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RECONSTRUCTIVE SURGICAL MANAGEMENT OF TRAUMATIC PATAGIAL INJURY IN A PIGEON (*Columba livia*)

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Abstract: An adult pigeon was presented to Triage of Raksha Bird treatment camp during Makar sakranti with a history of Left-wing injury. The bird was immediately given primary medication. The condition was diagnosed as Left Patagial ligament laceration along with laceration of Patagium and was decided for surgical anastomosis of Patagial ligament and Patagium. The surgery was performed under Ketamine and Midazolam anesthesia and tissue was anastomosed. Post-operatively antibiotic for 7 days and analgesic for 5 days was administered, surgical wound was dressed regularly.
Keywords: Indian pigeon, Injury from *Chinese Manjha*, Patagium laceration, Patagial ligament laceration, Tissue anastomosis.

INTRODUCTION

Traumatic wing injuries in birds have been a common problem in regions of Jaipur during festival of Makar sakranti. This involves flying of kites with glass-powder coated string known as *Manjha,* which during fighting entangles the bird and causes traumatic life-threatening injuries. Patagium and Pro-Patagium laceration has been reported in Pelicans (Patel et al., 2019) and commonly encountered clinical conditions in Birds (Kumar et al., 2019). In cases with severely lacerated patagium, wing-shortening is sometimes observed which limits the flying ability of the bird. This report discusses a case of Reconstructive surgical management of Traumatic Patagial Injury in Pigeon by anatomical restoration of Patagium and Pro-Patagial ligament.

CASE HISTORY AND OBSERVATIONS

A 2-year old cock pigeon was presented to Triage of Bird treatment camp, Jaipur during Kite festival *Makar sakranti* with the history of bird fallen from a height and not able to fly. The rescuers applied pressure bandage for haemostasis in the field before transporting the bird to treatment camp. The findings of physical examination disclosed the deeply lacerated Patagium and Pro-Patagial ligament. Wing bones appeared normal with no marked fracture. Hence it was decided to go for surgical management by anatomical restoration under general anesthesia.

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TREATMENT AND DISCUSSION

Under general anesthesia using Ketamine-Midazolam at 10-40 mg/kg + 0.2-2 mg/kg, respectively, (Fig. 1) the feathers surrounding the wound were manually plucked and surgical site was prepared aseptically. Butorphanol at the rate of 0.3 mg/kg body weight intramuscularly was given to the patient. The patient was positioned in dorsal recumbency (Fig. 2) and feathers were held in position by applying micropore surgical tape. Patagial ligament was apposed by applying far-near-near-far sutures using size 3-0 Polyglactin 910 (Vicryl 3-0). The muscles were then apposed by applying simple interrupted sutures using size 3-0 Polyglactin 910 without leaving any dead spaces. The skin edges were apposed by applying simple continuous sutures (Fig. 3) using size 3-0 Polyglactin 910. A figure-of-eight bandage was applied to the wing and tightened in position using adhesive surgical tape (Fig. 4). Postoperatively, the bird was given Enrofloxacin at the dose rate of 10 mg/kg body weight intramuscularly and Meloxicam at the dose rate of 0.2 mg/kg body weight intramuscularly for 5 days. The bird was given warm Lactated Ringer's solution with multi-vitamin through subcutaneous route. Alternative days wound dressing was done up to 10th postoperative day. The bird was supported by tube feeding and passive physiotherapy during post-op period.

Laceration of patagium and pro-patagial ligament in birds most often occurs as a result of injury from glass-powder coated string known as *Chinese Manjha* (Patel et al., 2019). Such injuries from *Manjha* have been reported in various birds like owls (*Bubo virginianus, Otus asio*), a crow (*Corvus brachyrhynchos*) and kite (*Milvus migrans*). It is preferred to conduct the surgical procedures on Dorsal recumbency as birds do not have a diaphragm, therefore breathing (inspiration and expiration) is an active process requiring muscular activity (Miller and Buttrick, 1999). Fluid therapy along with multivitamins intramuscularly was given to the bird, as most avian patients suffering from trauma or disease can be assumed to be at least 10% dehydrated (Parikh et al., 2019). Far-near-near-far sutures (Fossum et al., 2019) have been placed for anastomosis of Patagial ligament in present case. Ketamine-Midazolam (Doneley et al., 2010) along with Butorphanol was used for anesthesia, as plucking out of two feathers in a lightly anaesthetised bird may stimulate violent wing flapping (Coles et al., 2007). Hypothermia during the surgery was counteracted by orthopaedic heating pad to maintain body temperature (Kumar et al., 2019). In present case, laceration was complicated by deep injury to patagium which limits the flying ability of the bird. However, surgical management by anatomical restoration of Patagium and Pro-Patagial ligament was done in attempt to save the life of the bird, preventing it from suffering and return the bird back on flight.

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Fig. 1 Bird with laceration of Patagium and Pro-Patagial ligament.

Fig. 2 Preparation of Surgical site for aseptic surgery.

Fig. 3 Patagium after completion of Surgical anastomosis. (Dorsal view)

Fig. 4 Postoperative photograph showing figure-of-eight bandage.