

CASE REPORT OLGU SUNUMU

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Leech-Induced Palpebral Ecchymosis and Edema in Paramedian Forehead Flap Reconstruction

Paramedyan Alın Flep Rekonstrüksiyonunda Sülük Kaynaklı Palpebral Ekimoz ve Ödem

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ABSTRACT Paramedian forehead flaps are commonly used for nasal reconstruction. Leech therapy is an effective treatment for postoperative venous congestion, but may lead to rare complications. We report a 71-year-old woman who developed bilateral palpebral ecchymosis and eyelid edema during leech therapy after flap surgery. Leech therapy was initiated on postoperative day 1 with 2 small *Hirudo verbana* leeches applied for 30 minutes. Sessions were repeated every 8-12 hours, totaling 7 sessions over 3 days. No systemic anticoagulants or steroids were administered. Ecchymosis and edema emerged after the 2nd session and progressed mildly, peaking after the 5th session. No other complications or infections were observed. Symptoms resolved spontaneously within 2 days after therapy cessation. Unlike previously reported cases, this involved bilateral eyelid ecchymosis and edema, likely due to local spread of salivary enzymes via venous pathways. This case highlights the need for close monitoring and awareness of rare, self-limiting complications of leech therapy.

ÖZET Paramedyan alın flepleri, burun rekonstrüksiyonunda yaygın olarak kullanılan bir yöntemdir. Sülük tedavisi, postoperatif venöz konjesyonun etkin bir tedavisidir ancak nadir komplikasyonlara yol açabilir. Bu çalışmada, flep cerrahisi sonrası sülük tedavisi sırasında bilateral palpebral ekimoz ve göz kapağı ödemi gelişen 71 yaşında bir kadın hasta sunulmaktadır. Sülük tedavisi, ameliyat sonrası 1. günde, 30'ar dk'lık sürelerle 2 küçük *Hirudo verbana* türü sülüğün uygulanması ile başlatılmıştır. Tedavi seansları, 8-12 saat aralıklarla tekrarlanmış ve toplamda 3 gün boyunca 7 seans gerçekleştirilmiştir. Hastaya sistemik antikoagülan veya steroid uygulanmamıştır. Ekimoz ve ödem 2. seanstan sonra ortaya çıkmış, hafif derecede ilerlemiş ve 5. seansta en yoğun hâle gelmiştir. Başka herhangi bir komplikasyon veya enfeksiyon gözlenmemiştir. Semptomlar, tedavinin sonlandırılmasını takiben 2 gün içinde kendiliğinden gerilemiştir. Daha önce bildirilen vakalardan farklı olarak bu olguda, bilateral göz kapağı ekimozu ve ödemi görülmüş olup, bunun lokal olarak sülük salyasındaki enzimlerin venöz yolla yayılımına bağlı olduğu düşünülmektedir. Bu vaka, sülük tedavisinin nadir, kendi kendini sınırlayan komplikasyonlarının farkında olunması ve yakın klinik takip gerekliliğini vurgulamaktadır.

Keywords: Leeching; ecchymosis; complications; surgical flaps; flap reconstruction

Anahtar Kelimeler: Sülük uygulama; ekimoz; komplikasyonlar; cerrahi flepler

Paramedian forehead flaps are widely employed in nasal reconstruction due to their excellent vascular supply and cosmetic outcomes. Venous congestion is a frequent complication, potentially leading to flap failure if not addressed promptly. Various methods, including anticoagulant medications, negative pres-

sure therapy, and leech therapy, have been used to alleviate congestion.¹

Leeches, through their salivary enzymes such as hirudin and hyaluronidase, promote anticoagulation and reduce venous congestion.² However, they also introduce potential complications, including infec-

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tion, allergic reactions, and anemia.³ In this report, we discuss a rare complication-palpebral ecchymosis and edema-observed during leech therapy in a patient undergoing nasal reconstruction.

CASE REPORT

A 71-year-old female patient presented to our clinic with a non-healing ulcer on the nasal tip persisting for 1 year. Examination revealed a 2x2 cm irregular, elevated lesion with a sclerotic appearance encompassing the nasal tip and supratip region (Figure 1). There was no history of smoking. The patient had hypertension, diabetes, and hypothyroidism, all managed with medical treatment. An incisional biopsy confirmed basal cell carcinoma (BCC), and surgery was planned.

Excision with a 5 mm surgical margin was performed, followed by a left paramedian forehead flap reconstruction. On postoperative (post-op) day 1, venous congestion was observed in the flap, and leech therapy was initiated. Sterile medical leeches used were *Hirudo verbana*, obtained from an officially certified medical leech provider approved by the Ministry of Agriculture and Forestry in Türkiye. Prior to application, the leeches were rinsed in sterile distilled water. Although no standardized protocol exists for medicinal leech disinfection, they were provided by a licensed hirudotherapy supplier under

hygienic conditions.⁴ Two small *Hirudo verbana* leeches were applied to the dorsal surface of the flap under the supervision of a certified hirudotherapy physician (Figure 2). The 1st application lasted approximately 30 minutes, followed by a 2nd application at midnight on the same day. Over the next 2 days, a total of 7 sessions were conducted, using 2-3 leeches per session. Improvements in flap color were observed during therapy.

However, after 2 sessions on post-op day 1, ecchymosis and edema were noted in the medial part of the right upper eyelid, with mild edema in the left upper eyelid (Figure 3). The patient was not on anticoagulant, antiplatelet, non-steroidal anti-inflammatory drugs, steroid, or aspirin therapy during the perioperative period. This eliminates pharmacologic contributions to ecchymosis. The ecchymosis was attributed to the leech application rather than a postoperative complication. In the absence of hematoma and with only mild edema and ecchymosis observed, leech therapy was continued under close clinical surveillance. It was planned to discontinue the therapy immediately if any signs of hematoma developed.



