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Successful treatment and rehabilitation of burn injury in an Indian Flying Squirrel (*Petaurista philippensis*) Presented to Veterinary Hospital, Narharpur, Kanker, Chhattisgarh, India

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Abstract

A wild adult Indian flying squirrel (*Petaurista philippensis*) was presented to the Veterinary Hospital, Narharpur, Kanker, exhibiting severe thermal burn injuries following accidental exposure to a local fire incident. Clinical examination revealed partial-thickness burns involving twelve to fifteen percent of the total body surface area, specifically affecting the dorsal trunk, tail, and hind limbs. The condition was accompanied by severe dehydration, acute pain, depression, and reduced mobility.

The animal was managed systematically through initial fluid stabilization, wound debridement, systemic antibiotics, anti-inflammatory medication, daily topical burn dressings, and supportive nutritional care. Progressive wound healing and excellent contraction were observed over a four-week period, culminating in complete re-epithelialization and hair regrowth. The animal was successfully rehabilitated and released back into its natural forest habitat. This case highlights the importance of prompt veterinary intervention, intensive wound management, and targeted supportive care in the successful rehabilitation of burn injuries in wild nocturnal rodents.

Keywords: Flying squirrel, *Petaurista philippensis*, burn injury, wildlife rescue, wound management, thermal burn, rehabilitation

1. Introduction

Burn injuries are relatively uncommon but potentially life-threatening emergencies encountered in wildlife medicine. Thermal burns in wild mammals typically result from forest fires, agricultural residue burning, electrical accidents, or anthropomorphic activities. These wounds cause extensive tissue destruction, severe pain, acute fluid loss leading to hypovolemic shock, systemic infection, and compromised locomotion.

The Indian flying squirrel (*Petaurista philippensis*) is a large, arboreal, nocturnal rodent native to the forests of South Asia and is a crucial component of forest ecosystems. Clinical reports regarding the therapeutic management of burns in flying squirrels are extremely scarce globally, and particularly in the Indian subcontinent. Therefore, documentation of successful clinical interventions is highly vital for wildlife veterinarians and conservationists. This case report describes the clinical presentation, successful management, and rehabilitation of an Indian flying squirrel treated at the Veterinary Hospital, Narharpur.

2. Case History and Clinical Examination

On March fifteen, 2026, an adult Indian flying squirrel weighing approximately 1.1 kg was rescued from a village adjacent to Narharpur, Kanker, Chhattisgarh, following a localized fire incident. The animal was immediately brought to the Veterinary Hospital, Narharpur, for emergency clinical evaluation.

Upon presentation, the animal exhibited marked depression, lethargy, anorexia, and mild dehydration. Physical palpation elicited severe pain responses. Detailed dermatological examination revealed extensive singeing of the fur and characteristic partial-thickness burn

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wounds involving approximately twelve to fifteen percent of the total body surface area. The lesions were primarily distributed over the dorsal thoracic region, tail, and hind limbs.

Physiological parameters recorded at the time of admission are summarized in Table 1. No skeletal fractures, internal hemorrhages, or neurological deficits were detected during physical and locomotor evaluation.

Table 1: Physiological parameters of the flying squirrel at the time of admission

Parameter	Observation	Normal Reference Range / Status
Rectal temperature	38.4 °C	Within normal physiological limits
Heart rate	210 beats/min	Tachycardia (elevated due to pain/stress)
Respiratory rate	55 breaths/min	Tachypnea (elevated due to stress)
Body condition	Fair	Adequate fat and muscle reserves
Hydration status	Mild	Estimated five to six percent dehydration

3. Diagnosis

The diagnosis was established based on an anamnesis (history) of acute fire exposure, classic physical examination findings including extensive singeing of the pelage, and the presence of characteristic erythematous and edematous burn lesions. Differential diagnoses involving major mechanical trauma or primary neurological disorders were ruled out due to the absence of fractures, deep lacerations, or motor deficits. The case was definitively diagnosed as a moderate thermal burn injury accompanied by secondary dehydration.

4. Treatment and Management

4.1 Initial Stabilization

To combat shock and dehydration, Lactated Ringer's Solution was immediately administered subcutaneously at a dose rate of 20 ml/kg. The animal was placed in a warm, dark, well-ventilated, and stress-free enclosure to minimize captive stress. Oxygen supplementation via a face mask was provided during the initial stabilization phase to counter potential smoke inhalation.

