Gingival Recession in Severe Burns and Its Management

ªWesam Homouda , ᵇMohammed Amr Hamdy Salem
ªDepartment of plastic Surgery, Benha Teaching hospital, Benha, Egypt
ᵇDepartment of oral medicine and periodentology, Benha Teaching hospital, Benha, Egypt
Corresponding Author: WesamHomouda

Abstract

Background: Gingival recession following severe burns remains a significant challenge.

Objectives: This article describes the experience in incidence and management of gingival recession following severe burns with coronally advanced flap with platelet rich fibrin.

Patient and method: Thirty patients aged from 20 to 40 years divided into two groups 1st with post burn gingival recession had coronally advanced flap with platelet rich fibrin 2ⁿᵈ was control group. All the patients were operated under local anesthesia with sedation. The procedure was bilateral in three patients. There were eight females and seven males. The most common cause of burn was flame burns in twelve patients while three patients sustained burns to the face following assault with acid.

Results: Pre-operative mean measurement of gingival recession was 4 mm and post-operative mean healing time was one month. Follow-up was 3, 6, 9, 12 months. Late follow-up visits revealed that the improvement remained satisfactory.

Conclusion: The technique remains useful in management of gingival recession.Affection of platelets by burn affects efficacy of PRF. The operation is easily performed and it is recommended for immediate and delayed reconstruction. The functional and aesthetic results are generally well-acceptable.

KEYWORDS:severeburn, gingival recession, coronally advancedflap, platelet rich fibrin.

INTRODUCTION:

Burns forms a problem as ancient as time man attempted to use fire. Burn causes great suffering to humankind physically, socially as well as economically and remains a major health problem throughout the world. Thermal burns caused by application of heat to the body. The resulting burn injury degree depends on conductivity of tissue involved, intensity and duration of this applied heat . About 74% are domestic burns and 79% of all domestic burns involve women and children. [1, 2]

Thermal injuries are not only a physical heat phenomenon, but it also starts an inflammatory reaction. Leukocyte, platelets and mast cells are key cells in post burn inflammatory sequence. Together with endothelial cells, all these cell types represent

the prime target site responsible for the progression, mediation, and resolution of inflammatory process. [3-5]

Thrombocytopenia is caused by a number of factors including infection and sepsis, a normal platelet count higher in stable burn patients with no evidence of sepsis. The most important consideration is the temporary relationship of these physiologic events. [6-8]

Platelet cells, or thrombocytes, play an additional role in hemostasis. After a burn injury, the platelet count drops to nadir in 2-5 days and then rises to the top within 10-18 days. (9)

The popularity of platelet gel rose in the late 1990s after the publication (1998) of a paper on the use of platelet-rich plasma (PRP) bone rejuvenation in dental care. [10]

This paper was briefly preceded by the first published report (1997) regarding the use of platelet gel in maxillofacial surgery. [11] In addition to dental care, one of the most interesting areas is the use of platelet growth and chemotactic wound healing properties. Because diabetes is one of the most serious areas of healing of severe ulcers, diabetic ulcers are those lesions where the features found in platelets where the challenge began in 1998. Where did this idea come from? (12, 13)

Gingival recession and root exposure caused by migration of gingival margin apical to cementoenamel junction (CEJ). It can be localized or generalized and can be associated with one or more teeth. (14)

Epidemiological studies show that more than 50% of human subjects have one or more sites with an economic density of at least 1 mm, the most affected buccal sites. Higher rates of recession are found in men than in women. (15)

Economic decline in the buccal area is common in people with good oral hygiene (16, 17, and 18) and with poor oral hygiene may affect some teeth. (19) The deterioration of the limbs in the area of the frontal tooth tongue showed a strong correlation with the presence of supragingival and subgingival calculus. (20)

The etiology of this condition is multifactorial and may include inflammation caused by plaque, calculus and iatrogenic restorative factors, trauma from improper oral hygiene practices, tooth decay, high frenum attachment, improper periodontal treatment procedures , and uncontrolled movement of orthodontics. (21, 22)Gingival's decline is also a common consequence of the therapies introduced to treat periodontal disease.