FIGURE 1: The appearance of the lesion (preoperative)



FIGURE 2: During the 4th session. Blue arrow: Palpebral edema and ecchymosis. Yellow arrow: The end where the leech detaches from the skin. White arrow: The end of the leech attached to the skin. Green arrows: The ends of the leeches where they bite the skin.



FIGURE 3: Postoperative 1st week



FIGURE 4: Postoperative 2nd year

The edema and ecchymosis on the right side became more pronounced before the 5th session. Ecchymosis and edema gradually worsened as therapy

continued, however no hematoma developed, and regressed significantly 1 day after the final application (post-op day 4). Both symptoms resolved entirely by post-op day 5.

Histopathological evaluation confirmed intact surgical margins with no residual BCC. The pedicle of the flap was divided at three weeks post-op, and the patient was discharged in good condition. At all follow-up intervals, flap viability and aesthetic outcomes remained excellent (Figure 4).

This study was conducted in accordance with the Declaration of Helsinki and relevant ethical guidelines. Written informed consent was obtained from the patient for all procedures and publication.

DISCUSSION

The paramedian forehead flap is a pedicled flap option commonly utilized for large nasal defects. Despite adequate arterial supply, venous return disturbances can occur when the flap is rotated, potentially leading to flap necrosis. While various treatment methods exist for venous congestion, leech therapy offers a localized effect through 3 mechanisms: injection of anticoagulant substances into the flap, facilitation of blood drainage, and sustained passive blood outflow throughout the day. However, leech therapy is not without its side effects.

The literature includes a case of periorbital ecchymosis following leech therapy, where ecchymosis and subconjunctival hemorrhage developed in the right eye after leech application to the glabella.^{5,6} However, no edema was reported in the eyelids, and the findings resolved without intervention within 1 month.

In our case, the findings were bilateral, limited to the palpebral region, and accompanied by edema. Symptoms resolved completely within 2 days of discontinuing therapy. Given the timing of symptom onset and resolution, the ecchymosis was considered to be a direct result of leech therapy rather than a postoperative hematoma. The progressive appearance of ecchymosis following therapy initiation, and its rapid regression after cessation, support a cause-effect relationship specific to the application of leeches. These findings may be attributed to the local effects

of antithrombotic and antifibrinolytic molecules from leech saliva being distributed extensively to adjacent regions via the venous system. Symptoms resolved without specific intervention, underscoring the self-limiting nature of this complication.

The intervals between leech applications are primarily guided by clinical assessment of the flap's vascular status. Typically, sessions are repeated every 2 to 8 hours, depending on the degree of venous congestion observed. This approach allows for individualized treatment based on the dynamic needs of the patient.^{7,8}

Clinicians should remain vigilant for such complications during leech therapy on the head and neck. Decisions regarding continuation or cessation of therapy should be based on the progression of ecchymosis and edema, which require close monitoring. Close follow-up is essential for detecting and managing complications promptly.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Melikşah Çakır; **Design:** Melikşah Çakır; **Control/Supervision:** Selahattin Genç, Fatih Özdoğan; **Data Collection and/or Processing:** Melikşah Çakır, Muhammet Mustafa Çiftçi; **Analysis and/or Interpretation:** Melikşah Çakır; **Literature Review:** Melikşah Çakır; **Writing the Article:** Melikşah Çakır; **Critical Review:** Melikşah Çakır.

REFERENCES

1. Boissiere F, Gandolfi S, Riot S, Kerfant N, Jenzeri A, Hendriks S, et al. Flap venous congestion and salvage techniques: a systematic literature review. *Plast Reconstr Surg Glob Open*. 2021;9(1):e3327. PMID: 33564571; PMCID: PMC7858245.
2. Adams SL. The medicinal leech. A page from the annelids of internal medicine. *Ann Intern Med*. 1988;109(5):399-405. Erratum in: *Ann Intern Med* 1988;109(9):763. PMID: 3044211.
3. Jin HR, Jeong WJ. Reconstruction of nasal cutaneous defects in Asians. *Auris Nasus Larynx*. 2009;36(5):560-6. PMID: 19269755.
4. Ayhan H, Mollahaliloğlu S. Tıbbi sülük tedavisi: hirudoterapi [Medicinal leech therapy: hirudotherapy]. *Ankara Medical Journal* 2018;18(1):141-8. DOI:10.17098/amj.409057
5. Becanım F, Berktaş SA, Ceylan M. What is need to be known about medicinal leeches and hirudotherapy? *Anadolu Tıbbi Dergisi*. 2022;1(3):23-36. <https://doi.org/10.5505/anadolutd.2022.43043>
6. Sevimli N, Karadag R, Karadag AS. Periorbital ecchymosis and subconjunctival hemorrhage due to leech therapy for headache. *Arq Bras Oftalmol*. 2021;84(2):183-5. PMID: 33787665; PMCID: PMC12289256.
7. Herlin C, Bertheuil N, Bekara F, Boissiere F, Sinna R, Chaput B. Leech therapy in flap salvage: systematic review and practical recommendations. *Ann Chir Plast Esthet*. 2017;62(2):e1-13. PMID: 27427444.
8. Horoz L, Çakmak MF. Leech therapy for the treatment of venous congestion in digital re-plants and revascularizations. *J Orthop Res Rehabil*. 2023;1(1):16-8. DOI: 10.51271/JORR-0004