

## ROOTCANAL TREATMENT AND RADICAL THERAPY OF DOG'S TEETH: CASE REPORT

**Kovacevska Ivona<sup>1</sup>, Dimova C<sup>1</sup>, Georgiev Z.<sup>2</sup>, Odzaklievska S<sup>4</sup>, Nacevski I.<sup>3</sup>**

*University "Goce Delcev" Štip*

*Faculty of Medical Sciences Department of Stomatology<sup>1</sup>*

*University "St. Kiril and Metodij" Skopje*

*Faculty of Dentistry<sup>2</sup>*

*Private dental clinical practice – Kumanovo<sup>3</sup>*

*"European University" - Faculty of dentistry - Skopje<sup>4</sup>*

*R. Macedonia*

*Ivona.kovacevska@ugd.edu.mk*

### ABSTRACT:

**Introduction:** The scientific and the technological advancements made in the dentistry in the last decade its being used in the veterinary medicine for therapeutical aspect in order to improve dental health of animals.

**Aim:** In this case report we present our dental therapeutic intervention on a dog, which is an only specimen of its race in our country i.e. the Japanese race Akita Inu or a Samurai dog.

**Study design:** After the examination of the dog's oral cavity we found a fracture of the corona of the maxillary canine i.e. tooth 24. There was also a visible damage of the gums, fistulous formation and hiperemia. We realised endodontic treatment on the damaged tooth and it was successful for a period of three months. After that period there was a remission of the symptoms. The operative therapy that followed confirmed a presence of a vertical fracture of tooth 24 after which the tooth was extracted.

**Conclusion:** Eighteen months later, the four-legged patient is in great shape and with perfect oral health, even though it's missing one of its canines.

### Introduction:

Scientific and technological prosperity in dentistry especially in the last decade, finds adequate application in veterinary medicine, from therapeutic point of view, in order to improve the dental health of animals. As a result of the modern diet and limited oral hygiene a lot of small animals (dogs and cats) are subjects of changes on dental-supporting apparatus and stomatognathic system as a whole. Most common oral and dental changes often are presented as different inflammatory processes localized on the gum, presence of dental calculus and different piogenical collections (abscess). Not uncommon are the changes of teeth (dental caries decay), fractures of different parts or full dental crowns, chronically periapical changes that frequently require endodontic - conservative therapeutically treatment. Oral-surgical therapy such as apicoectomy or radical therapy-extraction should not be excluded.

Our colleges, doctors of veterinary medicine from Veterinary Hospital in Skopje specialized for small animals, request professional dental assistance for a dog, living in Bitola. This dog is the only specimen of his race in Macedonia. More precisely it was a specimen of the Japanese dog race - Akita Innu also known as samurai dog. (Fig. 1 and 2) The problems that were presented according to the owner include an inflammatory reaction and abscess accompanied by subjective discomfort of the animal manifested by uncontrollable biting of his domicile, irritability and after a certain period of time swelling and eye hyperemia and closed eye lid. The patient-dog was brought to the Veterinary Hospital in Skopje, where primarily was intervened with antibiotic therapy, but as a result of remission of pathological signs in a short period of time we had to remake the clinical examination of the oral cavity and we concluded that a fracture on the crown on the maxillary tooth canine 24 (dogs in the maxilla have three pairs incisors) is present. There was a visible damage on the gingiva, fistula formation, and hyperemia (Fig. 3, 4). Because it was necessary profile roentgen-

picture (Rtg) was made and it showed us visible periapical pathological change on the tooth 24 and root curvature in the apical third was noticeable. Root-apex was spreading nearby the premolar roots (Fig. 5).

#### ***Materials and methods***

In order to help our animal patient to save his key tooth, the animal was under anesthesia with application of Neurotrans 0,2 ml/10kg bw (miorelaxante) and sol.Ketamin 10%, 1ml/10kg bw . In the oral cavity holder was disposed and after that we made endodontic approach with trepanation the pulp chamber, continued with extirpation of the infected pulpal tissue (Fig. 6-10). Even though the Profile roentgen-picture demonstrated curvature of the root during the treatment any endodontic difficulties were not verified. The type of the pathological-changed pulpal and periapical tissue initiated intensive intracanal instrumentation and manual preparations with Ker expanders and K files according to crown-down technique and it was characterized by abundant irrigation with hypochlorite solution. In further the procedure root canal was irrigated with physiological solution, dried with paper shifts intracanalicularly. With adequate lentila we had applied calcium hydroxide paste (Calcicur-Voco) (Fig.11).

