



GINGIVAL DEPIGMENTATION FOLLOWED BY CONCENTRATED GROWTH FACTOR DRESSING: A CASE REPORT.

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ABSTRACT:

Excessive gingival pigmentation can significantly impact a person's smile aesthetics. The growing emphasis on a perfect smile has led to a surge in gingival depigmentation procedures. These surgeries aim to improve gingival aesthetics by addressing pigmentation concerns. Periodontal therapy has received a significant boost with the advent of platelet concentrates. This innovative approach promotes rapid wound healing through two key mechanisms: enhanced blood vessel formation (neovascularization) and accelerated remodelling of scar tissue (cicatricle tissue). Compared to platelet-rich fibrin (PRF), concentrated growth factor (CGF) represents a novel autologous platelet concentrate. Its distinct centrifugation process yields a denser fibrin matrix enriched with a higher concentration of growth factors. This case report describes a successful surgical approach to gingival depigmentation by use of a CGF membrane as a periodontal dressing following the removal of pigment.

KEY WORDS: Depigmentation, concentrated growth factor, platelet rich fibrin, esthetics, Physiologic Pigmentation, Melanin, Gingival hyperpigmentation, non-eugenol periodontal dressing

INTRODUCTION

The rise of facial aesthetics and growing patient awareness of oral health have fuelled the demand for cosmetic procedures in periodontics. The harmony of smile is attributable to the shape, colour, and position of the teeth in conjunction with the gingival tissue. Notably, the gingiva is the most common site of pigmentation within the oral cavity, making it a key area of focus for aesthetic treatments.^[1] physiologic mucosal pigmentation, a natural occurrence, varies in intensity and distribution across different ethnicities. This pigmentation appears as scattered or widespread melanin deposits. Creating a captivating smile requires both healthy gums and a pleasing gum appearance. Removing excess gingival pigmentation can significantly contribute to achieving this. Gingival depigmentation a periodontal plastic surgery procedure, addresses excessive gingival

pigmentation through various techniques including scalpel, bur, laser, and chemicals whereby the gingival hyperpigmentation is removed or reduced. This procedure aims to reduce or eliminate the discoloration for improved aesthetics. [2] A longstanding and dependable method for gingival depigmentation involves surgical excision. This technique utilizes a scalpel blade to remove the pigmented epithelium and a thin layer of underlying connective tissue, creating a raw surface for healing.[3] Protecting the exposed connective tissue immediately after surgery is crucial. This minimizes the risk of bleeding and allows for undisturbed healing by preventing irritation to the surface. For many years, periodontal dressings have been the preferred choice for dentists due to their beneficial mechanical properties.[4] Recent advancements have introduced concentrated growth factor (CGF) membranes as a promising alternative to traditional dressings. CGF, a next-generation platelet concentrate, possesses inherent wound healing properties that may accelerate tissue re-epithelialization (regrowth) after surgery.[5] This case report presents the use of concentrated growth factor (CGF) membrane as periodontal bandage after depigmentation.

Case 1:

A 24-year-old female patient came to the Out Patient Department with a concern of aesthetics due to black discolouration of gums in the upper front teeth region. (Fig 1) Her oral examination revealed that she had Generalized supragingival deposits and Subgingival calculus, Mild stains were present and Hyperpigmented gingiva wrt upper arch. The patient requested for any kind of esthetic treatment which could make her “black” coloured gums look better.



(a)



(b)



(c)



