

Pan-African Journal of Plastic Reconstructive and Aesthetic Surgery Vol. 2 No. 3 September 2025

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SUMMARY

Nairobi fly (*Paederus spp.*) exposure can lead to severe irritant dermatitis due to the release of paederin toxin. While most cases are mild and self-limiting, facial involvement can occasionally result in full-thickness soft tissue loss requiring complex reconstruction.

We report the case of a 55-year-old woman who presented to our plastic surgery unit with a healed, full-thickness defect over the left nasal ala following a contact with Nairobi fly toxin. Reconstruction involved harvesting conchal cartilage from the ipsilateral ear for structural support, combined with a pedicled nasolabial flap for soft tissue coverage. Healing proceeded without complications, and the patient reported excellent aesthetic and functional outcomes.

In conclusion, this case underscores the potential severity of Nairobi fly injuries and demonstrates how combining local cartilage grafting with regional flap coverage offers a reliable and resource-appropriate approach for nasal reconstruction, particularly in low-resource endemic settings.

INTRODUCTION

The Nairobi fly refers to two species of *Paederus* rove beetles commonly found in Eastern Africa (1). These insects don't bite or sting; instead, when crushed against the skin, they release paederin — a potent toxin that causes chemical burns. Patients often present with unusual skin lesions, including blisters and irritant dermatitis. In some cases, systemic symptoms such as fever, joint pain, and vomiting may occur, especially with widespread exposure (2). Contact with the eyes can even result in temporary blindness (3). Most cases are mild and self-limiting, but facial involvement — though rare — can lead to significant cosmetic and functional complications.

Nasal involvement is particularly concerning due to the nose's central role in facial aesthetics and breathing. The skin over the nasal cartilaginous framework is vulnerable, and once damaged, reconstruction can become complex (4). In endemic areas, delayed care or lack of awareness can worsen outcomes.

For full-thickness nasal defects, especially those involving structural loss, reconstruction must address both framework and soft tissue. Conchal cartilage, harvested from the ear, is commonly used due to its natural curvature and durability (5). A pedicled

nasolabial flap offers reliable, adjacent skin with excellent vascularity and aesthetic match (6).

This report describes a rare case of nasal alar tissue loss due to a Nairobi fly bite, successfully managed using a combination of conchal cartilage graft and nasolabial flap reconstruction.

CASE PRESENTATION

A 55-year-old woman presented to our plastic surgery unit for evaluation and reconstruction of a full-thickness nasal alar defect. She reported a remote history of contact with a Nairobi fly toxin five years back. At the time of contact she experienced a burning sensation and subsequent ulceration on the left side of her nose after brushing the insect away. She later sought medical attention at a local health facility where dressings were done and the wound got healed. By the time of presentation to our unit, she had already healed with a defect on the left side of the nose. The delay in presentation was due to limited access to specialist care, since the patient lived in rural Kenya and lacked funds for treatment. She only became aware of available reconstructive options after learning about free plastic surgery services during a visiting surgical camp.

On examination, there was a 1.5 cm × 1.2 cm defect involving the skin and underlying cartilage of the left alar subunit. The nasal tip and remaining framework were intact, and there were no signs of active infection or systemic involvement (Figure 1A). Given the stable wound bed and absence of inflammation, surgical reconstruction was planned. After debridement, the actual defect size measured approximately 5 cm × 3 cm. The nasolabial flap (Figure 1B) used measured about 6 cm × 4 cm, and the harvested conchal cartilage was 3 cm × 2 cm (Figure 1C).

The conchal cartilage was harvested from the ipsilateral ear using a posterior incision, trimmed, and designed to resemble the alar contour. It was placed and secured to the residual alar base with 3.0 vicryl sutures. The flap is a type C Mathes and Nahai, based on a perforator from the angular artery (Figure 1C2).

Dissection was performed in the suprafascial plane to avoid bulkiness and the need for secondary thinning. Closure was three-layered: inner lining, structural support (cartilage graft), and skin (nasolabial flap). 3.0 vicryl was used for dermal sutures, and 3.0 monocryl was applied for skin closure.