Different views of the endodontic therapy approach for chronic periapical pathological changes, are noticeable nowadays. Whatever the treatment can be realized in one session where possibility of an additional infection is minimized, or to make intervention in several stages (usually two) with the possibility of using inter-sessional intracanal medication, which is in the interest of the therapy and improves apical tissue reparation and disinfection and sterilization of root canal. Because of the type of pathological tissue disease and the complexity of the periapical morphology of the tooth and of course because of the specificity of patient we initiated that therapy should be realized in two phases. Thus, after a period of three weeks, period of fully stabilization of the clinical condition in the oral environment, the patient-dog was calm and there were absence of any signs of subjective discomfort. The animal was put under sedation and we finalized the endodontic treatment with definitive root canal obturation with AH plus sealer and modified conventional gutta-percha technique (in the canal system was applied couple of gutta-percha shifts). Composite filling was used for definitive obturation of the crown cavity.

#### ***Results:***

The realized endodontic therapy showed as successful in a period of three months, after which symptoms of inflammation, anxiety and discomfort of the animal had appeared again and the composite filling of the crown had fallen. Because endodontic treatment followed by adequate antibiotic therapy is not a permanent solution, we transferred to the next therapeutic measure-surgery, first choice was resection of root apex-apicoectomy, but meanwhile the possibility of radical therapy-extraction was not excluded. Re-assess to the apical area which had made pathological irritation and according to morphological configuration of the diseased tooth, after elaboration of existing roentgenogram we had concluded that all opportunities for dental intervention are exhausted except radical therapy.

#### ***Procedure of surgery:***

Maxillary canine in dogs are very big. Approximately 60-70% of the length of the tooth belongs to the root. As we noticed that the apex of the maxillary canine is located above the mesial root of the second premolar we made palpation along juga alveolaria of entire tooth (fig.12). Tooth can be extracted like any one-root tooth, with special attention not to be inserted in the nasal cavity (cavum nazi), i.e., not to damage different structures in the nasal cavity.

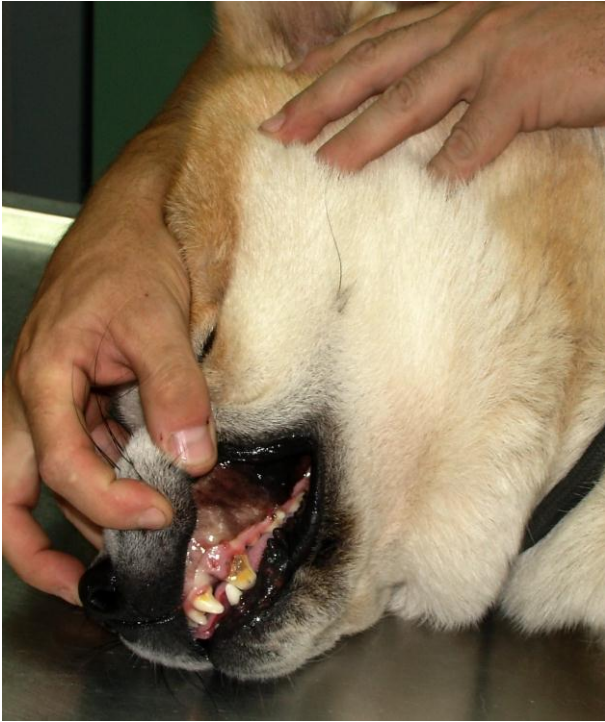
The dog was sedated with Neurotrans 0,2 ml/10kg bw (miorelaxante). For optimal operation first we applied local anesthesia and because of the compactness of bone as well as the severity of operative intervention additive infraorbital anesthesia- 4 ml of 2% Scandonest (Septodont) with vasoconstrictor was applied. Despite of the pathological changes in the periapical area and the surrounding soft structures the tooth firmly persisted in the jaw, the extraction was carried out operationally in several stages.

In the first phase, an incision was made starting from the apical part of the canines (above the second bicuspid) and extended caudally to the third left incisor (tooth 23), (2mm from the canines) then continued with sulcular incision to the second bicuspid. In this way we made reverse L section (fig.12), followed by raising of mucoperiosteal limbo. To conduct further extraction procedure we use osteotomy, in depth, with adequate instruments almost the entire length of the tooth. Before we start with the act of removing the tooth, we had noted presence of vertical fracture line all-along the tooth root in mesio-distal direction. With this finding we had confirmed the dilemma and the operational intervention on the tooth it was justified.

