



Penile Prolapse and Treatment in a Sugar Glider (*Petaurus breviceps*)

Tugba KURT*, Ziynet Dila ATESPARE, Emine Esma CERKEZ

Faculty of Veterinary Medicine, Department of Surgery, University of Istanbul- Cerrahpasa, Avcilar, Istanbul – TURKEY

Kurt T 0000-0002-1467-2145 Atespare ZD 0000 0002 3106 7596 Cerkez EE 0000 0002 6832 2263

*Corresponding Author's E-Mail: tubikkurt@gmail.com

Abstract

Sugar gliders are marsupials that have recently become popular in our country. They usually live in groups and feed on fruit extracts. Unbalanced diet and unsuitable living conditions cause many diseases. One of these diseases is penile prolapse, which we detected in a sugar glider that came to our hospital. Patient diagnosed with penile prolapse, was taken to the operation immediately. Penis tissue was checked and it was found to maintain its viability. Therefore the replacement of the prolapsed tissue was performed. In this way, the patient was protected from the surgical wound, long anaesthesia duration and postoperative complications. No complication and recurrence was observed in the postoperative controls. The patient returned to normal life in a short time, began to mate in postoperative 6 months.

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Bir Uçan Kuskusta Prolapsus Penis Olgusu ve Tedavisi (*Petaurus breviceps*)

Özet

Uçan kuskuslar (sugar glider), ülkemizde son zamanlarda popüler hale gelen keseli hayvanlardır. Genellikle gruplar halinde yaşar ve meyve özleri ile beslenirler. Dengesiz beslenme ve uygun olmayan yaşam koşulları birçok hastalığa neden olabilir. Bu hastalıklardan biri, fakültemize gelen bir uçan kuskusta tespit ettiğimiz penis prolapsusudur. Prolapsus olguları acil sayıldığından penis prolapsus tanısı konulan hasta, acil olarak değerlendirilip operasyona alındı. Penis dokusu kontrol edilerek canlılığını koruduğu görüldü. Daha sonra, prolabe dokunun reddi gerçekleştirildi. Böylelikle hasta, cerrahi yaradan, uzun anestezi süresinden ve postoperatif komplikasyonlardan korunmuş oldu. Postoperatif kontrollerde herhangi bir komplikasyon ve nüks gözlenmedi. Hasta kısa sürede normal yaşamına döndü ve postoperatif 6. ayından itibaren çiftleştiği de sahibi tarafından bildirildi.

Anahtar kelimeler: Uçan kuskus, çatal penis, penis prolapsusu, keseliler

Introduction

The sugar gliders (*Petaurus breviceps*) live in the treetops of Australia, Tasmania, Indonesia, and Papua-New Guinea (Corriveau, 2009). Sugar gliders are nocturnal, omnivorous, arboreal marsupials that feed on a variety of plant, avian pelleted diets, formulated primate diets, nectar, fruits, vegetables, eggs, insect exudates and arthropods, with natural diet dependent on habitat characteristics and season (Corriveau, 2009; Dierenfeld, 2009). In spring and summer, gliders fed mainly on insects because of increased protein need associated with reproduction. In our country, they have recently started to become a popular pet animal. Marsupial reproductive anatomy and physiology is significantly different from mammals. Sugar gliders have a cloaca where the gastrointestinal tract, urinary ducts and reproductive tract all share a common opening (Rivera, 2017). The scrotum and testes are external

and found proximal to the cloacal opening (Johnson-Delaney and Lennox, 2017).

Cloacal prolapse is a condition where the inner tissues of the cloaca protrude from the vent, exposing the intestines, oviduct for female or penis for male. In this report, a sugar glider with a penile prolapse was discussed. The penis of the male lies on the ventral aspect of the cloacal floor (Carboni and Tully, 2009).

The tip of the penis of the sugar glider is forked (to match the female's double vagina). Sometimes it can be perceived as abnormal by the owners (Capello and Lennox, 2006). Penile prolapses can be results of inflammation, infection, nutritional secondary hyperparathyroidism stress, neurologic or traumatic defects involving the retractor penis muscles or cloacal sphincter, and straining from intestinal parasites, impaction of the cloaca with gastrointestinal foreign bodies and reported that

penis prolapse was occurred forced separation after copulation (Doğu et al., 2015). Particularly it has been considered that stress may cause an increase in paracloacal gland size, resulting in prolapse of the bifid penis (Rapheal et al., 2018). In patients with penile prolapse, the availability of organs should be assessed. In cases where the penis is necrotic, removal of the necrotic tissue or distal penile amputation may be considered. Sugar gliders have a bifurcated penis and urinate from the penile base, so amputation at the forked end of the penis does not interfere with urination (Sladky and Miwa, 2016). In cases where the tissue is still considered viable, the organ should be reduced or rejected. It is useful to apply elizabethan collar against the possibility of self-mutilation of the patient.

In this report; edema and discoloration in the prolapsed penis tissue have not been observed. First of all, rejection of prolapsed tissue was tried under general anaesthesia and it was successful. In this way, the duration of anaesthesia was kept short, and the patient was protected from the complicated and bleeding cases of penile amputation, castration.

Case History

A seven years old, captive male 130 g sugar glider was presented with penile prolapse for 3 hours (Fig 1). According to the anamnesis, the urine, stool, appetite of the patient were normal and this disorder occurred suddenly. The owner prevented the tissue from drying out with saline solution application and urgently admitted to our hospital. According to first examination, clinical status, abdominal palpation findings of the patient and the tissue color of prolapsed penis were normal. Thus, an emergency operation decision was taken for the patient. Due to the urgency of the patient, blood test could not be performed.