A pedicled nasolabial flap was designed on the left cheek and elevated to provide external coverage (Figure 1B, 1C). The nasolabial flap was then advanced and inserted into the defect without tension. A nasal stent modified from the endotracheal tube was used to support the construct. The donor site on the cheek was closed primarily (Figure 1D). The postoperative course was smooth. At six weeks, the flap remained viable, the donor site healed well, and the patient had regained nasal symmetry and function with satisfactory cosmetic outcome (Figure 1E).

Figure 1: (A) Preoperative image of the patient showing the nasal defect following Nairobi fly bite. (B) Preoperative image showing the nasolabial flap marking. (C) Intraoperative image showing the placement of the conchal cartilage and the dissection of the nasolabial flap. A closer view of the image reveals the perforator artery (green outline) to the flap (C2). (D) The immediate postoperative image showing primary closure of the donor site. (E) Six weeks postoperative image showing healed donor site and restoration of the left nasal defect.





DISCUSSION

Nairobi fly injuries are often regarded as minor, but in some cases—like this one—the consequences can be significant. *Paederus* beetles do not bite or sting. Instead, they release *paederin*, a potent toxin, when crushed against the skin. This chemical can cause intense irritation and, in severe cases, full-thickness skin necrosis if not promptly managed (1,3).

Our patient's lesion started as a mild irritation but rapidly progressed into an infected ulcer involving the left nasal ala. This area is delicate and particularly prone to collapse and disfigurement once tissue loss begins. Beyond the physical damage, the psychosocial impact of facial injuries, especially in women, are considerable and should not be overlooked.

Reconstruction of nasal defects is rarely straightforward. It requires more than closing a wound—the surgeon must restore structural support, rebuild the nasal contour, and ensure the airway remains functional, all while achieving a good cosmetic outcome. The subunit principle, introduced by Burget and Menick (1985), supports replacing entire aesthetic zones like the ala when a large portion is lost, rather than attempting piecemeal repairs (4).

In this case, conchal cartilage from the ear was used to recreate the nasal framework. Its natural curvature and ease of harvest make it ideal for reconstructing the soft arc of the nasal ala (5,7). For soft tissue coverage, a pedicled nasolabial flap was selected. It offers an excellent skin match, reliable vascularity, and minimal donor site morbidity—making it one of the most dependable local options (6). Together, these techniques restored both form and function. The patient healed well, with minimal scarring, and regained facial symmetry and confidence.

Though cases like this are rare, they remind us that Nairobi fly injuries can be more than superficial nuisances. The literature largely focuses on skin-level dermatitis, with little guidance on managing deep defects (2). This case highlights the importance of early recognition and referral. Simple public health advice—like not crushing the insect and washing exposed skin—can help prevent such severe outcomes (3).

Recent literature has begun to document the reconstructive challenges posed by insect-related facial injuries in tropical and resource-limited settings. Bytyqi *et al.* (2024) conducted a systematic review of oro-facial filariasis, compiling over 100 cases of parasitic-induced facial tissue loss, many from sub-Saharan Africa, and highlighting the need for context-specific surgical strategies (8). Ruwanpathirana and Priyankara (2022) presented a case report and literature review on wasp stings, detailing systemic and cutaneous complications—including facial edema and necrosis—that may require surgical intervention (9). These studies underscore the importance of early recognition, public health education, and the availability of reconstructive services in endemic regions. Our case contributes to this evolving body of evidence, demonstrating the utility of nasolabial flaps and autologous cartilage grafts in managing insect-induced nasal defects.

CONCLUSION

This case highlights a rare but serious complication of Nairobi fly exposure—full-thickness tissue loss of the nasal ala—and the successful use of a conchal cartilage graft combined with a pedicled nasolabial flap for reconstruction. While most Nairobi fly injuries are mild, this case serves as a reminder of how severe the outcome can be when the face is involved,

especially in settings where early medical intervention is delayed. Using locally available, well-established reconstructive techniques, we were able to restore both nasal form and function with minimal donor site morbidity. As awareness of Nairobi fly-related injuries grows, so too should clinical readiness to manage their more complex presentations.

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