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Surgical removal of a tibiotarsal fibrosarcoma in an African grey parrot (*Psittacus erithacus*): A case report

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Abstract

A two-year-old male African Grey Parrot (*Psittacus erithacus*) was presented for a mass growing on the distal tibiotarsal region for months with rapid enlargement over the last three weeks. Clinical examination revealed reluctance in weight bearing and self-mutilation at the lesion site. Surgical excision was performed under xylazine (1.5 mg/kg) and ketamine (20 mg/kg) anesthesia. The excised mass measured $2.0 \times 1.4 \times 1.6$ cm. Post-operative management included enrofloxacin, meloxicam, fluid therapy, and regular wound dressing. Histopathology confirmed fibrosarcoma characterised by an infiltrative spindle-cell neoplasm arranged in interlacing fascicles with a herringbone pattern. Complete functional recovery was observed within two weeks. This report highlights successful surgical management of a distal limb fibrosarcoma in a psittacine species and emphasizes the importance of early intervention in cases of self-trauma and locomotor compromise.

Keywords: African grey parrot, fibrosarcoma, tibiotarsus, psittacine surgery, avian tumour

Introduction

The African Grey Parrot (*Psittacus erithacus*) belongs to the family Psittacidae and is widely recognized for its cognitive abilities and conservation importance. At CoP17 (Johannesburg, 2016), *Psittacus erithacus* was transferred from Appendix II to Appendix I; the listing entered into effect on 2 January 2017 (CITES Secretariat, 2017; CITES, 2016) [5, 4]. Neoplasia is well documented in companion birds and appears to be reported with increasing frequency in captive psittacines, in part reflecting improved longevity, heightened owner observation, and broader diagnostic access (Reavill, 2004; Castro *et al.*, 2016; Robat *et al.*, 2017) [13, 3, 15]. Distal limb tumours can rapidly compromise function due to limited soft-tissue coverage, high mechanical loading, and the propensity for trauma and self-mutilation once ulceration or irritation occurs (Harrison & Lightfoot, 2006; Robat *et al.*, 2017) [9, 15]. This paper documents the diagnosis, surgical management, and outcome of a fibrosarcoma located at the distal tibiotarsus in an African Grey Parrot.

Case History and Clinical Findings

A two-year-old male African Grey Parrot named “Alex” presented with a mass over the posterior aspect of the distal left tibiotarsus for a few months but showed a rapid increase in size in the past three weeks at the time of presentation (Fig. 1).



Fig 1: Highly vascular growth left tibiotarsal region as observed from the medial aspect

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Clinical Examination Findings: Highly vascular mass over distal tibiotarsal region with reluctance to bear weight on the affected limb. Bone involvement was ruled out by radiography and the mass was adherent to the subcutaneous tissue with a stump at the base which was established by digital palpation. Baseline health was good as observed by good pectoral muscle cover over the keel bone. The owner refused pre-operative haematological testing.

The bird was self-mutilating around the growth leading to injuries prone to bleeding as well as infection. The bird's appetite did not show any difference and was bright and alert in demeanour. The combination of progressive enlargement, functional impairment, and self-trauma supported a decision for surgical excision (Harrison & Lightfoot, 2006; Robat *et al.*, 2017) [9, 15]. Due to self-mutilation and bleeding risk driving for urgent excision of the mass, FNAC was not performed and the excised mass was decided to be sent for histopathological analysis post operatively.

Anaesthesia and Surgical Procedure

Due to unavailability of inhalant anaesthesia, which is most preferred for avian patients, injectable anaesthesia was achieved using xylazine (1.5 mg/kg IM) and ketamine (20 mg/kg IM), with dosages aligned to established exotic animal formularies and common avian injectable protocols (Carpenter & Marion, 2018; Abou-Madi, 2001; Curro, 1998) [2, 1, 6]. All vital parameters (respiration, heart rate, temperature) were monitored every five minutes diligently throughout the surgery with preparedness to provide emergency medicines if required.