Figure 1. Penile prolapse in a 7 years sugarglider (black arrows: bifurcated penis)

Sugar gliders should be fasting before surgery. At least 4 hours is recommended but a longer duration may be required for surgeries of the gastrointestinal tract (Rivera, 2017).

Since vascular access is difficult and sugar gliders rapidly lose body temperature during anaesthesia, the duration of anaesthesia should be kept as short as possible (Morges et al., 2009). Endotracheal intubation is difficult and requires that the glider be deeply anesthetized. Injectable anaesthetics are more disadvantageous in controlling depth than inhalation anaesthesia (Corriveau, 2009).

In this case, inhalant isoflurane (2-3%) in 100% oxygen was admisntrated via facemask for induction and maintenance of anaesthesia. Meloxicam 0,1 mg/kg SC (Meloxicam, BaVet, Turkey) were used preoperatively. The patient was placed dorsally on the operation table. The body temprature was 30,2 °C. While the patient was under anesthesia, heart rate was

continuously monitored with a pediatric stethoscope. In the detailed examination performed while the patient was under anaesthesia necrosis and edema were not seen on the penis. So, it was cleaned using with antiseptic dilution including 10% povidone iodine. After the antiseptic treatment prolapsed penis was simply rejected inside the preputium (Fig 2). One simple separate suture technique was applied to the cloaca. Elizabethan collar was applied just before waking up (Fig 3). Isoflurane was switched off and the patient was awakened without any problem. Enrofloxacin, one of the fluoroquinolones, was preferred in this patient. Meloxicam suspension 0.1-0,2 mg/kg orally, once a day for 3 days and enrofloxacin suspension 2.5- 5 mg/kg orally, once a day for 5 days were prescribed (Hess, 2019). Sutures were removed on the postoperative 5th day and no recurrence was observed (Fig 4). There was no complication in the later stages of the patient and the patient resumed normal life.



Figure 2. After the antiseptic treatment prolapsed penis (yellow arrow) was simply rejected inside the preputium (blue arrow)



Figure 3. One simple separate suture technique was applied to the cloaca (red arrow). Handmade Elizabethan collar was applied just before waking up

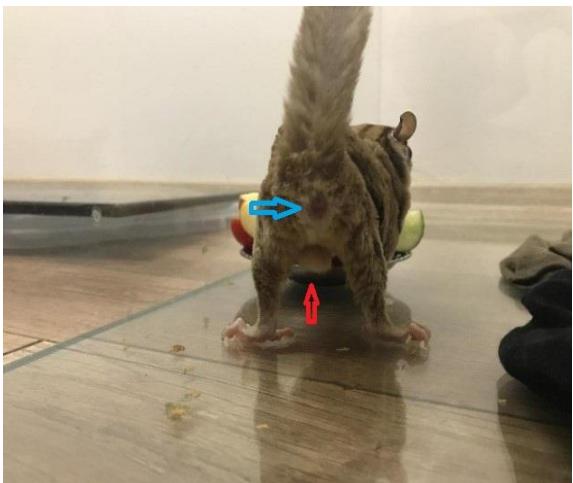


Figure 4. Sutures were removed on the postoperative 5th day. (Blue arrow: cloaka. red arrow: testes)

Discussion

It is important for clinicians to know the diseases of sugar gliders, which have recently become widespread as pet animals in Turkey. In the literature, there is not much information about the rejection of prolapse cases penis in sugar gliders because it is often unnoticed and delayed.

The advantages of this procedure include its simplicity, the speed of the operation, the shortest anaesthesia time and the rapid recovery time with minimum pain. During the treatment of prolapse penis, neutering and distal penile amputation may be required. But complications described with

orchectomy include self-mutilation and over grooming around the surgical site (Morges ve ark., 2009). In addition, there is a long anaesthesia time, pain and risk of bleeding. The postoperative process is long. Serious postoperative surgical complications were not observed with these procedures. Veterinarians should be careful when choosing antibiotics for sugar gliders. Antibiotics that are considered safe in herbivores are the fluoroquinolones, trimethoprim-sulpha combinations, sulphas, aminoglycosides, chloramphenicol, and metronidazole for anaerobes (Carboni ve Tully, 2009). Caution should be taken not to induce edema to the patagium (Patagium is a fold of skin from the body that extends between the fore leg and hind leg (wrist to ankle). This membrane acts almost like a parachute, catching the air and helping the animal glide between branches when performing subcutaneous injection. So subcutaneous injections are given over the shoulder (Hess, 2019). Their body temperature decreases very quickly under anaesthesia and body temperature should be maintained between 27-31 °C. Therefore heaters should always be used. There is no incision in this technique, so postoperative self-injury behavior is rare (Newbury et al., 2005). To prevent the tissue from prolapsing again, cloaca should be narrowed with a single stitch. The patient's diet should be programmed until the stitch is removed. In this way, diarrhoea, constipation and excessive straining are prevented. Just in case, an elizabethan collar was applied to the patient.

As a result; sugar gliders should be maintained as a group with one male and a number of females and cared as pet animals if proper diet and cage conditions can be provided. Thus, they are kept away from predisposing factors especially stress factors for both prolapse penis and other diseases.

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