Separation is designed to make it easier to understand the large number of objects and information involved in complex systems. [23]

Several sections have been proposed in the literature to facilitate the diagnosis of gingival recessions. [23]

One of the first stages to be proposed by Sullivan and Atkins in 1968.(24) The basis of this classification system was the depth and breadth of the feature. He proposed the following four categories: [25]

1. Depth
2. Shallow width
3. Depth is low
4. Slightly small.

Important Assessment

This section though simple is subject to the open definition of the tester and the variability of the inter examiner and therefore cannot be repeated. Mlinek et al. (1973) (26)

• Shallow wire: Depression <3 mm

• Depth: Depth> 3 mm.

This adjustment minimizes the corresponding variance, but does not specify a global sign of horizontal measurement as variable measurements may occur at different distances. Liu and Solt (1980) distinguish side muscle degeneration

1. Visual: Measured from CEJ to soft tissue genes.

2. Hidden: Loss of internal packet attachment with apical to tissue margin.

This division is not knowledgeable and does not distinguish significant economic downturns, focusing more on attachment losses than on downturns. [27] This distinction is neither classify visible recession or informative, the focus being more on attachment loss than visible recession.

Bengue et al. (1983) categorize the recession according to prognosis of coverage:[27]

1. Type - bad prediction

2. Type V - accurate prediction

3. I write - a good prediction.

Miller proposed a segregation plan in 1985 and is probably still the most widely used system to define gingival recession. He basically supported his breakdown of the economic crisis in the following areas:

A. The severity of gingival recession

B. Level of loss of hard and soft tissue in the areas between the teeth

surrounding gingival economic impairment. [28-29]Its importance is the fact that it is useful in predicting the final amount of root coverage by following the free gingival grafting process. [23]

The four types of recession are categorized as follows Figure 1: [23]

• Class I: Degeneration of peripheral tissues, which does not extend to the mucogingival junction (MGJ). There is no periodontal loss (bone or soft tissue) in the area between the teeth, and 100% root coverage can be expected.

• Stage II: Degeneration of the lateral, lateral or beyond MGJ tissues. There is no periodontal loss (bone or soft tissue) in the area between the teeth, and 100% root coverage can be expected.

• Class III: Degeneration of, lateral, or beyond MGJ tissue. Loss of bone or soft tissue in the area between the teeth is present or there is an abnormality of the teeth, which prevents 100% root attempts. The spread of the roots in part is unexpected. The amount of root coverage can be determined surgically using a periodontal probe

• Stage IV: Degeneration of the lateral, lateral or beyond MGJ tissues. Loss of bone or soft tissue in the area between the teeth and / or tooth decay is so bad that root coverage is not expected.

Although Miller's classification has been widely used, there are some limitations that need to be considered: [25]

1. Location indicator of segregation by MGJ. The difficulty of identifying MGJ creates difficulty in distinguishing between Class I and II. There is no mention of the presence of keratinized tissue

2. In Miller's Class III and IV recession, bone between the teeth or the loss of soft tissue is an important mechanism to differentiate the recession. The number and type of bone loss has not been specified. The reference to Miller's Class III and IV does not accurately define the level of papilla between the teeth and the amount of loss. A clear picture of the complexity of the recession is hard to come by

3. The Class III and IV segments of Miller's segregation revealed that peripheral tissue degeneration extends beyond or beyond MGJ with the loss of bone between the teeth or apical soft tissue in CEJ. Conditions, with moderate bone loss and irreversible

economic degradation in MGJ cannot be classified as Class I due to moderate bone or Class III because the gingival margin is not expandable to MGJ.

4. The differences between classes III and IV are based on the location of the gingival margin of the two adjacent teeth. Class III and Class IV can be seen if there are nearby teeth; however, if any nearby tooth is lost, there is no point of reference and it is not possible to file this case in Class III or Class IV.

5. Miller's separation does not specify the involvement of the face (F) or tongue (L) of the lateral tissues.

6. Decay of the inner papilla of the teeth alone cannot be classified according to Miller's categories. Requires the use of an additional separation system

7. The classification of the recession is a positive aspect is another area of concern. The complexity of Miller's procedure in the palatal portion of the maxillary arch can be assumed that there is no MGJ in the palatal aspect.

8. Miller's separation measures the prediction of root coverage following the connection process. Miller said 100% coverage can be expected in Class I and II economic downturn, partial root coverage in Class III, and no root insertion in Class IV.

