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Prosthetic fixation of beak in a green cheek conure (*Pyrrhura molinae*) using telemedicine

VA Patel, CM Bhadesiya, PJ Gajjar and MJ Anikar

Abstract

Increasing interest has been observed among rural and urban people of India to keep different exotic species of birds as pets or companions such as budgerigars, conures, cockatiels etc. A Green Cheek Conure (*Pyrrhura molinae*; Massena & Souance, 1854) was reported with a history of injured upper beak with loss of rhinotheca. The condition was observed to affect feed intake and overall condition of the bird. It was decided to perform prosthetic beak implant by using a toy bird available in a local toy store. The entire process was initiated, performed, completed and monitored by use of telemedicine. Normal feed intake, improved general clinical status as well as behavior were noticed after 6 months of prosthesis fixation without any complications. The present paper describes in detail about the condition, causes of beak damage, approach and telemedicine.

Keywords: green cheek conure, injured beak, prosthesis, telemedicine

Introduction

The Green Cheek Conure (*Pyrrhura molinae*; Massena & Souance, 1854), a native bird of South America, is a long-tailed New World Psittacine bird which is kept as a household companion bird due to its attractive color variations and adaptive behavior. This bird is considered as a 'Least Concerned (LC)' species as per the International Union for Conservation of Nature (IUCN). It has received popularity as a pet in different states of India; however, it does not belong to any schedules defined under the Indian Wildlife Protection Act, 1972. Cinamon, Yellow-sided, Pineapple and Turquoise are some of the color variations observed in this bird. Considering the value it receives as a pet, the possibilities of existence of diseases and disorders in this bird cannot be ignored. Extensive veterinary healthcare database and existing prevalence of diseases have not been documented in Green Cheek Conure in India.

The Green Cheek Conure generally prefers variety of seeds, fruits and different vegetables as food for which, they use their beak for consumption. Besides feed consumption, these birds use their beak to (a) groom feathers/preening, (b) clean debris on legs, (c) nibble, (d) express dominant behavior/attack, (e) catch-hold-play with toys in case of caged companions or zoo birds, (f) communicate, (g) defend territories, (h) break egg shells, (i) feed their chicks/young ones etc. Thus, the beak holds significant importance in maintaining normal behavior and general health of a bird. The structure of the beak is illustrated in Figure-1.

Tremendous achievements have been made into diagnostic and therapeutic aspects of diseases and disorders of avian species in recent years. Use of prosthetic material and 3D printed beaks in case of damaged/broken beaks have also been reported for different birds^[1,2,3]; however, such injured birds are generally required to be brought at veterinary hospitals/clinics for extensive and invasive procedures.

At present, the world is facing the challenges because of the ongoing COVID-19 pandemic. This pandemic has shown negative impacts on various sectors including veterinary healthcare services. The spread of COVID-19 pandemic specifically requires restriction in travel and physical contact in-between humans to restrict transmission/spread. This happens to be one of the reasons for implementation of nation-wide lockdown in India during the pandemic. Moreover, the healthcare professionals and veterinary institutions have also started practicing telemedicine or telehealth during the pandemic^[4]. With a similar point-of-view, a case of broken beak of a Green Cheek Conure in Bengaluru (Karnataka, India) was managed by practicing telemedicine from Himmatnagar (Gujarat, India). The clinical picture, process and outcome of the case have been documented in this paper.

