

*Case Report*

## **AURICULAR RECONSTRUCTION AND POSTOPERATIVE WOUND CARE IN NECROTIZING FASCIITIS SECONDARY TO MALIGNANT OTITIS EXTERNA IN A DIABETIC PATIENT WITH SCABIES: A CASE REPORT**

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### **ABSTRACT**

**Introduction:** Auricular necrotising fasciitis (NF) is a rare, life-threatening complication of malignant otitis externa (MOE), demanding prompt multidisciplinary management to prevent extensive tissue loss.

**Case Presentation:** A 55-year-old female with uncontrolled diabetes and active scabies presented with rapidly progressive auricular NF secondary to MOE. Cultures identified *Pseudomonas aeruginosa*. Management comprised targeted systemic antibiotics, strict glycaemic control, and a two-stage tissue-sparing surgical debridement to salvage viable cartilage, followed by medical-grade honey dressings to promote granulation.

**Conclusion:** Diabetes and scabies-induced skin barrier disruption act synergistically to exacerbate severe infections. Early debridement and tailored biological wound care are crucial in managing this surgical emergency, effectively eradicating the infection while optimising functional and aesthetic outcomes.

**Key words:** Necrotising fasciitis; Auricle; Malignant otitis externa; Diabetes mellitus; Wound care

**Pendahuluan:** Fasciitis nekrotikans aurikular merupakan komplikasi langka namun mengancam jiwa dari otitis eksterna maligna, yang memerlukan penatalaksanaan multidisipliner secara cepat untuk mencegah kehilangan jaringan yang luas.

**Laporan Kasus:** Seorang perempuan berusia 55 tahun dengan diabetes melitus tidak terkontrol dan skabies aktif datang dengan fasciitis nekrotikans aurikular yang berkembang cepat sebagai komplikasi otitis eksterna maligna. Hasil kultur mengidentifikasi *Pseudomonas aeruginosa*. Penatalaksanaan meliputi pemberian antibiotik sistemik terarah, kontrol glikemik yang ketat, serta debridement bedah dua tahap dengan pendekatan pelestarian jaringan untuk mempertahankan kartilago yang masih viabel, diikuti oleh penggunaan balutan madu medis untuk mendukung pembentukan jaringan granulasi.

**Simpulan:** Diabetes melitus dan kerusakan sawar kulit akibat skabies berperan sinergis dalam memperberat infeksi berat. Debridement dini dengan pendekatan pelestarian jaringan serta perawatan luka biologis yang terarah merupakan kunci dalam menangani kegawatdaruratan bedah ini, sehingga infeksi dapat dieliminasi secara efektif sekaligus mengoptimalkan luaran fungsional dan estetika.

**Kata kunci:** Fasciitis nekrotikans; Aurikula; Otitis eksterna maligna; Diabetes melitus; Perawatan luka

### **Conflicts of Interest Statement:**

The author(s) listed in this manuscript declare the absence of any conflict of interest on the subject matter or materials discussed.

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**INTRODUCTION**

Necrotising fasciitis (NF) of the head and neck is a rare, rapidly progressive infection with significant mortality if diagnosis or treatment is delayed.<sup>1</sup> Diabetes mellitus is a key predisposing factor due to its impairment of immune defence and wound healing. In this context, malignant otitis externa (MOE), a severe Pseudomonas-associated infection, may extend into adjacent soft tissues, although progression to auricular NF remains rare.<sup>2</sup>

In this context, skin barrier disruption acts as a critical exacerbating factor. Intense pruritus from scabies provokes scratching that breaches the epidermal barrier, creating a direct portal for opportunistic pathogens to initiate severe soft-tissue infections, including NF.<sup>3</sup> Auricular involvement presents unique reconstructive challenges due to sparse soft tissue and a delicate cartilaginous framework with segmental vascular supply.<sup>4</sup>

We report a rare coexistence of uncontrolled diabetes and active scabies, resulting in Auricular NF secondary to MOE, highlighting the need for early tissue-sparing debridement and honey-based wound care to control infection and preserve auricular structure.

**CASE REPORT**

A 55-year-old woman presented with a severe left auricular ulcer, uncontrolled hyperglycemia, and active generalized scabies. She was admitted under internal medicine for systemic stabilization and consulted to the plastic surgery team for wound care. Examination revealed extensive auricular, preauricular, and retroauricular necrosis with exposed cartilage and distorted landmarks

(Figure 1). Surrounding tissues were edematous. The auditory canal was partially obscured without cranial nerve deficits.



**Figure 1.** Preoperative clinical appearance of the left auricle showing extensive necrosis with near-partial amputation and exposed cartilage.

