

Short communication

SURGICAL MANAGEMENT OF DENTAL TRAUMA AND INCISOR TEETH AVULSION DUE TO DOG BITE IN A GREY LANGUR (*SEMNOPITHECUS ENTELLUS*)

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ABSTRACT: Traumatic injuries are common in grey langur (*Semnopithecus entellus*) and are mostly associated with a fight among themselves. Tooth avulsion and luxation are some of the commonly reported dental emergencies. A 2-year-old male grey langur was presented with a history of dog bite injury on the oral cavity. On general clinical examination, the langur was dull and depressed, with physiological parameters within the normal range. A detailed examination of the oral cavity revealed a lacerated wound on the gum with avulsion of the left central and lateral maxillary incisors. The lateral skull radiograph confirmed teeth avulsion and ruled out the involvement of jaws. The langur was stabilized with fluids (normal saline and DNS @ 5 ml/kg), cefotaxime @ 20 mg/kg, and meloxicam @ 0.2 mg/kg. General anesthesia was induced with ketamine hydrochloride @ 15 mg/kg intramuscular along with lignocaine infiltration. The oral cavity was cleaned using chlorhexidine gluconate rinse (0.12%). The injured left lower central and lateral incisor teeth were removed. Excess bleeding in the gum was controlled by applying direct pressure using adrenaline-soaked gauze. The torn gum tissue was sutured using polyglactin 910 (3-0) in a simple interrupted pattern to re-approximate the wound edges. Post-bite anti-rabies vaccine and tetanus toxoid were administered subsequently. The animal recovered uneventfully.

Keywords: Langur, Dental trauma, Teeth avulsion, Dog bite, Surgical management.

Animals are domesticated from an early stage of human civilization. However, it was performed primarily for production and afterward for companion purposes, and many of their relatives still live in the wild [6,16] despite the rapid loss of their natural environment and area due to human intervention [5]. This leads some wild animals to become accustomed to human settlements. Some other animals are also kept ex-situ for different reasons, and both of them require human intervention to keep them in good health or to protect them from diseases [8,15].

Traumatic injuries are common in grey langur (*Semnopithecus entellus*) and are mostly associated with a fight among themselves [15]. Tooth avulsion and luxation constitute dental emergencies [9]. According to the type of dentition (2/2 1/1 2/2 3/3), the etiology of tooth avulsion varies, and the maxillary central incisors are most commonly affected [12]. The

treatment is decided based on the viability of the periodontal ligament, and the best outcome is obtained within 5 minutes of replantation after avulsion [2]. The common causes of teeth avulsion include falling from heights, road traffic accidents, aggressive chewing, and fighting with other animals [9]. The predisposing factors for tooth avulsion include periodontal diseases and immaturity of the periodontal ligament. The vitality of the pulp tissue and the periodontal ligaments decreases as long as the tooth is out of the socket.

Tooth avulsion is a condition considered to have an unpredicted prognosis which varies from favorable healing to inflammatory resorption of replanted teeth [10]. Furthermore, acute dental injury can result in pulpal necrosis [4]. Therefore, timely management of the condition is a foremost factor for a successful outcome. The methods to prevent inflammatory resorption of the avulsed tooth can result in dental

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ankylosis. Masticatory stimulation can help eliminate dental ankylosis by increasing the functional area of the periodontal membrane.

Moreover, antibiotic administration following the surgery is necessary for eliminating the inflammatory response [3]. So, rather than replanting the avulsed teeth, it is useful to extract the teeth, especially in free-ranging monkeys. Excessive manipulation with extraction forceps should be avoided while handling the avulsed tooth. Inadvertent force or trauma can result in further damage as well as fragmented roots. Root fragments are commonly encountered as foreign bodies in the dental cavity [14].

Case description

The owner reported that the langur was attacked by a group of dogs three days before and injured the oral cavity. On general clinical examination, the langur was dull and depressed. However, the physiological parameters were within the normal range. A detailed examination of the oral cavity revealed a lacerated wound on the gum with avulsion of the left central and lateral maxillary incisors (Fig. 1a). A radiographic examination of the skull revealed the avulsion of the left lower incisors and ruled out mandible involvement (Fig. 1b).