Pini‑ Prato (2011) stated that waiting for 100% root implantation does not mean it will happen. Percentage of roots from 9% to 90% was reported by different authors in the Class I and II recession using different strategies. The outcome of treatment may depend on other predictive factors and classification in order to predict the effects of root findings in Classes I and II are incorrect. Smith (1990) proposes a downturn indicator consisting of two digit divides. The first digit means horizontal and the second digit means the vertical portion of the recession site. [23]

Horizontal Level of Recession

• score 0 - No clinical evidence of root exposure

• score 1 - No clinical exposure to root exposure and independent detection of dental sensitivity in response to 1 airway rupture has been reported, and / or there is a visible CEJ exposure of up to 10% of the median scale. to mid-distal range

• score 2 - Horizontal exposure of CEJs by more than 10% but not more than 25% of average distance to medium

• score 3 - Exposure to CEJ exposure of more than 25% of medium to medium grade but not more than 50%

• score 4 - CEJ exposure of more than 50% medium to middle grade but not more than 75%

• 5 points - CEJ exposure of more than 75% of the medial to mid-distal range is 100%.

Vertical Range of recession

• score 0 - No clinical evidence of root exposure

• score 1 - No clinical exposure to root exposure and independent sensitivity of dental sensitivity is reported and / or there is a clinical manifestation of CEJ not exceeding 1 mm by standing directly at the edges of the gingival.

• School 2–8 - 2–8 mm root exposure stretches straight from CEJ to the root of the soft tissue defect

• score9 - Root exposure of more than 8 mm from CEJ to soft tissue root

• score * - A star appears near the second digit whenever the vertical part of the soft tissue enters the MGJ or passes beyond it into the alveolar membrane; the absence of a star means the absence of MGJ involvement in the target area or its involvement in soft tissue disease. [26]

The author has suggested that in the case of a broad horizontal section another horizontal section may be distributed at a distance between the CEJ and the element base, which is not clearly defined. In addition, different amounts can be assigned to roots with multiple roots, making them very difficult. It can lead to over-thinking of the situation as it uses thoughtful awareness of empathy. It is also difficult to see the medial and distal medial areas, where there is a papilla between the fixed teeth. Nordland WP and Tarnow DP in 1998 as quoted in Glover ME [30] developed a system for differentiating papillary length loss. The system uses three locally identified signals: the area of contact between the teeth, the apical facial width of the CEJ, and the interproximal coronal extent of the CEJ. General: The inner papilla of the tooth fills the adhesive space to a low point / point of contact between the teeth.

• Class I: The papilla tip between the teeth is between the contact area between the teeth and the most coronal level of the interproximal CEJ

• Class II: The interdental papilla title is dormant or apical in the interproximal CEJ but coronal according to the facial level of CEJ

• Class III: The head of the papilla lies at an apical level with the CEJ of the face. Mahajan proposed a modified classification for gingival decline in 2010 namely: [28]

• Class I: Gingival's economic downturn should not pass to MGJ

• Class II: Gingival's economic impact extends to MGJ / beyond

• Class III: Gingival recession defect with loss of bone or soft tissue in the area between the teeth to the cervix at 1/3 of the root and / or dental implant.

• Class IV: Gingival recession defect with severe loss of bone or soft tissue in the area between the teeth larger than 1/3 of the root canal and / or severe tooth decay. Prediction as the division of Mahajan: [28]

• Best: Class I and Class II with a thick gingival profile

• Good: Class I and Class II with a small gingival profile

• Fair: Class III with a thick gingival profile

• Poor: Class III and Class IV with a low gingival profile.

This modification still does not cover all clinical conditions. For example, a gingival tooth that does not reach MGJ but has the loss of soft and hard tissue between the teeth cannot be placed in Class I or Class III as there is no mention of MGJ involvement in Class II.

Cairo et al. (2011) [31] differentiated gingival degeneration based on CAL testing at both buccal and interproximal sites.

• Type of Recession 1: Gingival recession without loss of attachment within interproximal. The Interproximal CEJ clinically was not detected in both the mesial and distal teeth of the tooth.