Laboratory tests showed elevated C-reactive protein (15.7 mg/dL), leukocytosis (leukocyte count 46,630/ $\mu$ L), anemia (hemoglobin 8.4 g/dL), normonatremia (sodium 144 mmol/L), elevated creatinine (3.7 mg/dL), hyperglycemia (glucose 384 mg/dL), and hypoalbuminemia (albumin 2.4 g/dL).” These parameters yielded a Laboratory Risk Indicator for Necrotising Infection (LRINEC) score of 11, indicating a high risk of necrotising fasciitis, as shown in Table 1.<sup>1</sup>

**Table 1.** Laboratory Risk Indicator for Necrotising Infection (LRINEC) score

Variable	Criteria	Score
C-reactive protein (CRP), mg/L	< 15	0
	$\geq$ 15	4
Total white blood cell count, cells/mm <sup>3</sup>	< 15	0
	15–25	1
	> 25	2

Variable	Criteria	Score
Hemoglobin, g/dL	> 13.5	0
	11 - 13.5	1
	< 11	2
Sodium, mmol/L	≥ 135	0
	< 135	2
Creatinine, mg/dL	≤ 1.6	0
	> 1.6	2
Glucose, mg/dL	≤ 180	0
	> 180	1

<sup>a</sup> < 5 indicates a necrotizing fasciitis risk <50%

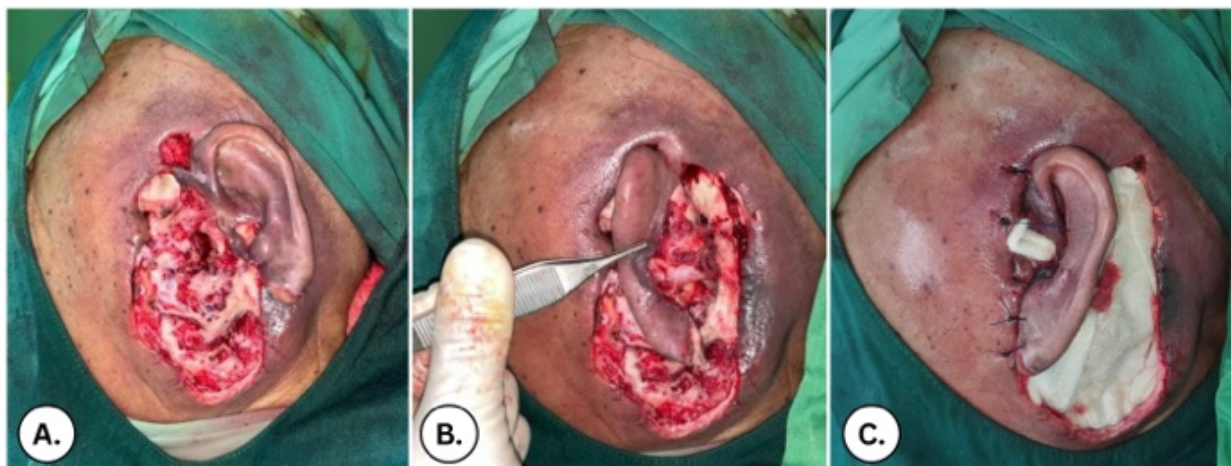
<sup>a</sup> 6-7 points indicates a necrotizing fasciitis risk of 50-75%

<sup>a</sup> ≥8 points indicates a necrotizing fasciitis risk >75%

Microbiological culture identified *Pseudomonas aeruginosa*. Computed tomography excluded intracranial/mastoid involvement. Histopathology demonstrated chronic granulomatous inflammation with necrosis.

Systemic therapy included IV Meropenem (500 mg q12h), adjusted to Amikacin (500 mg q12h) per culture sensitivities. Glycemic control utilised a basal-bolus insulin regimen (Detemir 10 IU QD, Aspart 8 IU TID) and a 1700 kcal diet. Anaemia and scabies were treated with PRC transfusions, 5% permethrin, and cetirizine (10 mg daily).

To control infection, a staged surgical approach, as shown in Table 2, involved sequential debridement of necrotic tissue while carefully preserving cartilage and anterior vascularity (Figure 2). Between the staged debridements, alginate dressings were applied to protect exposed cartilage and promote granulation. Serial assessments and repeat debridements facilitated progressive granulation, with preservation of the anatomical contour, as demonstrated in Figure 3. After the final procedure, medical-grade honey dressings were applied to promote further granulation.



**Figure 2.** Intraoperative view of selective debridement in a near-partially amputated auricle with preservation of viable cartilage and anterior vascular supply. (A.) Anterior auricle view, (B.) Posterior auricle view, (C.) Immediate postoperative clinical view after auricular reconstruction.

