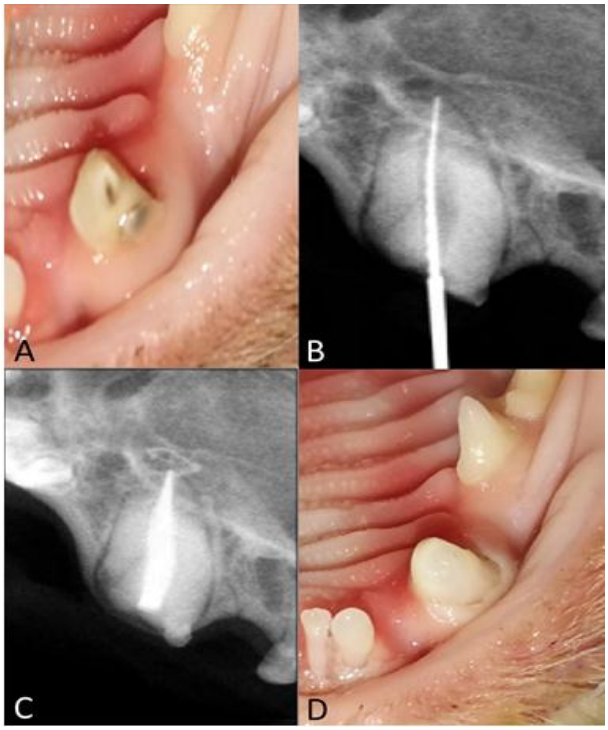

Figure 1: A. Clinical appearance of complicated canine tooth fracture; B. The working length was determined radiographically by placing an endodontic K-file size #20 in the root canal; C. Postoperative radiography of root canal treatment; D. The direct composite restoration after completion of endodontic treatment

DISCUSSION

The canine teeth endure the majority of the vertical masticatory forces. A very small chip fracture is likely to cause pulp exposure in the canine cat's teeth since they have about 1-1.5mm of enamel and dentin between the oral cavity and pulp chamber.[7] The ultimate goal of dentistry is to retain a functional tooth for a lifetime. As an alternative to tooth extraction, single visit root canal treatment was performed with subsequent obturation using semisolid gutta-percha points and a sealer. Adequate irrigation with NaOCl during endodontic treatment is considered very important because apical root canal anatomy in cats has the same "sprinkler-rose" appearance as seen in dogs.[7]

CONCLUSION

Adhesive dentistry with composite restorations considered optimal way to restore endodontically treated tooth. This approach allows more tissue preservation, enables retention and acceptable esthetic appearance.

REFERENCES

1. Lyon KF. Endodontic instruments for root canal therapy. Clin Tech Small Anim Pract, 2001; 16(3): 139-50.
2. Lyon KF. Endodontic Therapy in the Veterinary Patient. Veterinary Clinics of North America: Small Animal Practice, 1998; 28(5): 1203-1236.
3. Capik I, Ledecky V, Ševčik A. Tooth Fracture Evaluation and Endodontic Treatment in Dogs. Acta Vet. Brno, 2000; 69: 115-122.
4. Torabinejad M, Shabahang S. Pulp and periapical pathosis. In: Torabinejad M, Walton RE, eds. Endodontics: principles and practice. 4th ed. St Louis: Saunders Elsevier, 2009; 49–66.
5. Verstraete FJ, Kass PH, Terpak CH. Diagnostic value of full-mouth radiography in cats. Am J Vet Res., 1998; 59(6): 692–5.
6. Bladowski M, Kotowicz-Gears A, Wojtkiewicz J. Restoration of fractured canines in ferrets after one-step root canal treatment Pol J Vet Sci., 2011; 14(1): 137-9.
7. Bannon K. Fractured teeth – What's next? European Veterinary Dental Society (EVDS), 2018; 60.
8. Hennet PR, Harvey CE. Apical root canal anatomy of canine teeth in cats. Am J Vet Res., 1996; 57(11): 1545-8.