• Type 2 Economy: Gingival economic downturn associated with the loss of medium attachment. The value of the medium attachment loss (measured from the central CEJ to the interproximal packet) was less than or equal to the loss of the buccal attachment (measured from the buccal CEJ to the buccal packet depth)

• Type 3 Economic Deterioration: Gingival Deterioration related to the loss of moderate attachment. The amount of internal interproximal attachment loss (measured from interproximal CEJ packet depth) was higher than buccal attachment loss (measured from buccal CEJ to buccal packet depth). [32]

This separation provides a simplified way to differentiate the gingival recession and emphasizes the role of a close attachment level, one of the most important predictive factors associated with a site. However, it does not consider the remaining range of gingiva attached, the relationship of gingival margin, and MGJ, which plays a very

important role and regulates the choice of treatment process; and dental damage that greatly affects the outcome of treatment.

Rotundo et al. (2011) [33] Gingival recession has been considered to be both soft and hard dental tissue. In this classification, direct taxonomic variables were considered, and in particular, the amount of keratinized tissue (KT = 2 mm); presence / absence of non-carious cervical ulcer (NCCL), with invisible CEJ; and the presence / absence of moderate attachment losses. Considering these variables, the following test method is suggested:

A. KT ≥2 mm
• NCCL - none
• Medium attachment loss - none.
B. KT <2 mm
• NCCL - available
• Interproximal attachment loss - available.

As a result, the following classes may be identified among the people:
• KT ≥2 mm - no NCCL - no loss of medium attachment (AAA)
• KT ≥2 mm - NCCL - no loss of interproximal (ABA) attachment
• KT ≥2 mm - no NCCL - interproximal attachment loss (AAB)
• KT ≥2 mm - NCCL - interproximal attachment loss (ABB)
• KT <2 mm - no NCCL - no loss of interproximal attachment (BAA)
• KT <2 mm - NCCL - no loss of interproximal attachment (BBA)
• KT <2 mm - no NCCL - interproximal attachment loss (BAB)
• KT <2 mm - NCCL - interproximal attachment loss (BBB). [33]

A new separation plan was proposed by Kumar and Masamatti in 2013 [25] based on a combination of certain conditions for Miller's separation and specific aspects of the Nordland and Tarnow divisions. It can be used on large facial areas as well as facial and tongue areas of the mandibular teeth. Deterioration of interdental papilla can also be classified according to this new category.

Class I suffers from internal tissue degeneration without loss of bone marrow or soft tissue. Classes II and III deal with bone loss between the teeth / soft tissues / without degeneration of lateral tissues.[25]

• Class I: No bone loss between teeth or soft tissues. This is divided into two categories:
oClass IA: Gingival margin in the F / L apical element at CEJ, but coronal to MGJ with gingiva attached attached between the lateral gingiva and MGJ [Figure 2a]
oClass IB: The Gingival margin on the F / L factor lies in MGJ or apical and the absence of a gingiva is attached between the lateral gingiva and MGJ [Figure 2b]. Any of these clauses may be F or L or both (F and L).

• Class II: The title of the papilla between the teeth is found between the contact area between the teeth and the CEJ midbucally / midlingally level. Moderate bone loss is seen on a radiograph. This is divided into three categories:
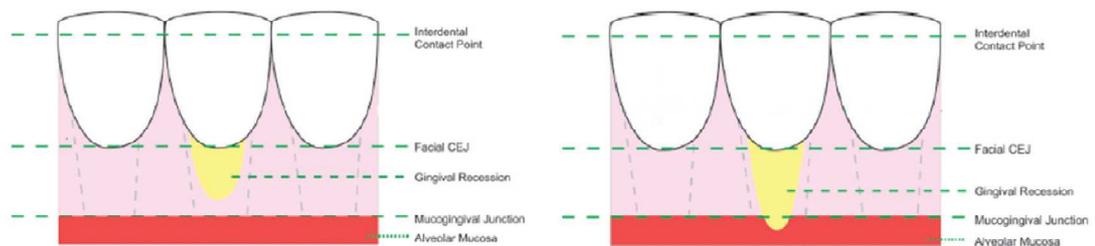oClassIIA: No subcutaneous degeneration of the F / L factor [Figure 3a]
o Phase IIB: Gingival margin in the F / L apical element at CEJ but coronal in the MGJ with attached gingiva located between the lateral gingiva and MGJ [Figure 3b]
o Class IIC: The Gingival margin on the F / L element lies in MGJ or apical and the absence of a gingiva is attached between the lateral gingiva and MGJ. Some of these clauses may be F or L or both (F and L) [Figure 3c].

