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Case Report / Olgu Sunumu

Surgical Management of Symphisis Mandibulae Fracture in a Hedgehoh (Erinaceus europaeus) Following a Traffic Accident (Case Report)

Bir Kirpide (Erinaceus europaeus) Trafik Kazası Sonucu Symphisis Mandibulae Kırığının Cerrahi Sağaltımı (Olgu Sunumu)

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Abstract: The material of this case report was a 3-year-old male Western European hedgehog (Erinaceus europaeus) brought to Burdur Mehmet Akif Ersoy University Animal Hospital. The patient was brought as a result of a traffic accident. Radiographic images were taken for diagnosis, and it was determined that there was a fracture in the symphysis mandible. As a result of the examinations, an operation was decided to provide the coaptation of the symphysis mandible. After monitoring the patient's general condition and fasting for 12 hours, the patient was taken to the operating room. 3 µg/kg medetomidine was administered intramuscularly to the patient for sedation. For anesthesia, 4 mg/kg ketamine was administered intramuscularly. Ventral surface of the symphysis line was shaved, and asepsis and antisepsis were provided. A stab incision was made in the ventral surface of the symphysis line with a number 11 scalpel, and an 18 g hypodermic needle was inserted. The needle was removed into the oral cavity following the caudal aspect of the lower incisor. 0.3 mm cerclage wire was passed through the needle, and the needle was removed. The cerclage wire curved from the needle passed across the mandible was removed from the first incision site, and reduction was achieved. The cerclage wire was bent and cut. In the postoperative period, the reduction status was determined by X-ray.

Keywords: Western European hedgehog (Erinaceus europaeus), Traffic accident, Cerclage wire, Symphysis mandible fracture.

Öz: Bu olgu sunumunun materyalini Burdur Mehmet Akif Ersoy Üniversitesi Hayvan hastanesine getirilen 3 yaşında, erkek Batı Avrupa Kirpisi (Erinaceus europaeus) oluşturdu. Trafik kazası sonucu getirilen hastanın tanı amacıyla radyografik görüntüleri alınıp simfizis mandibulada kırık olduğu belirlendi. Yapılan muayeneler sonucunda simfizis mandibula kırığının redüksiyonu için operasyon kararı alındı. Hastaya sedasyon amacıyla 3 µg/kg medetomidin kas içi olarak uygulandı. Anestezi için ise 4 mg/kg ketamin kas içi olarak uygulandı. Simfizis çizgisinin ventral yüzeyi tıraş edilip asepsi ve antisepsi sağlandı. Simfizis çizgisinin ventral yüzeyine 11 numara bisturi ile küçük bir ensizyon uygulanarak 18 g hipodermik bir iğne sokuldu. İğne, alt insisiv dişin kaudalini takip ederek ağız boşluğuna çıkarılarak 0,3 mm' lik serklaj teli iğneden geçirilip iğne çıkarıldı. Mandibulanın karşısından geçirilen iğneden kavis verilen serklaj teli ilk ensizyon yerinden çıkartılarak redüksiyon sağlandı. Serklaj teli sıkıştırılarak kesildi. Postoperatif dönemde ilk olarak röntgenle redüksiyonun durumu tespit edildi.

Anahtar Kelimeler: Batı Avrupa Kirpisi (Erinaceus europaeus), Trafik kazası, Serklaj teli, Simfizis mandibula kırığı.

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Introduction

Erinaceus europaeus is an insectivore weighing less than 1.5 kg. Active life from April to September, and hibernation starts in October and continues until March (Claire ve ark., 2010). Hedgehogs use a variety of foods as food sources, including eggs and young birds, mice, and frogs, in addition to invertebrates such as insects, caterpillars, and worms (Rautio ve ark., 2015).

Hedgehog-caused road accidents have decreased in many regions, which indicates that hedgehog populations are declining in these regions. This population decline includes badger predation, increased road traffic, increased use of insecticides, molluscs, anticoagulants, rodenticides, and agricultural chemicals. The nocturnal activity of hedgehogs in urban areas is shaped by badgers, human activity, weather conditions, and the availability of prey (Claire ve ark., 2010).

The effects of roads and traffic on animal populations are not limited to traffic accidents. Damage to or loss of habitat, traffic, and road-related factors that can affect the movement of animals can lead to significant reductions in the life span and population. Factors such as light visual stimuli, traffic noise, road construction activities, human access to natural habitats resulting in pollution, erosion and sedimentation cause a noticeable decrease in habitat quality. The affected areas are not limited to the specified road; depending on the relevant factors, they can spread over extensive areas (Huijser ve Bergers, 2000).

Hedgehogs are omnivorous, with highly developed jaws and primitive and relatively coarse dentition (Chaprazov ve ark., 2014). It has a small skull with a zygomatic arch. The third upper premolar tooth is absent or small. The tooth formula is I 3/2, C 1/1, P 3/2, M 3/3, totalling 36 teeth (Santana ve ark., 2010).