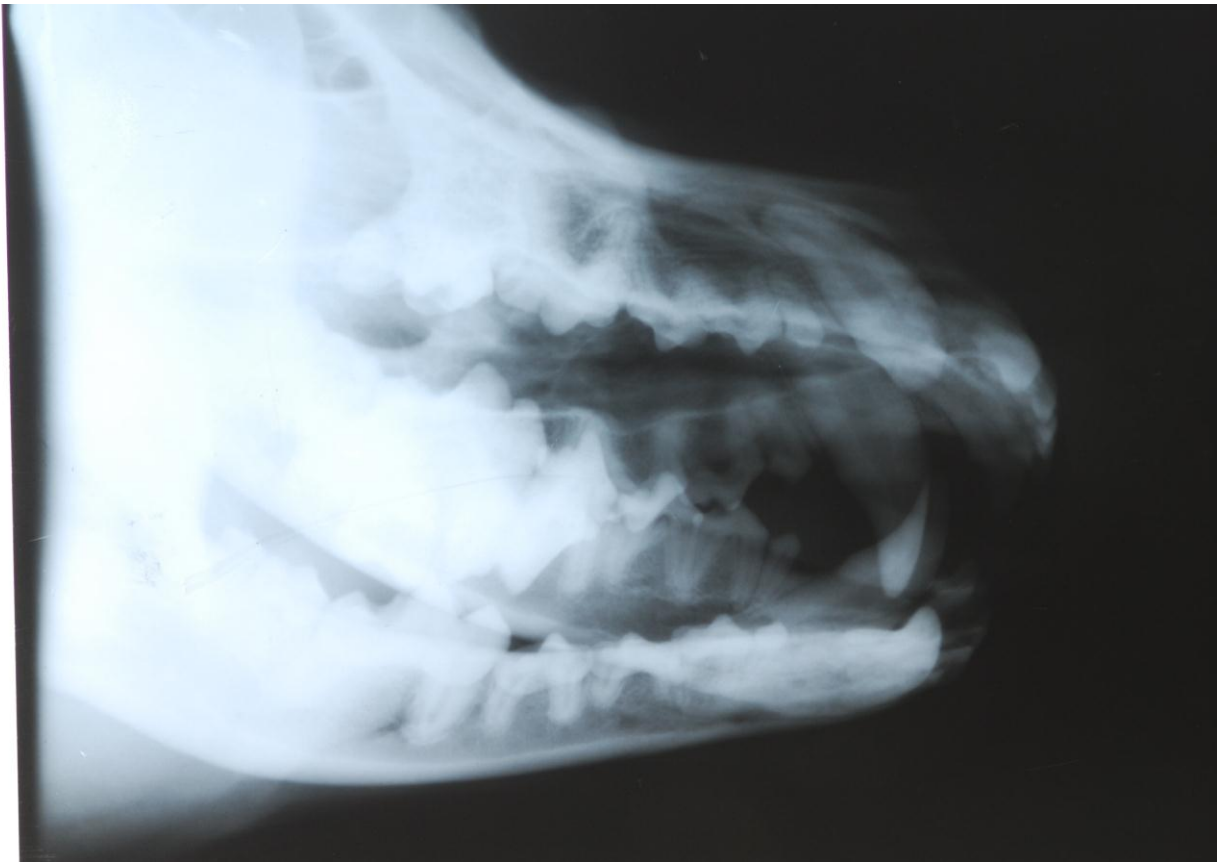
We were using instrument Bajn , placing with the wider work-end on the mesial part of the tooth. We was applying force on the distal tooth root surface because of the specific curvature (fig. 13 and 14). After extraction, we removed all the parts and sharp edges, made maximal irrigation with hydrogen and physiological solution. Because of the bone and soft-tissue defect and of course because of the patients' temperament, we used individual sutures with resorptive thread No. 1 (fig.15). For the period after extraction streamlined diet, analgesics and antibiotics were suggested in a period of 7 days. We made control after two weeks and we found satisfactory results, a complete absence of subjective symptomatology and patient discomfort.