• Class III: The topic of papilla between the teeth is found at the apical or at the level of CEJ midbucally / midlingally. Moderate bone loss is visible on a radiograph. This is divided into two categories:
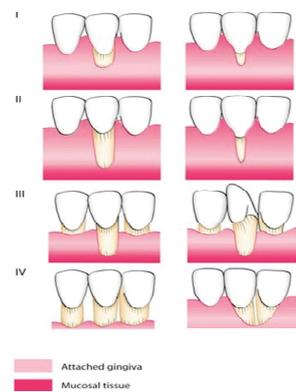
Figure 1: Millers classification. (Reprinted with permission from Kumar A,Masamatti S.[25] Copyright 2013 Journal of Indian Society of Periodontology).

Figure 2: AshishKumars' classification: (a) Schematic representation of Class IA. (b) Schematic representation of Class IB. (Reprinted with permission from Kumar A, Masamatti S.[25] Copyright 2013 Journal of Indian Society of Periodontology).
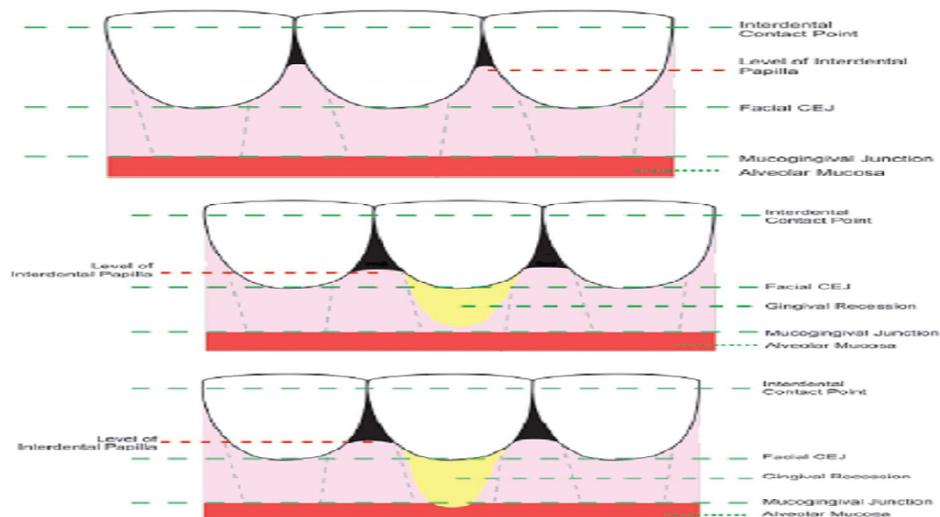
Figure 3: (a) Schematic representation of Class IIA. (b) Schematic representation of Class IIB. (c) Schematic representation of Class IIC. (Reprinted with permission from Kumar A, Masamatti S.[25] Copyright 2013 Journal of Indian Society of Periodontology).

o Class IIIA: Gingival margin in the F / L apical element at CEJ, but coronal in the MGJ with attached gingiva located between the lateral gingiva and MGJ [Figure 4a]
o Class IIIB: The Gingival margin on the F / L element lies in the MGJ or apical and the absence of a gingiva is attached between the lateral gingiva and the MGJ. Some of these clauses may be F or L or both (F and L) [Figure 4b].

Separation of the Palatal Gingival Recession

The position of the papilla between the teeth remains the basis for distinguishing gingival degeneration from the paltal aspect. The process of classification has been modified to compensate for the absence of MGJ. [25]

Palatal recession‑I

There is no loss of bone between the teeth or soft tissues. This is divided into two categories:

• Palatal recession‑IA (PR-IA): Degeneration of peripheral tissues ≤3 mm from CEJ [Figure 5a]