Incisor teeth are sharp teeth used for grasping and lifting small prey. Canine teeth are quite small and similar to incisors or premolars. Molar and premolar teeth are flat and wide (Chaprazov ve ark., 2014). In the ninth week, the hedgehogs form all the temporary teeth, and the milk teeth grow between days 18 and 23. Permanent teeth develop between the 7th and 9th week. Erinaceus europeus M1, M2, P2, I3 have permanent teeth in the second month. After the 2nd and 3rd canine teeth, M3 is formed. In the 4th and 5th months, P3 and P4 appear. Erinaceus europeus has permanent dentition, M1, M2, P2, I3, C, M3, P4, P3, I2, I1, respectively (Asher ve Olbricht, 2009).

This case report aims to present the diagnosis, treatment, and postoperative results of a fracture of the symphysis mandible in a hedgehog due to a traffic accident.

Case Report

In the examination of a 3 years old male Western European hedgehog (Erinaceus europaeus) weighing 700 grams, which was brought to Burdur Mehmet Akif Ersoy University Faculty of Veterinary Medicine Animal Hospital as a result of a traffic accident, symphysis mandibulae fracture was diagnosed by radiological examination (Figure 1).

Figure 1. A case of symphysis mandibulae fracture in Western European Hedgehog (Erinaceus europaeus).

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After monitoring the patient's general condition, it was fasted for 12 hours. Medetomidine 3 µg /kg and ketamine 4 mg/kg were applied to the right musculus quadriceps femoris. Atipamezole was applied to the same area again to wake the patient.

A stab incision was made in the skin ventral to the symphysis mandible. An 18G hypodermic needle was inserted along the lateral surface of the mandible and removed into the oral cavity following the caudal aspect of the lower incisor. A 0.3 mm cerclage wire was passed through an 18G hypodermic needle. The needle was inserted from the opposite side of the mandible in the same way, and the cerclage wire was curved and removed from the point where it first entered after passing through the needle. After the fracture reduction was completed, the wire was stretched and cut outside the skin incision, and then the wire was bent (Figure 2), (Figure 3). A postoperative radiological image was taken (Figure 4).

Figure 2. Use of cerclage wire in symphysis mandibulae.

Figure 3. Completion of fracture reduction using cerclage wire.

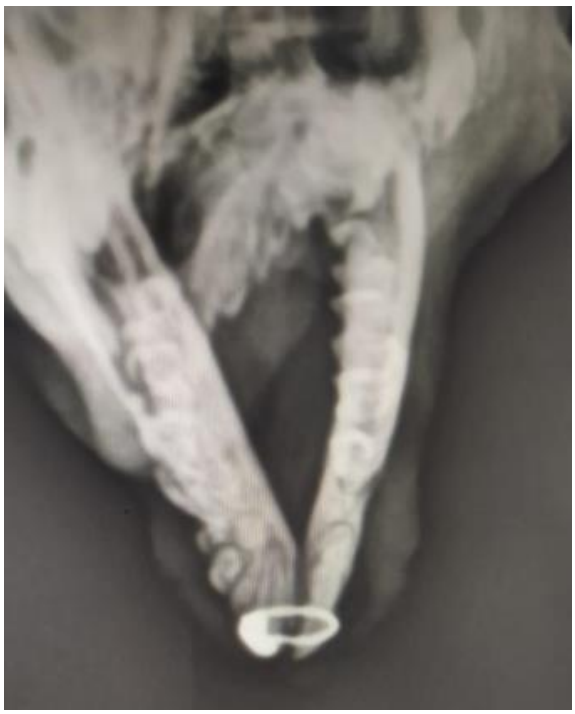

Figure 4. Postoperative radiology image.

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Since the patient was homeless, it was kept in the intensive care cage at Burdur Mehmet Akif Ersoy University for 6 weeks. Wet food was given for six weeks in order to prevent the patient from chewing the food and disturbing the reduction. Postoperatively, the patient was followed up once a week by radiology. At the end of the sixth week, stabilization was achieved, and the patient returned to daily routines.

Discussion

Radiological imaging can be used to diagnose and determine the fracture's location. During the radiological examination, overlapping structures in the mandibular condyle and ramus evaluation may cause artifacts and fracture fragments not to be identified. (Woodbridge ve Owen, 2013). Therefore, multidirectional radiographs were taken in the preoperative period.

Cerclage wire application is the most effective surgical treatment method for uncomplicated and simple mandibular symphysis fractures (Woodbridge ve Owen, 2013). Accordingly, we have applied cerclage wire to the symphysis mandible fracture. It has been observed that a single cerclage wire can be effectively used as a treatment method for symphysial fracture.

The cerclage wire is advanced from the ventral surface of the symphysis line along the lateral mandibular surface and surrounds the incisor teeth caudally (Hayashi ve ark., 2019). The fracture was traversed using an 18G hypodermic needle ventral to the symphysis, followed by reduction caudal to the incisor teeth, and subsequently, the cerclage was tightened and cut.

The wire used can be removed postoperatively after three weeks. Approximately six weeks are required for the fracture to heal (Jacobson, 2019). In this case, the patient was fed wet food for six weeks after the operation to prevent deterioration of the fracture line. Healing was observed at the end of the sixth week with radiological examinations.

Conclusion

In conclusion, it is revealed that traffic accidents can result in symphysis mandible fractures. Utilization of oblique radiographs facilitates the diagnosis of symphysis separations in hedgehogs. Furthermore, the coaptation achieved through the fixation of mandibular symphysis separation utilizing cerclage wires, combined with a diet of wet food, facilitates healing within six weeks.

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