



Periorbital Necrotizing Soft Tissue Infection Caused by Streptococcus pyogenes

Ono, Yuko
Kato, Chiharu
Yoneda, Ryuhei
Shinohara, Kazuaki
Kotani, Joji

(Citation)

Acute Medicine & Surgery, 12(1):e70105

(Issue Date)

2025-01

(Resource Type)

journal article

(Version)

Version of Record

(Rights)

© 2025 The Author(s). Acute Medicine & Surgery published by John Wiley & Sons Australia, Ltd on behalf of Japanese Association for Acute Medicine.
This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium,...

(URL)

<https://hdl.handle.net/20.500.14094/0100498902>



CASE IMAGE OPEN ACCESS

Periorbital Necrotizing Soft Tissue Infection Caused by *Streptococcus pyogenes*

Yuko Ono^{1,2}  | Chiharu Kato¹ | Ryuhei Yoneda¹ | Kazuaki Shinohara² | Joji Kotani¹¹Department of Disaster and Emergency Medicine, Graduate School of Medicine, Kobe University, Kobe, Japan | ²Department of Anesthesiology, Ohta General Hospital Foundation, Ohta Nishinouchi Hospital, Fukushima, Japan**Correspondence:** Yuko Ono (windmill@people.kobe-u.ac.jp)**Received:** 3 July 2025 | **Revised:** 15 October 2025 | **Accepted:** 11 November 2025**Keywords:** necrotizing fasciitis | severe pain | skin grafting | *Streptococcus pyogenes* | surgical debridement

A 57-year-old woman with type 1 diabetes presented to the emergency department with a 1-day history of severe periorbital pain. On admission, she was restless and in profound shock. Physical examination revealed periorbital ecchymosis with partial skin necrosis (Figure 1A, asterisks), although no clear portal of bacterial entry was identified. Emergency surgical exploration revealed extensive dermal and subcutaneous tissue necrosis extending from the periorbital to parietal region (Figure 1B, asterisks). *Streptococcus pyogenes* was isolated from the necrotic tissue. Periorbital necrotizing soft tissue infection was diagnosed. By hospital Day 3, demarcation of the necrotic skin had

become apparent (Figure 1C). Following multiple debridements and skin grafting, she was transferred to a rehabilitation facility. Photographs documenting various stages of treatment are shown in Figure S1.

Periorbital necrotizing soft tissue infection is rare, with an estimated annual incidence of 0.24 per 1,000,000 individuals [1]. In nearly 50% of patients with group A streptococcal necrotizing fasciitis or myonecrosis, the infection originates deep in the soft tissues without an identifiable entry point [2], as seen in this case. Therefore, all patients presenting with severe facial pain

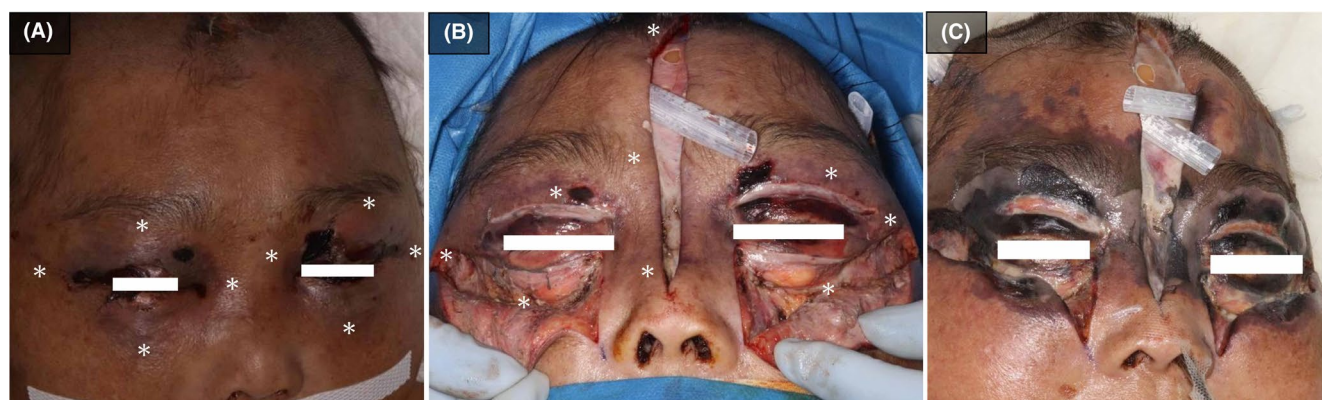


FIGURE 1 | Clinical progression of bilateral periorbital necrotizing soft tissue infection caused by *Streptococcus pyogenes* in a woman in her late 50s. (A) Initial presentation at the emergency department. Periorbital ecchymosis with partial skin necrosis was visible (asterisks). (B) Surgical debridement conducted approximately 2 h after initial presentation. Extensive dermal and subcutaneous tissue necrosis extending from the periorbital to parietal region was noted (asterisks). (C) 3 days after the first debridement. Demarcation of the necrotic skin had become apparent.

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2025 The Author(s). *Acute Medicine & Surgery* published by John Wiley & Sons Australia, Ltd on behalf of Japanese Association for Acute Medicine.

and systemic signs of infection should be evaluated for periorbital necrotizing soft tissue infection on an emergency basis. Group A *Streptococcus* can invade soft tissue rapidly, causing extensive necrosis, as demonstrated here.

Acknowledgments

We thank Nozomi Ono, MD, from Hoshigaoka Hospital, Koriyama, Japan, for providing assistance in reviewing the manuscript. We also thank Angela Morben, DVM, ELS, from Edanz (<https://jp.edanz.com/ac>), for editing a draft of this manuscript.

Funding

The authors have nothing to report.

Ethics Statement

The authors have nothing to report.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

References

1. P. W. Flavahan, P. Cauchi, M. E. Gregory, B. Foot, and S. R. Drummond, "Incidence of Periorbital Necrotising Fasciitis in the UK Population: A BOSU Study," *British Journal of Ophthalmology* 98 (2014): 1177–1180.
2. D. L. Stevens and A. E. Bryant, "Necrotizing Soft-Tissue Infections," *New England Journal of Medicine* 377 (2017): 2253–2265.

Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Figure S1:** Photographs taken at various stages of treatment. (A) Ten days after hospital admission, demarcation of the necrotic skin had become more apparent. (B) Surgical debridement performed 19 days after admission. (C) Surgical debridement and (D) skin transplantation performed 49 days after admission. (E) Postoperative appearance 6 months after skin transplantation.