• PR-IB: Peripheral tissue degeneration> 3 mm from CEJ [Figure 5b].
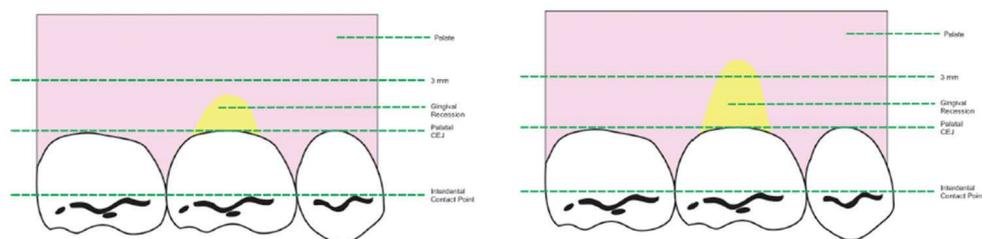
Palatal recession‑II

The papilla point between the teeth is located between the contact area between the teeth and the CEJ level midpalatally. Moderate bone loss is visible on a radiograph. This is divided into two categories: [25]

• PR‑IIA: Degeneration of peripheral tissues ≤3 mm from CEJ

[Picture on page 6a]

Figure 4: (a) Schematic representation of Class IIIA. (b) Schematic representation of Class IIIB. Palatal gingival recession.(Reprinted with permission from Kumar A, Masamatti S.(25) Copyright 2013 Journal of Indian Society of Periodontology).

Figure 5: Palatal gingival recession: (a) Schematic representation of palatal recessions (palatal recession‑IA). (b) Schematic representation of palatalrecession‑IB. (Reprinted with permission from Kumar A, Masamatti S.(25) Copyright 2013 Journal of Indian Society of Periodontology).

PR-IIB: Decreased intensity of adjacent tissue> 3 mm from CEJ [Figure 6b].

Palatal recession‑III

The tip of the interdental papilla is found at or below the level of the CEJ in the middle palatally. Moderate bone loss is visible on a radiograph. This is divided into two categories: [25]

• PR‑IIIA: Degeneration of peripheral tissues ≤3 mm from CEJ [Figure 7a]

• PR‑IIIB: Degeneration of peripheral tissues> 3 mm from CEJ [Figure 7b].

Prashant et al. (2014) [34] proposed a classification that describes the dental characteristics that are most important in diagnosing areas of gingival stiffness that may be helpful in choosing a specific treatment option.

Tests were performed on both the front and rear view using a × 4 magnifying lens, a periodontal probe (PCP UNC 15), and a dental examiner. Two variables are considered:

CEJ and cervical abnormalities. Considering the presence of CEJ in the buccal area, two classes were identified:

Class A, CEJ identified throughout the buccal area once

Class B, CEJ invisible in whole or in part. Considering the presence of cervical abnormalities (step), measured by the periodontal probe perpendicular to the long axis of the tooth point in the deepest point of abrasion, two classes were identified:

Class (+), presence of cervical step (> 0.5 mm) involving root or crown and root and Section (-), absence of cervical step. Therefore, job segregation identifies four different conditions such as:

Prashant B et al CEJ classification of step descriptions

Class A - CEJ visible, without step

Class A + CEJ is visible, with action

Class B - CEJ is not visible, except for action

Class B + CEJ is invisible, with action

CEJ: Cementoenamel junction

Coronally advanced flap

This straightforward procedure gives a good aesthetic effect, but is only shown if there is sufficient sulcular depth. [35] Pedicle flap surgery techniques (advanced or rotating flaps) are recommended when there is enough keratinized tissue near the deterioration. In this surgical procedure, the soft tissue used to cover the root canal is similar to that of the original tooth with a deteriorating tooth and thus the aesthetic effect is more satisfying. Two straight cuts are made to extend beyond the mucogingival junction and a full thick flap is raised. The flap is lowered by dissection to loosen the periosteum. The flap is repositioned in the coronal area and securely fastened to the area. In addition, postoperative studies are less problematic as other surgeries on donor sites do not involve. [36]

The coronally advanced flap is often used to treat the economic downturns of Miller Class I and II. The positive effects of root coverage, good color compatibility with nearby soft tissues, and recovery of the original morphology of the gingival margin can be achieved using this surgical procedure. [37] In addition, the corolly advanced flap is very effective in treating multiple dementia with obvious patient benefits in terms of aesthetics and ailments. [38] A few factors that may contribute to the end result of a corolly advanced flap; such as the length of the papilla between the teeth, the amount of keratinized gingiva, the presence of gingival cracks stretching in the alveolar mucosa, deep cervical aging, attachment to the frenum, and vestibular depth. [39]