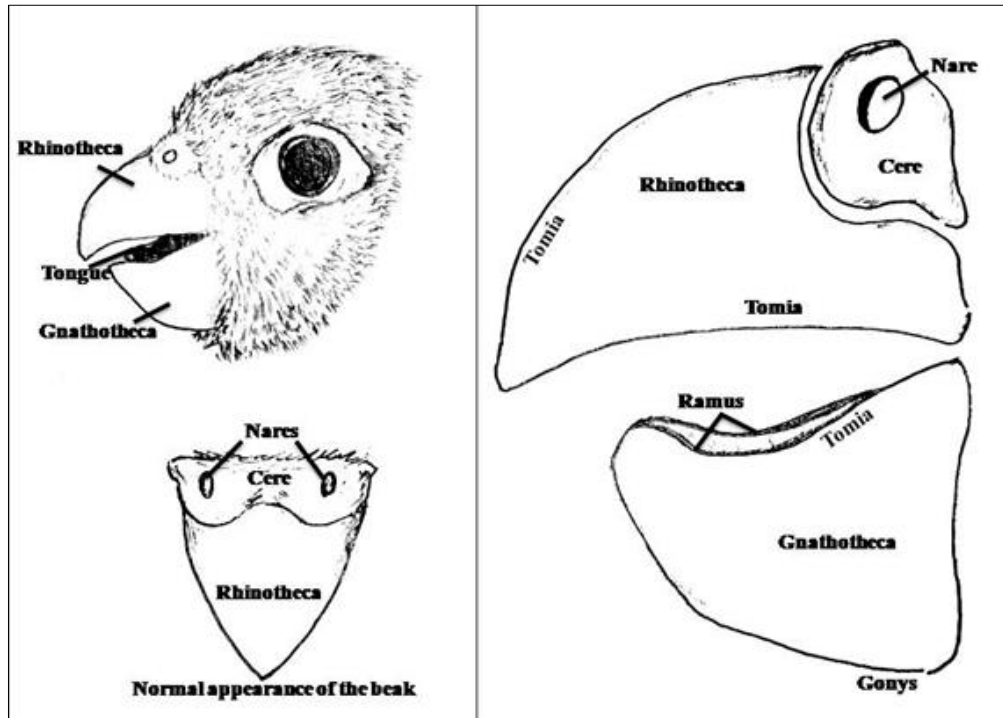


Fig 1: Normal appearance and structure of beak in a Green Cheek Conure

Case History

A case of an 8-months-old Green Cheek Conure with damaged upper beak was reported from Bengaluru (Karnataka, India) seeking telemedicine/teleguidance from veterinarians of the Postgraduate Institute of Veterinary Education & Research (PGIVER), Kamdhenu University, Rajpur (Nava), Himmatnagar (Gujarat, India). Anamnesis included recent introduction of a 1.5-year-old Green Cheek Conure in the same cage where the bird was being raised. Following introduction, no behavioral changes could be observed in any of the birds for two days. After two days, aggressive dominant behavior was seen in the elder bird which resulted into fight with its inmate causing damage in the upper beak of younger bird (Figure-2). This traumatic injury was followed by bleeding (lesser amount), lack of feed intake, inability to drink water and loss of general behavior (such as nibbling, preening etc.).



Fig 2: Damaged beak in the Green Cheek Conure

Telemedicine and Outcome

The present case was managed by use of telemedicine given due consideration to the clinical status of the bird, on-going COVID-19 pandemic, travel restrictions, distance between the PGIVER institute and location of the bird as well as cooperation from the owner. The entire case management involved some crucial steps as mentioned hereunder,

1. Drying of lesion, Control of sepsis and Control of bleeding

The owner was advised to clean the injured beak followed by topical application of Moxifloxacin (antibiotic) on affected part of the beak and oral administration of Himpyrin (Product of Himalaya; 0.5 ml diluted in 8 ml drinking water @ three drops/day PO). Bleeding and infection were not observed after using this approach up to 6 months.

2. Feeding

Owner was advised to follow A19 hand feeding formula (Versele-Laga) for 10 consecutive days using a small tube. No abnormalities could be seen during the feeding process. This approach was sufficient to prevent nutrient deprivation in the bird during the period before prosthesis.

