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INJECTABLE PLATELET-RICH FIBRIN: BOON FOR "RECALCITRANT" ORAL ERYTHEMA MULTIFORME: A CASE REPORT

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ABSTRACT Erythema multiforme (EM) is an acute, immune-mediated mucocutaneous disorder characterized by episodic ulcerations predominantly affecting the lips and oral mucosa. Recurrent oral EM poses significant therapeutic challenges because of its unpredictable course and frequent relapses despite conventional management with corticosteroids and antiviral agents. Injectable Platelet-Rich Fibrin (i-PRF), a second-generation autologous platelet concentrate, has recently gained attention due to its regenerative, anti-inflammatory, and immunomodulatory properties mediated through sustained release of growth factors such as platelet-derived growth factor (PDGF), transforming growth factor-beta (TGF-), and vascular endothelial growth factor (VEGF). Its application in recurrent oral EM remains largely unexplored. This case report describes a 23-year-old male who presented with recurrent painful ulceration and haemorrhagic crusting of the lower lip for two months. Clinical examination revealed a solitary shallow ulcer measuring approximately 4 × 2 cm involving the lower labial mucosa, and a provisional diagnosis of erythema multiforme minor was established. Although initial treatment with topical corticosteroids and antiviral therapy resulted in temporary remission, repeated recurrences were observed. Intralesional i-PRF was subsequently administered under aseptic conditions following low-speed centrifugation of autologous venous blood. Marked clinical improvement (50–70%) was noted within one week of the first injection, and complete epithelial healing was achieved after the second administration. No recurrence was observed during a three-month follow-up period. These findings suggest that i-PRF may serve as a safe and promising adjunctive modality in managing recurrent oral erythema multiforme; however, further controlled clinical studies are required to validate its long-term efficacy.

KEYWORDS : Erythema multiforme, Injectable platelet-rich fibrin, Recurrent oral ulceration, Regenerative therapy, Immunomodulation.

INTRODUCTION

Erythema multiforme (EM) is an acute, immune-mediated inflammatory disorder affecting the skin and mucous membranes. Oral involvement commonly manifests as painful ulcerations with hemorrhagic crusting of the lips, leading to significant discomfort and functional impairment. Recurrent episodes are frequently observed and substantially compromise patient comfort and quality of life. Conventional management includes corticosteroids, antihistamines, and antiviral agents; however, recurrence remains common, necessitating the exploration of alternative therapeutic approaches[1].

Blood plays a fundamental role in tissue repair and regeneration. It contains essential components such as platelets, plasma, red blood cells, and white blood cells, each contributing to the healing process[2]. In recent years, platelet concentrates have gained significant attention in regenerative medicine due to their ability to enhance wound healing through growth factor release.

Platelet concentrates are broadly classified into first-generation and second-generation products. Platelet-Rich Plasma (PRP) represents the first-generation concentrate, while Platelet-Rich Fibrin (PRF) is considered a second-generation platelet concentrate. PRF exists in various forms, including pure PRF (P-PRF), leukocyte-rich PRF (L-PRF), Advanced PRF (A-PRF or Choukroun's PRF), Injectable PRF (i-PRF), and Concentrated Growth Factors (CGF)[6]. Compared to PRP, PRF offers several advantages, including the absence of anticoagulants, simplified preparation, and sustained release of growth factors.

PRF provides continuous release of bioactive molecules such as platelet-derived growth factor (PDGF), transforming growth factor-beta (TGF-), and vascular endothelial growth factor (VEGF), thereby promoting angiogenesis, fibroblast proliferation, collagen synthesis, and epithelial regeneration. Injectable PRF (i-PRF), obtained through low-speed centrifugation, contains a higher concentration of leukocytes and demonstrates enhanced biological activity and regenerative potential.

Although i-PRF has been widely used in dentistry for procedures such as sinus lifting[2], alveolar augmentation[3], socket preservation[4], and periodontal surgery[5], its application in recurrent oral erythema multiforme remains largely unexplored. The present case report highlights the successful use of intralesional i-PRF in the management of recurrent oral EM.

Case report

A 23-year-old male patient reported to the Department of Oral Medicine and Radiology, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, with a chief complaint of painful ulceration associated with bleeding over the lower lip for the past one to two months.

History

The patient reported that the lesion initially appeared two months prior as vesicles over the lower lip following an episode of fever. These vesicles subsequently ruptured, resulting in ulceration accompanied by bleeding and crust formation. The ulcer was associated with continuous pain, gradual in onset and progressive in nature, with an intensity of 7–8 on the Visual Analog Scale (VAS). The pain was aching in character, aggravated by spicy food intake and lip movements, and relieved by application of cold water. There was no relevant history of drug intake. The patient denied any significant dental history.

Clinical Examination

The patient was moderately built, and all vital signs were within normal limits. Extraoral examination revealed a solitary, well-defined shallow ulcer measuring approximately 4 × 2 cm, involving almost the entire lower lip (Figure 1A). The

lesion had irregular margins with a sloughed, erythematous base and haemorrhagic crusting. It was tender on palpation, with a soft to firm consistency and no evidence of induration.

Figure 1: To show profile picture and lesion location on lower labial mucosa (A), Profile picture of patient (B).

Facial symmetry was maintained, and no regional lymphadenopathy was detected. Temporomandibular joint examination showed normal range of motion without clicking, popping, or crepitus (Figure 1B). No lesions were observed on the gingiva, tongue, buccal mucosa, palate, extremities, or genital region.

Provisional Diagnosis

Based on clinical history and examination, a provisional diagnosis of erythema multiforme involving the lower lip was established. Differential diagnoses included herpes labialis, erosive lichen planus, and drug-induced ulceration. To confirm the diagnosis, an incisional biopsy was performed. Histopathological examination revealed epithelial degeneration with areas of necrotic keratinocytes, intercellular oedema, and a dense subepithelial inflammatory cell infiltrate predominantly composed of lymphocytes. These features were consistent with erythema multiforme. A complete blood count revealed a haemoglobin level of 9 g/dL.

