



SHORT COMMUNICATION

Digit Entrapment and Edema in a Rose Ring Parakeet due to a Toe Ring and its Management

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ABSTRACT

Toe and leg ringing using metallic or non-metallic materials is widely practiced by bird conservationists for identification purposes. However, its use by aviculturists on captive birds, such as parakeets, is illegal under the Indian Wildlife Protection Act, 1972. Materials commonly used include non-metallic PVC and PMMA, and metallic aluminum—either soft or hard anodized. Improper ring material or size can lead to irritation, scratching, and self-inflicted trauma in birds. Additionally, as birds grow, ill-fitted rings may cause entrapment injuries and infection. This case highlights such complications observed in a rose-ringed parakeet (*Psittacula krameri*). A 7-year-old rose-ringed parakeet weighing 120 grams was presented to the Referral Veterinary Polyclinic (RVP), IVRI, Bareilly, with a history of continuous gnawing at its right digit. Clinical examination revealed an edematous swelling and wound at the third phalanx of the second digit, caused by an identification ring placed on the second phalanx. Litter material was found trapped beneath the ring. The bird's body temperature (105°F) was within normal limits, but the heart rate was elevated at 320 bpm. Preoperative medication included intramuscular ampicillin (50 mg/kg) and meloxicam (0.5 mg/kg). Sedation was achieved using midazolam (0.5 mg/kg), followed by ketamine (50 mg/kg) for anesthesia. The affected area was cleaned with 2% chlorhexidine and 0.5% povidone-iodine. A 2–4 mm bone cutter was used to remove the ring after safeguarding soft tissues with a plastic guard. Postoperative care included continued antibiotics and analgesics, antiseptic wound dressing, and light bandaging. This case emphasizes the risk of constriction injuries due to improper ring application and highlights the need for appropriate materials and sizing. It underscores the importance of enforcing wildlife protection laws and reporting such cases to relevant authorities to prevent illegal captivity and safeguard avian welfare.

HIGHLIGHTS

- ❶ Toe ring entrapment caused digit edema and trauma in a captive rose ringed parakeet emphasizing use of biocompatible materials and correct sizing.
- ❷ Case highlights illegal captivity and the need to enforce wildlife Protection Act, 1972 and the role of veterinarians in its enforcement.

Keywords: Bird anesthesia, muscular necrosis, rose ring parakeet, toe entrapment, toe ring

Toe and leg ringing with metallic or non-metallic materials has been used by bird conservationists as a form of identification as well as by aviculturists though illegally as per the Indian wildlife protection act, 1972 (Ramesh, 1999). Different species of birds react differently to the material utilized in the manufacturing of the rings by the clinical signs of scratching and manipulation of the ring with its beak leading to self-inflicted trauma (Pierce *et al.*,

2007). Among the non-metallic material PVC and PMMA are commonly used whereas among metallic material aluminum metal is used which can be either hard or soft

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anodized. As coloring and hard anodization can be both costly and not suitable for the birds they are less commonly used (Rees *et al.*, 1990). The general body growth of the bird also necessitates the change in the size of the ring used as it may lead to entrapment of the distal extremity, this clinical case highlights such issue encountered in a rose ring parakeet (*Psittacula krameri*).

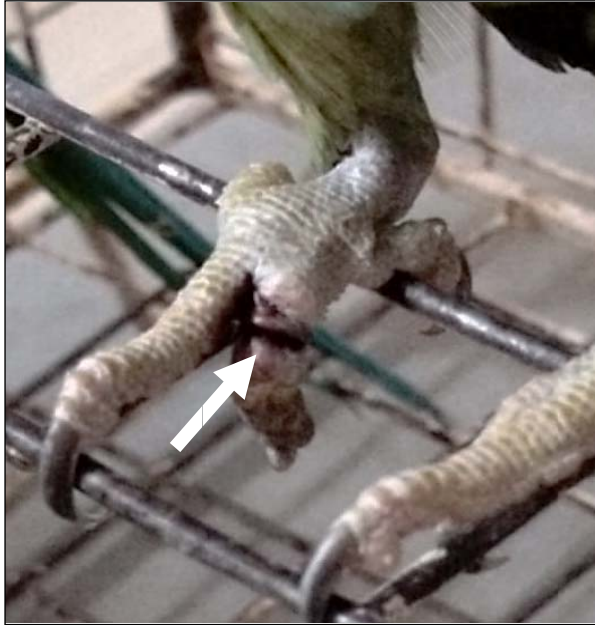


Fig. 1: Toe ring leading to entrapment of the 2nd digit at the 2nd phalanx



Fig. 2: Cutting of the toe ring with the help of orthopedic wire cutter and exposed underlying wound



Fig. 3: Edematous 3rd phalanx of 2nd digit after cutting of toe ring and application of betadine

A 7-year-old rose ring parakeet (*Psittacula krameri*) was brought to the Referral Veterinary Polyclinic (RVP), IVRI, Izatnagar, Bareilly weighing 120 gms with history of continuous gnawing of the right digit. On clinical inspection it was found that a toe ring which was applied by the aviculturist at the 2nd digit on the 2nd phalanx has led to the edematous swelling at the 3rd phalanx along with wound and litter material beneath the ring and digit. On clinical examination, the body temperature of the bird was 105 °F and within normal physiological limits whereas the resting heart rate was elevated at about 320 beats/min.

Preoperatively the bird was given ampicillin at the dose rate of 50 mg/kg and meloxicam at the dose rate of 0.5 mg/kg both by intramuscular route with the help of insulin syringe at the pectoral muscle. For sedation the animal was given midazolam at the dose rate of 0.5 mg/kg and after point of effect of the sedative drug; ketamine a dissociative anesthetic was given at the dose rate of 50 mg/kg. The site of the digit entrapment was cleaned with 2% chlorhexidine solution and 0.5 % povidone iodine solution. Thereafter, with the help of bone cutter of jaw size 2-4 mm was used to cut the ring after protecting the underlying soft tissue with the help of a small plastic guard. Postoperatively the animal was maintained on ampicillin at 50 mg/kg intramuscularly for 5 days, twice

a day and meloxicam 0.5 mg/kg by oral drops for 3 days, once a day along with antiseptic dressing of the wound with 0.5% povidone iodine and light bandaging. Also, the owner was reprimanded from keeping the bird caged after recovery and the whole incident and involved individuals were reported to the wildlife crime control bureau and state forest department for taking the appropriate actions.

Constriction and entrapment injuries are commonly encountered in birds when identification rings are applied on it as well as a consequence of plastic littering leading to wrapping of cords or cables around the legs or digits (Thomas *et al.*, 2022). Accumulation of foreign material under these rings can become a source of infection for the entrapped digit and among the materials used for making of the rings, plastic material has been found to attract more foreign materials in comparison to metallic ones. Hard anodized rings have been to more effective in inhibiting contact inflammation in comparison to plastic rings (Griesser *et al.*, 2012). Proper size of the ring with appropriate clearance ranging from 6- 40% have been proposed to compensate for the increase in size of the bird with age with adult body weight of more than 50-80 gm (Splittgerber and Clarke, 2006). Instead of the small sized bone cutter orthopedic instrument used, specialized wig band cutter device should have been used in the present case (Bairlein, 1995). Also, the stringent enforcement of wildlife protection act, 1972 is essential for the maintenance of biodiversity of the species of fauna (Soni, 2020).

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