Results and discussion

Since it was a delayed case, the blood supply to the pulp tissue and the periodontal ligaments were compromised. So, it was decided to remove the exarticulated teeth. The langur was stabilized with fluids (Normal saline and dextrose normal saline @ 5ml/kg BW), cefotaxime @ 20 mg/kg BW, and meloxicam @ 0.2 mg/kg BW [7]. The langur was anesthetized with ketamine hydrochloride @ 15 mg/kg BW intramuscular, and the anesthesia was maintained with ketamine. The oral cavity was flushed with chlorhexidine gluconate (0.12%) oral rinse, and the avulsed left lower central and lateral incisor teeth were removed using artery forceps (Fig. 1c and Fig. 1d). The bleeding was controlled by applying direct pressure using adrenaline-soaked gauze pieces. The torn gum tissue was sutured using polyglactin 910 (3-0), in a simple interrupted pattern to re-approximate the wound edges. The animal was given a post-bite anti-rabies vaccine and tetanus toxoid. Post-operatively, antibiotics and analgesics were administered for seven days (Fig. 2). The grey langur recovered uneventfully after 12 days of surgery.

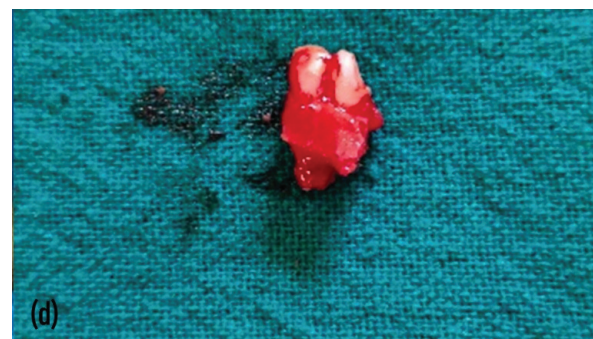


Fig. 1. (a) Avulsed left lower central and lateral incisors. (b) Radiograph revealing avulsed lower incisors without the involvement of the mandible. (c) The removal of avulsed teeth. (d) The removed incisors.



Fig. 2. The grey langur with the healed surgical site on the 7th postoperative day.

Teeth avulsion has not been reported in langur yet. However, teeth avulsion represents dental emergencies in all species. It accounts for 0.5-3% of traumatic dental injuries [1]. Exarticulation or avulsion is the complete dislocation of the teeth from the alveolar socket. The maxillary incisors are most susceptible to avulsion due to their peculiar anatomical position [9,13]. Depending on the type of dentition, the etiology of tooth avulsion varies; that is, temporary teeth avulsion mainly results from injury due to hard objects hitting the teeth, and permanent teeth avulsion results from injury due to falls, fights, and road traffic accidents [12].

The most common complications associated with tooth avulsions are tooth resorption and necrosis of the pulp. Avulsion of the tooth from its socket causes rupture of periodontal tissues and hinders blood supply to the pulp tissue, causing necrosis. In addition to periodontal ligament damage, localized cemental damage occurs due to frequent rubbing of the tooth against the socket [13]. Treatment includes multidisciplinary approaches such as surgery, endodontic and periodontal treatments, orthodontic movements, and esthetic coronal restoration [11]. The primary goal of the treatment is to preserve the vitality of the supporting tissues and reestablish the avulsed teeth [12]. Teeth avulsion should be corrected within 30 minutes of the occurrence. The vitality of the pulp tissues and the periodontal ligaments deteriorates as long as the tooth is out of the socket [9]. Therefore, time is an important factor for successfully managing the condition.

Conclusion

Tooth avulsion is a dental emergency, irrespective of etiology. Tooth avulsion is rarely reported in primates. Furthermore, it is an uncommon finding in primates compared to other mammals. In the present case, the avulsed teeth were removed due to delayed presentation and the poor viability of the periodontal ligaments. Prompt diagnosis and treatment resulted in uneventful recovery in the present case. This case report will add to the scarce database of teeth avulsion in mammals.

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