The Semilunar Coronally advanced Flep process was first proposed by Tarnow in 1986. This procedure does not cause disruption of the nearby papilla, no vestibule contraction, and no flap grip. [40] Adequate gingival thickness allowing for flap separation thickness is required

to prevent the emergence of alveolar bones. [41]

Platelet-rich fibrin (PRF) has recently been proposed as an aid to stimulating strong tissue regeneration in the field of oral surgery. [42] It is a simple, natural and inexpensive method of leukocyte production and PRF concentration. [43] PRF is a non-invasive fibrin biomaterial and is not enhanced by fibrin glue from the platelet-rich plasma family (PRP). [44] PRF produces high levels of growth factors such as altering factor B1 (TGFB-1), platelet-derived growth factor AB (PDGF-AB), vascular endothelial growth factor (VEGF), and -matrix glycoprotein-like thrombospondin- 1) within at least 7 days in vitro. [45] Thus this biomaterial presents a specific biology that offers several benefits that include promoting wound healing, bone growth and maturation, graft strengthening, wound closure and hemostasis, and improving connective tissue management properties. PRF can also be used as a membrane. Clinical trials suggest that a combination of bone grafting and growth factors contained in PRP and PRF may be appropriate to improve bone density. [46, 47]

Aim of the work:

to evaluate coronaliy advanced flap with platelet rich fibrin in management of gingival gingival recession in burned patients.

Patients:

In the current study thirty patients were included aged between 20-40y 15 with severe burn and gingival recession miller class I or II 15 with gingival recession miller class I or II.This study was conducted at the Plastic, Reconstructive and Burn Surgical Center and Department of oral medicine and periodontologyBenha Teaching Hospital,atjuliard center for plastic surgery, and dental center for oral medicine.

Inclusion Criteria:

1.severe burn of 20-30%TBSA with miller class I or II.gingival recession.
2. Buccal gingival recession > 2mm
3.Patient's cooperation, motivation and good oral hygiene.
4. No Acute Infection is present.
5. No root surface restorations or root caries.
6.age between 20-40y.

Exclusion Criteria:

1.burn percentage less than 20% TBSA or more 40% TBSA.
2.classIII, IV gingival recession gingival recession.
3. Poor oral hygiene, traumatic occlusion, smokers and presence of parafunctional habits.
4. Presence of acute and chronic systemic disorders such as uncontrolled diabetes, hemorrhagic disorders and other conditions that can affect wound healing responses.
5. Cases with associated autoimmune diseases particularly autoimmune thyroiditis, diabetes mellitus or pernicious anemia.
6.age below 20y or above 40y
7.Previous periodontal surgery in the proposed surgical area
8.Smokers.
9.Pregnant female

Methods:

Preparatory stage

A thorough medical and dental history were obtained from each patient. Patients received proper oral hygiene instructions before entering the study to eliminate possible habits related to the etiology of the recession, such as toothbrush trauma. Initial therapy was performed consisting of full-mouth supra and subgingival scaling, root planing and polishing. Patients were reevaluated after 3 weeks.
Patients were subjected to the following:
a) History taking
b) Physical examination
c) Explanation of the procedure
d) Baseline investigations including complete blood count and coagulation profile, HIV, Hepatitis B and C virus serology.
e) Baseline and serial post-treatment photography.
Informed consent was taken from all cases included in the study that was approved by the Research Ethics Committee, GOTHI.
The thirty patients of the study were subdivided equally into two groups:
The first group(15 patients) with gingival recession only.
The second group (15 patients) with severe burn and gingival recession
Both groups subjected to:

Presurgical preparation

Root surfaces are mechanically prepared prior to any mucogingival procedure to allow biological attachment of the grafted tissue to it. The root surface is thoroughly debrided with ultrasonic or hand instruments and irrigated with sterile saline. Mechanical modification of the root surface as well as root conditioning procedures have been used prior to the surgical root coverage techniques to achieve improved results . Root surface modification using agents suchas citric acid or tetracycline hydrochloride has been advocated in an effort to promote the healing response following root surface coverage, although clinical studies have failed to show any improvement in root surface coverage when using such agents.