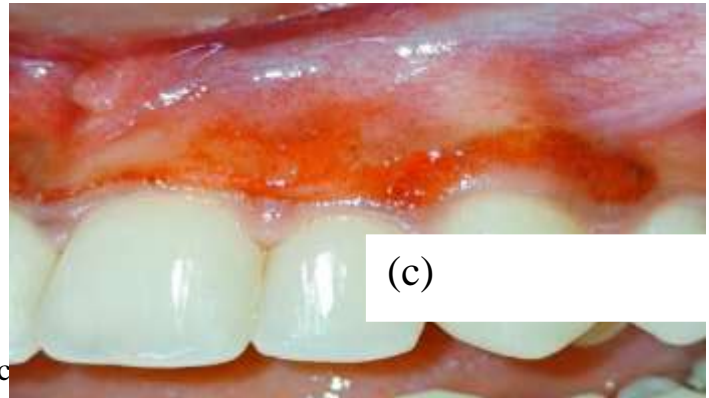
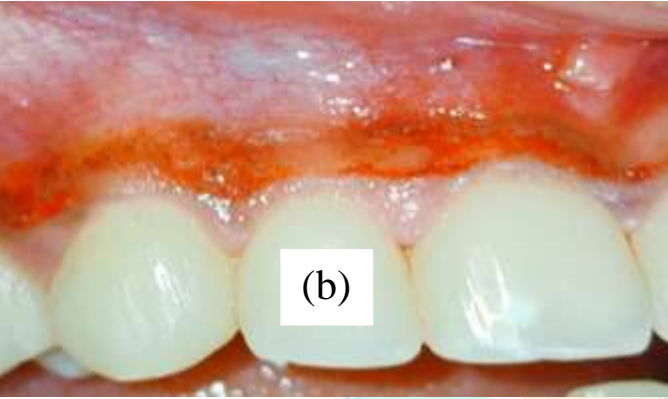
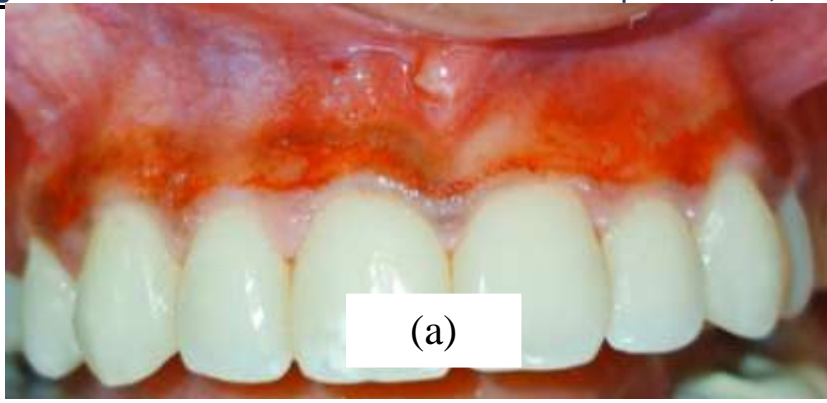
(d)

Fig 1: Pre-operative (a) full mouth (b) labial aspect (c)(d) lateral aspect

The diagnosis was made as Chronic generalised gingivitis with gingival hyperpigmentation (DOPI Score- 2 using the Dummett Index)

A treatment plan was designed which included phase I therapy which consisted of, scaling and root planning (SRP) and oral hygiene instructions.

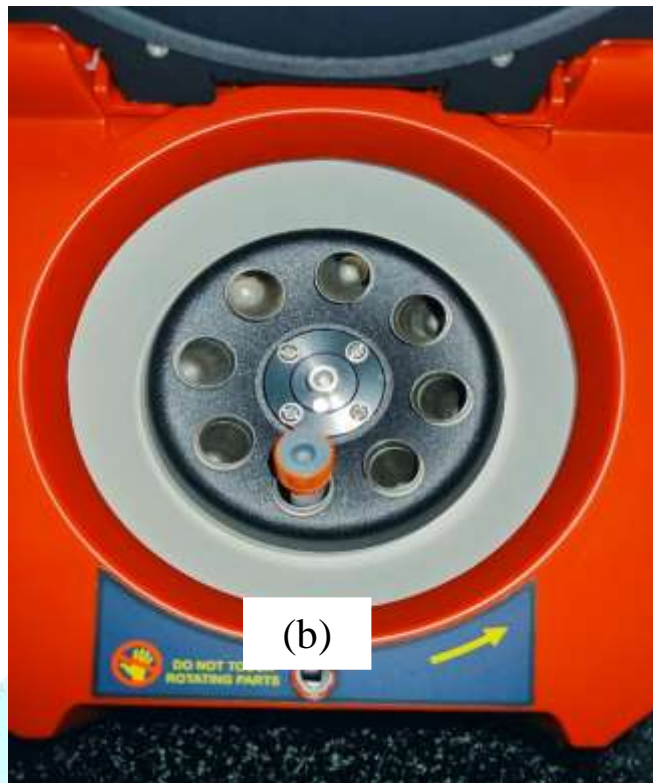
Following the phase I therapy a phase II therapy was carried out which included a scalpel surgery to perform the depigmentation (fig 2) followed by CGF Bandage dressing.



10 ml of blood was phlebotomised from the antecubital vein of the patient and transferred to silica-coated plastic vacutainers without anticoagulants. Centrifugation was done for 30 s acceleration, 2 min at 2700 rpm, 4 min at 2,400 rpm, 4 min at 2700 rpm, 3 min at 3000 rpm, and 36 s deceleration to prepare CGF.(fig 3)



(a)



(c)



(d)

Fig 3 : preparation of concentrated growth factor (a) 10 ml of blood (b) Centrifugation to prepare CGF (c)(d) preparation of CGF membrane

Following depigmentation, the treated gingival area was secured with a CGF membrane bandage (fig 4). This membrane, stabilized with vicryl 4-0 sutures and covered with a tin foil which served as a barrier (fig 5).



