



## Treatment of Lateral Luxation of the Maxillary Canine Tooth with Extraction and Mucoperiosteal Flap Application in Anatolian Shepherd Dog

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**Abstract:** Dentoalveolar traumas are frequently encountered various animal species. Cause of these traumas; biting a hard object, car accidents, blows, or fights with another animal. As a result of these traumas, various scales of damage may occur in the teeth and - or the surrounding tissues. In this case report, a 3-year-old male weight 70 kg Anatolian Shepherd dog, was brought with complaints of nasal swelling and intraoral bleeding, which occurred as a result of fighting with another dog. According to clinical examination, the maxillary right canine tooth of the dog was laterally luxated. It was decided to extract the tooth due to causes of poor oral hygiene, alveolar socket damage, and lasering of the mucogingival tissue. After tooth extraction, the operation area was closed with mucoperiosteal flap application. Following the postoperative two weeks, the patients recovered without any complications.

**Keywords:** Dental Trauma, Canine, Dislocated Tooth, Extractione.

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### INTRODUCTION

**T**he Dental traumas are common in pets. These cases should be considered as dental emergencies and treatment options should be rapidly evaluated.(1) Tooth luxation defined as clinically and radiographically significant displacement of the tooth in the alveolar socket.(2)

In pets typically fractures of the alveolar bone and rupture of mucogingival tissues have been reported. Lateral and incomplete extrusive luxation in dogs causes inability to close the mouth completely. In the treatment of dentoalveolar trauma, manual tooth repositioning, soft tissue repair, splinting, and delayed endodontic treatment or extraction may be required.(3) Tooth luxations are

more common observed than tooth fractures in animals.(4)

One study reported in cats and dogs a frequency of 17.3% of all traumatic dentoalveolar injuries. It has been reported that approximately half of all luxation injuries occur in animals under the age of three.(5) It has been suggested that at this age, the supporting periodontal ligament is more flexible and low mineralization of the alveolar bone is more conducive to luxation injuries than tooth fractures. (6)

If a healthy maxillar canine tooth is extracted, alveolar bone should be removed. This process it may be called an "alveolectomy". In alveolotomy, two incisions are made on the gingiva in the buccal part

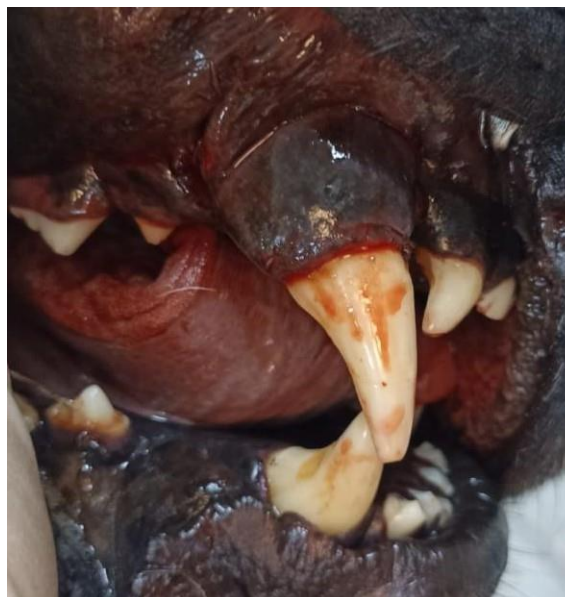
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of the tooth. These incisions should be in the rostral and caudal parts of the tooth. The mucoperiosteal flap is loosened from the underlying alveolar bone. Then the apex should be loosened by placing an elevator on the rostral and caudal parts of the root. When the apex is relaxed, the tooth should not be forced medially. This increases the risk of oronasal fistula formation. Finally, extraction forceps are used to extract the tooth. Care should be taken not to damage the medial bone plate. No connection should be made with the nasal cavity. This sometimes results in unilateral (on the involved side) nosebleeds. The cavity is washed, the bone edges are smoothed, and the soft tissue is closed with a mucosal flap.(7)