4.2 Medical Therapy

Systemic therapeutic management was initiated to prevent secondary bacterial complications and control pain:

- **Antibiotic Therapy:** Ceftriaxone was administered at 25 mg/kg body weight intramuscularly (IM) once daily for five consecutive days.
- **Analgesic & Anti-inflammatory Therapy:** Meloxicam was administered at 0.2 mg/kg subcutaneously (SC) on day one, followed by 0.1 mg/kg orally once daily for three days.
- **Supportive Therapy:** High-potency multivitamin drops were added to the water daily to promote tissue repair.

4.3 Wound Management

Wound management was performed daily under mild sedation using physical restraint techniques to avoid excessive stress:

1. The affected burn regions were carefully clipped and cleansed utilizing sterile normal saline solution.
2. Devitalized and necrotic tissues were meticulously debrided to expose healthy underlying tissue margins.
3. The wounds were disinfected using a diluted povidone-iodine solution.
4. Silver sulfadiazine cream was applied topically as a thin layer twice daily over the affected areas.
5. A sterile, non-adherent dressing was loosely applied over the dorsal lesions during the first week to protect against self-mutilation and environmental contamination.

4.4 Nutritional Support

A specialized diet was formulated to meet the high metabolic demands of burn healing. The squirrel was offered fresh

seasonal fruits (banana, papaya, and guava) along with fresh coconut water and oral electrolyte solution to maintain hydration. Protein intake was enhanced through the provision of water-soaked pulses and soft nuts.

5. Results and Discussion

The progression of wound healing and behavioral recovery was documented systematically over a twenty-eight-day period.



Fig 1: Morphological and clinical assessment of the rescued *Petaurista philippensis* showing specific areas evaluated at presentation (A: Dorsal burn lesions, B: Ocular and facial alertness, C: Patagium and limb integrity).

- **Day 7:** The animal showed marked improvement in appetite and alertness. Local inflammation, erythema, and pain on palpation were significantly reduced. Early healthy red granulation tissue was observed filling the wound beds.
- **Day 14:** Significant wound contraction was evident across the dorsal trunk. There was no clinical evidence of secondary bacterial infection or purulent discharge. The squirrel displayed increased physical activity and initial climbing behaviors within the enclosure.
- **Day 21:** Advanced re-epithelialization was visible across all burn sites. Fine hair regrowth was initiated around the margins of the healed skin. The animal resumed normal feeding habits without support.
- **Day 28:** Nearly complete anatomical and functional healing of the burn wounds was achieved. Normal arboreal locomotion, leaping posture, and self-grooming behaviors were fully restored. The animal was officially declared fit for wild discharge.

Burn injuries in wild small mammals induce severe hypermetabolic states characterized by substantial fluid evaporation, electrolyte imbalances, and acute pain. The damaged skin barrier serves as an ideal portal for opportunistic pathogens, frequently resulting in fatal septicemia if untreated. Therefore, immediate stabilization via fluid therapy and aggressive multi-modal wound management

are core pillars of successful wildlife burn therapy.

In this case, the administration of Lactated Ringer's Solution effectively mitigated early hypovolemia. Systemic ceftriaxone provided broad-spectrum antibacterial coverage, which prevented secondary bacterial dermatitis. For topical wound management, silver sulfadiazine cream proved highly effective. This agent provides essential antimicrobial action against both Gram-positive and Gram-negative bacteria—including *Pseudomonas aeruginosa*—while maintaining a moist wound environment that accelerates epithelial cell migration.

The rapid recovery of the patient within twenty-eight days can be attributed to the timely rescue, minimal stress induction during handling, and high-protein nutritional supplementation which facilitated rapid cell synthesis. This report confirms that moderate thermal injuries involving up to fifteen percent of body surface area in wild rodents can be successfully resolved with standard veterinary regimens. Following a final veterinary health assessment, the flying squirrel was safely transported to a nearby protected forest habitat and successfully released under the joint supervision of the local Forest Department authorities.

6. Conclusion

This case report demonstrates that thermal burn injuries in wild Indian flying squirrels can be managed successfully through rapid fluid stabilization, targeted systemic antimicrobial/analgesic therapies, and disciplined topical wound care. Early veterinary intervention not only prevented systemic shock and sepsis but also preserved the physiological function of the patagium (gliding membrane) and limbs, allowing for complete rehabilitation. This documented clinical protocol can serve as a valuable reference template for wildlife practitioners handling thermal injuries in small wild mammals.

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Conflict of Interest

Not available

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