(a)

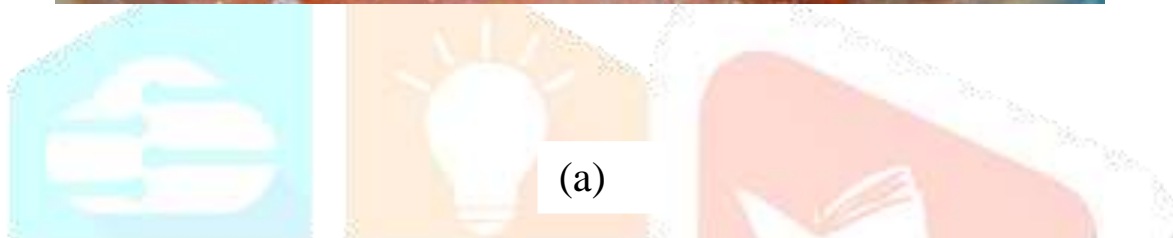


(b)



(c)

Fig 4: placement of CGF Membrane (a) Labial Aspect (b)(c) Lateral aspect.



(b)

Fig 5: stabilization of concentrated growth factor bandage using (a) vicryl 4-0 (b) Tin foil

analgesics was prescribed to manage any discomfort post-surgery. The patient was instructed to use a chlorhexidine mouth rinse twice daily for one week.

14 days after surgery, the patient returned for a follow-up appointment. The examination revealed normal healing progress, and the patient did not experience any discomfort. (fig 6)



Fig 6: post operative 14 Days

The patient was instructed to continue using the chlorhexidine mouthwash for an additional week. After two months, a follow-up examination revealed complete re-epithelialization (tissue regrowth) and satisfactory healing (fig 7). Patient had no complaints of postoperative pain or sensitivity.



Fig 7: Post operative 60 days

DISCUSSION:

While not medically concerning, gingival hyperpigmentation can significantly impact a person's smile aesthetics.[6] variations in oral mucosal pigmentation exist not only between races but also among individuals of the same race and even within different areas of the same mouth. This physiological pigmentation likely has a genetic basis. However, as suggested by Dummet (1960), mechanical, chemical, and physical stimulation may also play a role in the degree of pigmentation^[2]. To address this, gingival depigmentation procedures remove the pigmented epithelium, exposing the underlying connective tissue.^[6] Surgical depigmentation, also known as surgical stripping or split-thickness epithelial excision, involves the direct removal of the pigmented gingival epithelium using a scalpel. This leaves the underlying connective tissue exposed, promoting healing through a natural process called secondary intention.^[7] It is a technique requiring minimal time and equipment, making it cost-effective. Additionally, some studies suggest potentially faster healing and lesser recurrence rate compared to other methods but patients may experience post-surgical discomfort, including pain and bleeding. Additionally a periodontal dressing is typically required.^[8]

For decades, periodontal dressings have served as the primary method for protecting exposed connective tissue (lamina propria) after surgery^[9]. However, Concentrated growth factors (CGF) presents a promising alternative. Studies suggest CGF delivers a concentrated dose of growth factors (GFs) directly to the surgical site, potentially accelerating wound healing, tissue maturation, and promoting better sealing and blood clotting (haemostasis)^[10]. CGF boasts a slow degradation rate. This allows for the gradual remodelling of the solid fibrin gel, providing sustained support for healing. Dohan et al. described CGF's unique structure as a complex three-dimensional network, enriched with platelets, leukocytes, and growth factors^[11]. This case reports several potential benefits associated with CGF membranes as a surgical site covering. Patients may experience reduced post-surgical pain and inflammation compared to traditional methods. This could be attributed to the presence of growth factors within the CGF, such as transforming growth factor- β 1 (TGF- β 1) and vascular endothelial growth factor (VEGF). These factors may contribute to enhanced cellular proliferation, improved matrix remodelling, and increased blood vessel formation (angiogenesis), potentially promoting faster and more comfortable healing^[12].

Therefore, the use of CGF membranes as a bandage following gingival depigmentation demonstrated promising results. The CGF membrane potentially protected the exposed connective tissue, leading to improved patient comfort and potentially faster healing.

CONCLUSION:

This case report suggests that CGF membranes as a bandage after gingival depigmentation may offer a valuable approach. Compared to traditional periodontal dressings, CGF membranes might provide better protection for the exposed tissue, potentially leading to improved patient comfort and faster healing. However, further controlled studies with larger patient groups are necessary to confirm these findings and establish CGF membranes as a standard practice.

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