Akita Inu - Japanese Samurai dog - Fig. 1, 2



Fistula and hyperemia - intraoral status- Fig. 3, 4



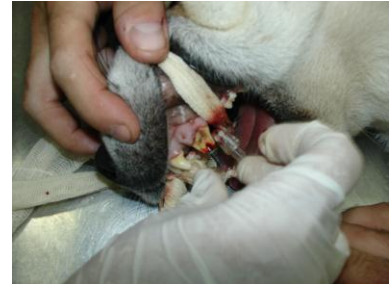
Radiograph examination- Fig. 5



Prepare access cavity - Fig. 6



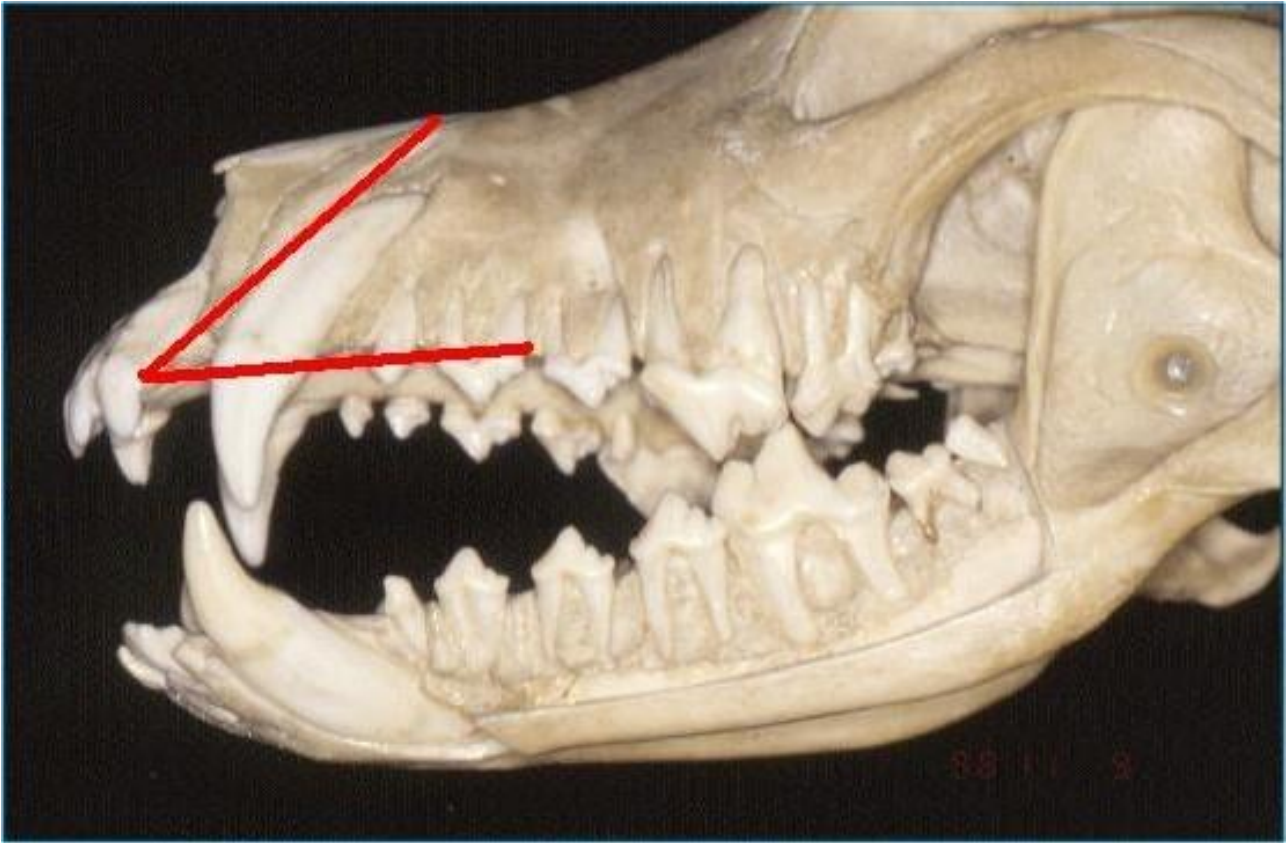
Root canal extirpation - Fig. 7



Intra canal preparation - Fig. 8, 9, 10



Temporary filling - Fig. 11



Operative L section - Fig. 12



Extracted teeth 24 - Fig. 13,14



Post operative status - Fig. 15