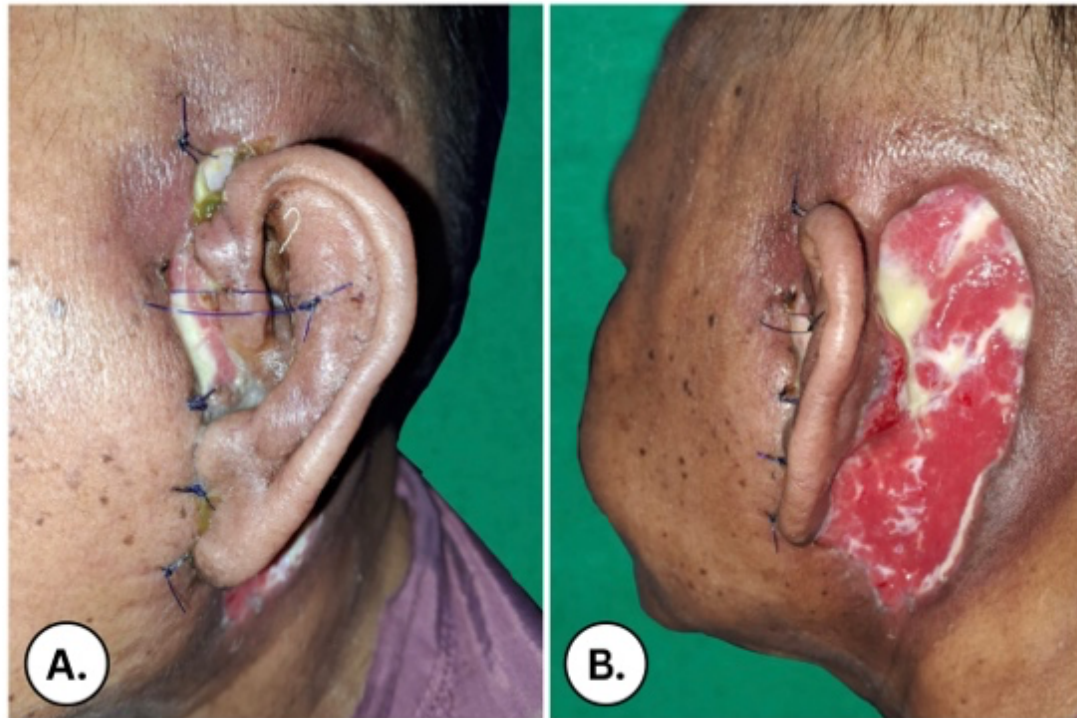


Figure 3. Postoperative view after staged debridement. (A.) Anterior auricle view, (B.) Postauricular view

Table 2. Staged Surgical Debridement Approach

Stage	Timing	Indications	Surgical Procedures
1 <sup>st</sup> debridement	July 6, 2023 (Day 13 of hospitalization)	Extensive necrosis & exposed cartilage.	Aseptic prep; excision of necrotic tissue; edge refreshing; hemostasis; and wound suturing.
2 <sup>nd</sup> debridement	July 13, 2023 (Day 7 post 1st debridement)	Residual non-vital tissue & wound evaluation.	Aseptic prep; re-exploration; residual tissue excision; hemostasis; and wound suturing.

Following resolution of the infection, she was discharged after 23 days. At discharge, the wound showed progressive granulation and halted necrosis, successfully maintaining cartilaginous integrity without auditory deficits. She attended internal medicine follow-ups on July 24 and 31, but was lost to plastic surgery follow-up. Her systemic condition subsequently deteriorated from progressive renal failure. She declined hemodialysis upon a September readmission and passed away under palliative care in October 2023.

## DISCUSSION

Auricular NF is a rare complication of MOE and diabetes, both strongly associated with *P. aeruginosa*.<sup>2</sup> Diabetes exacerbates severity via immune and microvascular dysfunction, while scabies breaches the skin barrier, facilitating

rapid soft-tissue extension.<sup>5</sup> Normal healing progresses through inflammation, proliferation, and remodelling; however, diabetes prolongs inflammation and impairs angiogenesis, causing delayed epithelialization.<sup>6</sup>

Medical-grade honey acts as a biologic wound dressing; its high osmolarity and low pH inhibit bacterial growth, while its bioactive compounds promote angiogenesis. These properties are highly advantageous in diabetic wounds characterised by persistent inflammation.<sup>7,8</sup>

Historically, auricular NF necessitated aggressive excision, often causing cartilage collapse.<sup>9</sup> Thus, early plastic surgery involvement is essential to perform tissue-sparing debridement, balancing infection control with the preservation of viable cartilage.<sup>10</sup>

Contemporary management favours staged debridement over radical excision. In this case, two serial debridements were performed. Initial heavy purulent necrosis improved markedly post-stage one, revealing a reduced bacterial load and demarcating residual non-viable tissue for safe excision in stage two.

This staged approach, prioritising anterior vascular preservation, prevented avascular cartilage ischemia. Adjunctive alginate and honey dressings synergistically managed exudates, inhibited *Pseudomonas*, and fostered a pro-angiogenic environment. This combined mechanical and biological management stimulated rapid granulation over the exposed framework, ensuring optimal functional and aesthetic preservation.

## CONCLUSION

Auricular NF secondary to MOE is a time-sensitive condition, especially in diabetics with scabies-induced barrier disruption. Tissue-sparing staged debridement, strict glycemic control, and tailored biological wound care remain the cornerstones to eradicate infection while optimally preserving auricular structure and function.

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