Initial Management

The patient was prescribed:

- Topical triamcinolone acetonide 0.1% (two to three times daily)
- Levocetirizine 5 mg once daily
- Haematinics once daily

After 15 days, approximately 50–60% improvement was observed (Figure 2A). The same medications were continued for another 15 days, resulting in complete clinical resolution (Figure 2B). The patient was advised maintenance topical therapy and recalled after one month.

However, at the one-month follow-up, the patient presented with recurrence of the lesion similar to the initial presentation. The same regimen was restarted along with acyclovir 400 mg four times daily for one week. Partial relief was noted at subsequent follow-up. Although temporary remission was achieved, another recurrence occurred two months later, presenting as painful ulceration with haemorrhagic crusting over the lower labial mucosa (Figure 2C).

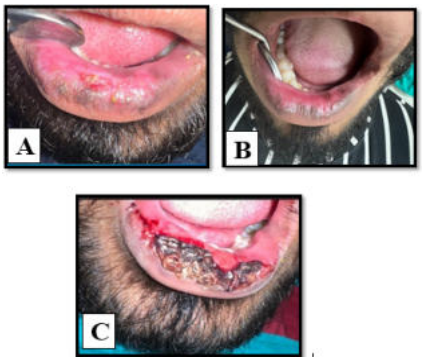

Figure 2: To show reduction (A) and no clinically evident ulceration, encrustations (B)and recurrence of lesion (C).

Injectable Platelet-Rich fibrin (i-PRF) Procedure

Considering the recurrent nature of the lesion, intralesional Injectable Platelet-Rich Fibrin (i-PRF) therapy was planned.

Under aseptic conditions, 20 ml of venous blood was drawn from the antecubital fossa using a tourniquet and collected in two 10 ml plain tubes without anticoagulant. The samples were centrifuged in a Remi centrifuge machine at 700 rpm for 3 minutes (Figure 3A). Following centrifugation, a yellowish fluid layer (i-PRF) was obtained at the top and carefully aspirated using a sterile 5 ml disposable syringe (Figure 3C). Approximately 1 ml of i-PRF was obtained from each 10 ml of whole blood.

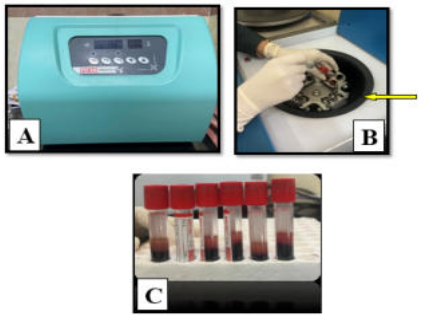

Figure 3: To show Remi machine (A), Preparation of I-PRF(B) and Collection of I-PRF (C)

The i-PRF was injected intralesionally into the affected area (Figure 3B). At the 7-day follow-up, 50–70% clinical improvement was observed. A second intralesional injection was administered. Complete epithelial healing was achieved within 15 days after the second administration (Figure 4).

Figure 4: To show intralesional I-PRF (A), post treatment (B)

The patient was advised to apply a lubricating agent such as petroleum jelly two to three times daily. At three-month follow-up, no ulceration or crusting was observed. The patient continues on monthly recall visits, with no evidence of recurrence to date.

DISCUSSION

Erythema multiforme (EM) is an immune-mediated hypersensitivity reaction commonly triggered by infections, particularly herpes simplex virus, or certain medications. It involves a cell-mediated immune response leading to keratinocyte apoptosis and epithelial damage. In recurrent oral EM, persistent inflammatory activation contributes to repeated ulceration and delayed healing. Conventional therapy with corticosteroids and antiviral agents provides symptomatic relief; however, recurrence remains common and tissue regeneration is not directly enhanced[7,8].

Platelet-Rich Fibrin (PRF) is a second-generation platelet concentrate that releases growth factors such as platelet-derived growth factor (PDGF), transforming growth factor-beta (TGF-), vascular endothelial growth factor (VEGF), and insulin-like growth factor (IGF), thereby promoting angiogenesis and epithelial repair9,10. Injectable PRF (i-PRF), prepared using low-speed centrifugation, has been

shown to possess enhanced regenerative and immunomodulatory properties due to increased leukocyte content and sustained release of bioactive molecules11,12. Its prolonged growth factor release may support tissue healing and modulate inflammatory responses in immune-mediated conditions.

In the present case, intralesional i-PRF resulted in rapid clinical improvement and complete healing without recurrence during follow-up. Although promising, this represents a single clinical case, and larger controlled studies are required to confirm long-term efficacy and establish standardized treatment protocols.

Limitations and Future prospectus of the study

The present study is limited by its single-case design and relatively short follow-up period, which restrict the generalizability of the findings and long-term assessment of recurrence. Although histopathological confirmation was obtained, the absence of a control group limits comparison with conventional treatment modalities.

Future research should include larger sample sizes, randomized controlled trials, and extended follow-up durations to establish the safety, efficacy, and long-term benefits of Injectable Platelet-Rich Fibrin in recurrent oral erythema multiforme. Further investigations exploring its immunomodulatory mechanisms and standardizing preparation protocols and dosage regimens are also warranted.

CONCLUSION

Recurrent oral erythema multiforme is difficult to manage due to frequent relapses. In this case, intralesional Injectable Platelet-Rich Fibrin (i-PRF) produced rapid healing and no recurrence during follow-up. Although promising, further controlled studies are required to confirm its long-term efficacy and establish standardized treatment protocols.

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