#### CASE REPORT

A 3-year-old male Anatolian Shepherd dog, weighting 70 kg, was brought to Atatürk University Veterinary Faculty Animal Hospital with complaints of swelling around the nose and bleeding in the mouth as a result of a fight with another dog. Based on clinical examination, the maxillary canine of the dog was luxated laterally. It was observed that the tooth was almost completely removed from the alveolar socket, the alveolar bone was fractured and there was a serious injury in the mucogingival area (Figs. 1 and 2). In the anamnesis information obtained, it was understood that more than 12 hours had passed since the case. It was also observed that the patient's oral hygiene was poor. Hemogram and routine biochemistry analyzes were within reference values. The patient was fasted 12 hours before the operation. A 20 gauge intravenous (IV) catheter (Novacath, Turkey) was placed into the left vena cephalica antebrachi and 10 ml/kg/h of lactated Ringer's solution (Polifarma, Turkey) was administered during surgery. Preoperatively, 20 mg/kg IV Cefazolin sodium (Cezol 1 Gr, Deva, Turkey) was administered. The animal was received IV 0.3 mg/kg butorphanol (Butomidol, Interhas, Turkey) and IM 100 µg/kg medetomidine (Domitor, Zoetis

USA) for premedication and analgesia. Anesthesia induction was achieved with 6 mg/kg IV propofol (Lipura, B. Braun Germany). After intubation, anesthesia was continued with isoflurane (Forane Liquid, England). The patient's vital parameters were monitored with a veterinary monitor (ePM 12M Vet, MINDRAY, China) throughout the operation. Infraorbital nerve blockade was performed with 2.5 mg/kg bupivacaine (Buvicaine, Polifarma, Turkey). Antisepsis of the operation area was achieved with 0.12% diluted chlorhexidine clohexidine gluconate solution (Hibitanol, Kimpa, Turkey). The periodontal ligament was separated from the mucogingival tissues with the use of a perostal elevator. The damaged tissue in the alveolar bone was removed from the area by alveotomy. The canine was removed with tooth extraction forceps (Figure 3). Irrigation of the extraction socket was performed with 30 ml of lactated Ringer's solution (Polifarma, Turkey), and a gentle curettage was performed. The operation area was closed with a mucoperiosteal flap using monofilament 3-0 absorbable (monocryl, Eticon, USA) suture material (Figure 4). In the clinical examination performed two weeks later, the patient was healed without any complications.



**Figure 1:** Mucogingival Laceration and Luxated Tooth



**Figure 2:** Root Surface of Dislocated Tooth



**Figure 3:** Extracted Maxillary Right Canine Tooth



**Figure 4:** Soft Tissue Closure with a Mucoperiosteal Flap

### DISCUSSION and CONCLUSION

This case report showed that tooth extraction can be a successful treatment option for lateral canine luxation in dogs. The time elapsed over the case, the size of the fracture in the alveolar bone, and the vitality of the periodontal tissues play a major role in determining the treatment modality in the lateral luxation of the canine tooth. In such cases, placement of the tooth in the socket, repair of mucogingival tissues and splinting or endodontic treatment options using various materials can be evaluated.(3)

Such treatments should be applied as soon as possible after trauma, ideally within 30-60 minutes. In cases where time has passed, the success rate of treatment decreases. It has been reported that inflammatory root resorption, dentoalveolar ankylosis, and root replacement resorption may occur among long-term complications following the treatment of dental luxations. In cases where time has passed, the periodontal ligament and alveolar bone are severely damaged, and mucogingival tissues are lacerated, fixing the tooth may lead to treatment failure or various complications. For this reasons, extraction of the luxated tooth is also a treatment option in delayed cases.(8)

Extraction of the affected tooth has been reported to provide an excellent prognosis, as the lesioned area is removed and the affected mucosal wound heals rapidly after repair.(9) Concordant with previous studies, this case also showed improvement without complications after tooth extraction. On the other hand, it should be kept in mind that excessive curettage of the nasal cavity in extraction procedures of maxillary canine teeth may cause intranasal fistula formation.

### Conflict of Interest

The authors declare that they have no conflict of interest.

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