The bird was positioned in dorsal recumbency for aseptic surgical preparation (Fig. 2). Feathers over the surgical field were removed by plucking; feathers regenerate from follicles, and plucking is an accepted method of surgical site preparation in birds (Pass, 1995) [12]. Aseptic preparation was done by scrubbing the area with chlorhexidine solution followed by povidone iodine 7.5% alternatively, for five times (Fig. 3). Electrocautery was used to make an incision at the base of the growth ensuring haemostasis perioperatively. The mass was bluntly dissected and excised. A gross surgical margin of approximately 3 mm was achieved circumferentially; wider margins were constrained by distal limb integument and limited tissue availability." (Robat *et al.*, 2017; Steffey, 2017) [15, 17]. Birds have hyper keratinised skin on the legs, due to the wide margin of tumour, absent elasticity of skin, the wound was left open to heal with secondary intention healing post operatively. Thermoregulatory support was provided throughout recovery, given the recognised risk of hypothermia associated with sedation/anaesthesia in birds (Abou-Madi, 2001; Durrani *et al.*, 2009) [1, 7]. Routine dressing and bandaging of the surgical area was carried out. The bird recovered completely from anaesthesia after two hours.



Fig 2: Supine positioning under surgical plane of anaesthesia



Fig 3: Pre-operative aseptic surgical preparation

Gross Findings

The excised mass measured $2.0 \times 1.4 \times 1.6$ cm. The mass was firm, well-circumscribed, and subcutaneously attached (Fig. 4 and 5).

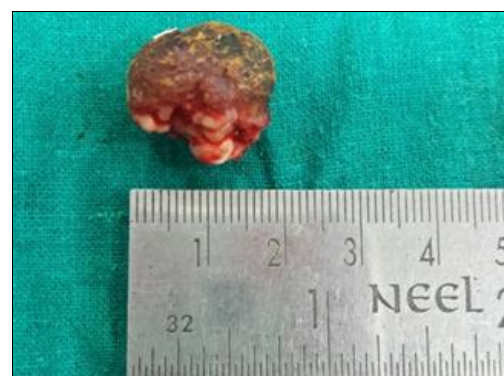


Fig 4-5: Gross morphometry of the excised mass

Post-Operative Management

Post-operative therapy included: Enrofloxacin @ 5 mg/kg IM followed by oral administration for five days. Meloxicam @ 0.2 mg/kg IM followed by oral administration for two days. Ringer's Lactate @ 3 ml/100 g SC once perioperatively. Wound dressing and bandaging was carried out on alternate days using antiseptic ointment and a chew resistant cap over the bandage. Dosages were based on established exotic animal dosage guidance (Carpenter & Marion, 2018) [2]. The bird was confined in a smaller cage setup with less perching opportunity for providing rest to the leg by limiting its routine physical activity.



Fig 6 and 7: Partial weight bearing during 5th day post op. (left). Complete weight bearing present by 12th day post-operatively (right)

Recovery Timeline: The patient showed mild reluctance to bear weight immediately post-operatively, followed by progressive improvement within one week, complete weight bearing by the second week, and a dry, non-infected wound healing satisfactorily (Fig. 6-9).

Recurrence was not reported for two years post operatively.



Fig 8 and 9: Wound healing by secondary intention (left). Completely healed wound (right)

Histopathological Examination

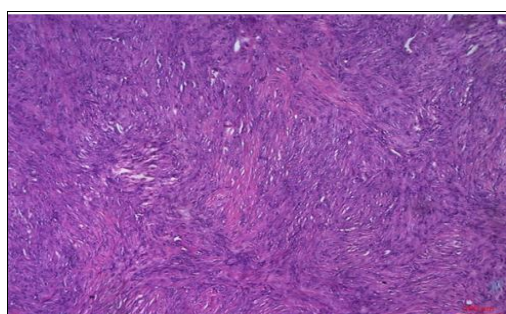


Fig 10: Histopathology revealed dense bundles of fibrous connective tissue consistent with fibrosarcoma

The histopathology section shows a densely cellular spindle-cell neoplasm arranged in interlacing bundles and sweeping fascicles, forming a characteristic whorled pattern. The cells are elongated with indistinct cytoplasmic borders and eosinophilic cytoplasm. Nuclei are oval to elongated, variably hyperchromatic, with anisokaryosis. The neoplastic spindle cells are arranged in an interwoven herringbone pattern, characterized by alternating, sharply angled fascicles that intersect in a repetitive V-shaped configuration. This architectural arrangement is classically associated with fibrosarcoma and reflects orderly but malignant fibroblastic proliferation within a collagenous stroma (Fig. 10) (Reavill, 2004; Schmidt *et al.*, 2024) ^[13, 16].