3. Finding and fixing an artificial beak

Owner was advised to procure a suitable toy bird (Figure-3) and use its beak as prosthesis in the injured Green Cheek Conure. Moreover, emphasis was placed on changing the shape and size similar to the beak of a normal/clinically healthy Green Cheek Conure. After proper furnishing, the owner was advised to use commonly available adhesive (Cyanoacrylate glue) to fix the artificial beak of the toy bird on broken beak of the Green Cheek Conure (Figure-4). Care was taken to keep nares open to facilitate normal breathing. The owner was also advised to monitor the bird for occurrence of any local inflammatory reactions. No such side effects or local reactions could be observed for a period of 6 months.

4. Monitoring after the procedure

The bird was monitored for a period of 6 months after fixing the artificial beak. Normal feed intake, nibbling, preening and gradual improvement in feed intake were noticed after the procedure (Figure-5). The bird recovered uneventfully using telemedicine and showed no complications after 6 months.

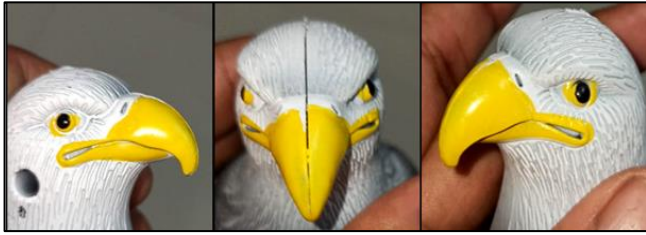


Fig 3: Toy bird whose beak was used for prosthesis



Fig 4: Fixation of artificial beak using commercially available fixative agent at home



Fig 5: Regaining of normal behavior and no signs of local inflammation after 6 months

Discussion

Various reasons associated with damage/breakage in the structure of the beak (such as cracks, wounds, and partial or total avulsion of the beak, fractures or losses of the rostral portion) include [a] aggressive fights with inmates (e.g. different species kept in a single cage, difference in age of the birds, difference in behavior, development of vices such as cannibalism etc.), [b] traumatic injuries in captivity due to managerial error (e.g., faulty placement of enrichment material, entry of predatory birds into the cage due to lack of preventive measures etc.), [c] traumatic injuries while handling (e.g., for reasons such as transportation, changing cages, research, treatment, demonstration etc.), [d] structural abnormalities (e.g., tumors, hypertrophy, overgrowth, soft beak etc.) making the beak prone to damage especially in case of deficient captive birds etc.

With regards to repairing techniques, 'Alloplastic' repair is the term used to describe beak repair by use of beaks of same species while 'Heteroplastic' repair is used to describe beak repair by use of beaks of different species [2]. In past, various efforts have been made for repair of damaged beaks in birds using different tools/devices, implants and chemicals [1, 2]. Scientists have also tried to implant 3D printed beaks and have reported successful results [3]. Some of the cases have also been managed by use of acrylics and other plastic materials in the past with or without metal support or use of natural materials. Noticeably, all types of procedure and fixation of implants require extensive and sometimes invasive

procedures which can only be performed at an established veterinary hospital.

Despite extensive reports, none of the reports show use of telemedicine for management of broken beak in birds. Recent evidences suggest that practicing telemedicine can be an effective tool for treatment of minor conditions in animals during COVID-19 pandemic [4]. Similarly, the clinical approach in the present case effectively prevented travelling stress in bird, saved costs associated with travelling from Bengaluru to Himmatnagar, saved cost of major surgical procedure, maintained social distancing during the COVID-19 pandemic, prevented physical contact between owner and staff of veterinary hospital, showed promising results in the case without any complications and facilitated distant monitoring of the case up to 6 months because of cooperation from the owner.

Conclusion

Fixation of an artificial beak (prosthesis) in a Green Cheek Conure by using telemedicine resulted in complete clinical recovery without any adverse reactions for 6 months. Telemedicine effectively reduced cost of travel, cost of major surgical procedure, travelling stress and also maintained social distancing effectively during COVID-19 pandemic. Similar efforts can be made in clinical cases reported with a similar extent of damage in future. Practicing telemedicine should be encouraged at veterinary hospitals on regular basis.

Conflict of Interest

Authors declare no conflict of interest with regards to funding.

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