

white LEDs can be an effective tool for analyzing skin status in certain dermatologic diseases. The results showed that dryness and skin conductance values had significant correlations with some L^* , a^* , and b^* with green LED and with disease severity in atopic dermatitis, rosacea, and xerotic dermatitis. CIELAB values from PPL with green LED correlated more than with white LED with regard to skin characteristics. When properly applied, an analytic technique using PPL images with green LED can be utilized for evaluation of various skin diseases and skin characteristics.

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Periorbital Lipogranuloma after Autologous Fat Injection for Forehead Augmentation

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Dear Editor:

Autologous fat injection (AFI) for facial augmentation has become a popular cosmetic procedure at local plastic surgery clinics. It is considered safe, with no severe adverse

reactions, compared with synthetic filler injection. However, we encountered a patient with a periorbital lipogranuloma, a rare side effect of AFI for forehead augmentation. A 46-year-old woman presented with swelling on the left

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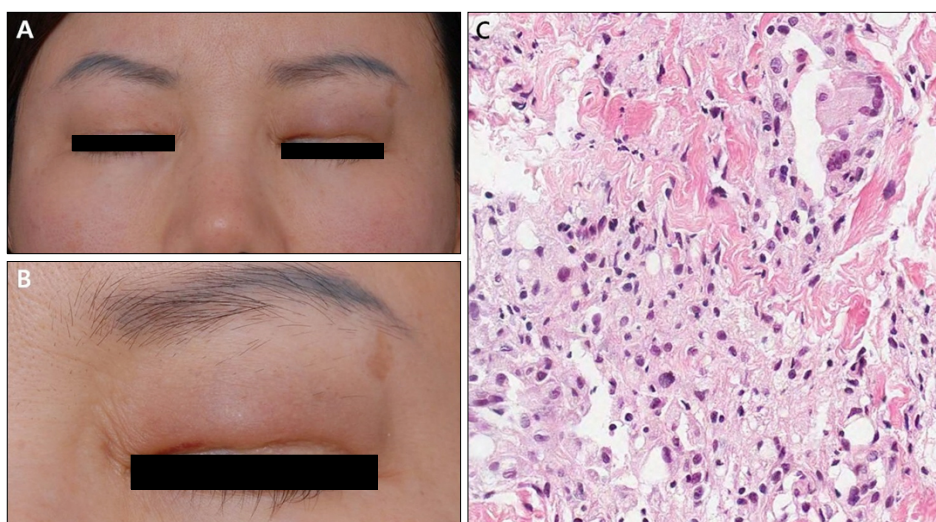


Fig. 1. (A, B) Erythematous swelling on the left upper eyelid. (C) Histopathologically, a foreign body reaction with lipid vacuoles, multinucleated giant cells, and fibrosis is observed at the subcutaneous layer (H&E, ×200).

upper eyelid that was present for 3 weeks. She had received cosmetic AFI on her forehead at local plastic surgery clinics twice, 7 and 4 months previously. She stated that fat was harvested from her thighs during the first injection and stored frozen for the second injection. On physical examination, erythematous swelling with a palpable mass was noted on the left upper eyelid (Fig. 1A, B). Histopathologically, a foreign body reaction with lipid vacuoles, multinucleated giant cells, and fibrosis was observed in the subcutaneous layer (Fig. 1C). The patient was diagnosed with lipogranuloma following AFI for forehead augmentation and referred to the department of plastic surgery for surgical removal.

Autologous fat is an easily accessible, renewable resource that can be harvested from multiple sites with little morbidity. When transferred to recipient site, autologous fat serves as a non-allergenic, well-tolerated, supple implant material¹. Also, it does not have the potential risks of allogeneic fillers. Complications of AFI include visible lump, uneven contour, and hematoma. Rare, serious, and potentially fatal complications, such as skin necrosis, infection, central retinal artery occlusion, and cerebral infarction, have also been reported². Granuloma formation is a well-known complication after synthetic filler injection, with 0.01% ~ 0.1% incidence³. However, it occurs less frequently after AFI and is usually at the injection site. Lipogranuloma on the eyelid following AFI of the forehead has rarely been described.

AFI generally requires repeated injections because of the high rate of volume loss, which is up to 70% after fat transfer⁴. To avoid repeated harvesting, cryopreservation of harvested fat at -20°C is widely performed³. During cryopreservation, ice crystals form inside the adipocytes, causing viability loss. Nonviable adipocytes may illicit a

foreign body reaction and failure of engraftment^{2,3}. In the case series of Sa et al.³, 7 of 9 patients developed lipogranuloma after the second injection using cryopreserved autologous fat.

The characteristic location of the lipogranulomas, the upper eyelid, is ascribed to the musculo-aponeurotic system. The galea is connected to the retro-orbicularis fascia to facilitate mobility of the frontalis muscle in the forehead. Therefore, fat injected into the forehead could move down to the upper eyelid along the galea. This could be exacerbated by gravity, massage, or facial muscle movement^{2,3}.

Conservative treatments, such as cooling with ice, anti-inflammatory drugs, topical and intralesional steroids, diuretics, and antibiotics may have some therapeutic effects. However, in most cases, surgical excision is needed^{2,5}.

To our knowledge, only 13 cases of periorbital lipogranuloma after AFI for forehead augmentation have been reported in ophthalmology and plastic surgery literature^{1-3,5}. None have been reported in the dermatologic literature. Dermatologists should know that, periorbital lipogranuloma can occur after AFI for forehead augmentation.

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Cutaneous Metastasis of Giant Cell-Rich Osteosarcoma

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Dear Editor:

Cutaneous metastasis from osteosarcoma is exceedingly rare, with only 11 cases reported in the literature¹. Giant cell-rich osteosarcoma is a rare variant of osteosarcoma, accounting for 1% ~ 3% of conventional osteosarcomas².

Herein, we present the rare case of a patient with cutaneous metastasis of giant cell-rich osteosarcoma, which closely resembled a giant cell tumor. Owing to the different prognoses and treatment strategies for these tumors, it is important to ensure that the correct differential diag-



Fig. 1. Three 5 to 12-mm, flesh-toned to erythematous, firm nodules on the scalp (arrows).

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