Discussion

Neoplasia is increasingly recognised in captive psittacines, with integumentary and soft-tissue tumours representing a clinically important subset because they are readily traumatised and often amenable to surgical intervention (Reavill, 2004; Castro *et al.*, 2016; Robat *et al.*, 2017) ^[13, 3, 15]. Distal limb tumours present disproportionate welfare impact in birds due to perching biomechanics, limited soft tissue, and high risk of self-inflicted injury once irritation or ulceration occurs (Harrison & Lightfoot, 2006; Robat *et al.*, 2017) ^[9, 15]. The xylazine-ketamine combination remains a practical injectable approach in avian patients when inhalant anaesthesia is not feasible, but it warrants careful monitoring for hypothermia and cardiorespiratory depression (Abou-Madi, 2001; Curro, 1998) ^[1, 6]. Hypothermia, in particular, is well recognised following $\alpha 2$ -agonist sedation and general anaesthesia in birds and may be exacerbated by reduced

activity, altered peripheral perfusion, and heat loss during recumbency (Durrani *et al.*, 2009; Abou-Madi, 2001) ^[7, 1]. Because birds lack a diaphragm and therefore rely on sternal/rib excursions to ventilate the rigid lungs and air sacs, any pressure on the sternum in sternal recumbency (*e.g.*, restraint, padding, surgeon's hand, coelomic distension) can impede ventilation, so lateral or dorsal recumbency is often chosen when free sternal movement is to be ensured (Gunkel & Lafortune, 2005) ^[8].

Evidence-based numeric surgical margins have not been established for avian limb neoplasms. Current avian oncology reviews indicate that 'adequate margins' in birds are undefined and must be extrapolated as per the surgeon's discretion if a demarcation between affected and normal tissue is absent (Steffey, 2017) ^[17].

The distal limb of birds is covered by epidermal scales (scuta and reticula) composed of β -keratin (corneous β -proteins), characterized by a thick, compact stratum corneum for mechanical protection, absence of feathers, and a dermis that is tightly adherent to the underlying tendons and bone (Lucas & Stettenheim, 1972) ^[10]. The to the scale-bearing, relatively inelastic integument of the distal pelvic limb and the anticipated defect following wide excision, which can limit primary closure after wide excision and makes secondary intention a common, pragmatic strategy in this region (Lucas & Stettenheim, 1972; Maxwell, 2021) ^[10, 11]. Bandage was applied and a thick plastic cap was slid over it to prevent chewing at the surgical wound by the bird.

Fibrosarcoma in African grey parrots has been reported previously and can behave as a locally invasive malignant mesenchymal tumour in this species (Cribb & Riddell, 1983) ^[14]. More broadly, avian soft-tissue sarcomas are often infiltrative, and local recurrence is an important clinical consideration when complete margins are difficult to obtain, particularly on distal limbs where tissue availability constrains wide resection (Robat *et al.*, 2017; Steffey, 2017; Maxwell, 2021) ^[15, 17, 11]. For this reason, histologic margin assessment and structured long-term follow-up are commonly recommended components of surgical oncology case management in birds (Steffey, 2017; Robat *et al.*, 2017) ^[17, 15]. Histologic margin assessment was not performed, representing a limitation when discussing recurrence risk. The case also emphasizes the need for histologic margin assessment and structured follow-up, even when the initial wound heals well. The successful outcome in this case demonstrates that complete excision of well-circumscribed fibrosarcoma carries an excellent prognosis.

Conclusion

This case report describes successful surgical excision of a tibiotarsal fibrosarcoma in an African Grey Parrot with complete functional recovery. Early diagnosis, appropriate anesthesia, meticulous surgical technique, and comprehensive post-operative care ensured a favorable outcome. Distal limb tumours in psittacines should be treated proactively to prevent locomotor dysfunction, chronic pain, and escalating self-injury (Harrison & Lightfoot, 2006; Robat *et al.*, 2017) ^[9, 15]. A two-year, recurrence-free follow-up supports a favourable outcome consistent with complete excision in select soft-tissue sarcoma presentations (Steffey, 2017; Robat *et al.*, 2017) ^[17, 15].

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