Preoperative therapy

All patients were subjected to proper oral hygiene instructions, scaling and root planning for all teeth and periodontal treatment if needed to provide an oral environment more favorable to wound healing

The following parameters were recorded for each patient:

I- Clinical parameters:-

1 - Probing pocket depth (PPD).

The probing pocket depth was measured from the free gingival margin till the end of the pocket on the mesial, buccal, distal and lingual surfaces of each tooth in the arch using standard William's graduated periodontal probe with the long axis parallel to the examined tooth and a force of nearly 25g.

2 - Clinical attachment level (CAL).

The attachment level was measured from the cemento-enamel junction till the base of the sulcus using the standard William's graduated periodontal probe with the same principals of detecting probing probe.

3- Gingival recession height measurement (RH):

It is the distance in millimeters between the cemento-enamel junction (CEJ) and the gingival margin.

4 - Gingival Index (GI) :

The degree of gingival inflammation is assessed by means of the gingival index of Loe and Silness, 1967.

The scores from 0-3 were recorded as follows:

0: Normal gingival

1: Mild inflammation: slight change in color and slight edema.

No bleeding on probing.

2: Moderate inflammation: redness, edema, glazing and bleeding on probing.

3: Severe inflammation: marked redness, edema and laceration with tendency toward spontaneous bleeding.

5. Thickness of keratinized tissue:

Assessed by standard William's graduated periodontal probe.

Surgical procedure:

Each patient was asked to rinse her mouth with 0.2% chlorhexidine solution. All the surgical procedures were performed under local anesthesia injection (mepivacaine[®] HCI 2% 1:200000), and strict aseptic conditions. two vertical releasing Intrasulcular incisions mesial and the distal line angles of the adjacent teeth, distant from the recession site, providing a broader flapsSulcular incisions were made through the bottom of the crevice uniting the two releasing incisions to raise full thickness mucoperiosteal flap and the teeth were carefully removed by a gentle extraction using forceps in order to protect and to preserve the alveolar bone. Sockets were curetted and irrigated with saline to remove granulation tissue and residual periodontal ligament (Fig.3). Drilling was performed at 600-800 rpm at the accurate direction guided by the surgical drill guide.Sequential drilling with copious irrigation was carried out till the desired dimensions were achieved depending on the selected implant (Dentium® System, Superline, Seoul, Korea). Manual key and ratchet were used for implant insertion. The implants were placed 2-3mm beyond the apex to achieve primary stability. The cover screw was placed on the top the implant (Fig.4). PRF membrane was positioned and stabilized over the graft (Fig.5, 6). Prior to wound closure with simple interrupted suture, releasing incisions were performed to allow better flap adaptation around implant neck (Fig.7). Then, an immediate post-operative x-ray was done (Fig.8).

The papillae of teeth were preserved by doing a horizontal incision at base of papillae. Full thickness flap was raised till the end of the bone resorption on the root surface, then a split thickness flap was done by severing the periosteum and the muscle attachment was cut, so that the flaps could be passively positioned coronally over the defects without tension.Following flap elevation, the exposed root surfaces were gently planed with sharp curettes.

A convenient blood sample was collected from a peripheral venous blood from the patient in sterile 10 ml tubes without the addition of an anticoagulant and centrifuged at 3000 revolutions (400g) per minute for 10 minutes. PRF settles down between the platelet poor plasma (PPP) at the top and the red blood cells (RBC) at the bottom of the tube (Fig.2).

After that it settles into the following two layers: red lower fraction containing red blood cells and the upper fraction containing the fibrin clot. The PRF clots were recovered and packed tightly in 2 sterile compresses in order to obtain resistant fibrin membranes. PRF was then placed on the exposed root surface then in the two groups, sling sutures around the tooth were performed and simple interrupted for vertical incisions. The periodontal dressing was applied for two weeks.

Postoperative instructions:

1.The patient were instructed to avoid the surgical area during tooth brushing for the next 3 weeks following the surgery.

2.Instruction for good oral hygiene measures was also given. Chlorohexidine mouth wash was prescribed for one week.

3.Analgesics were prescribed as ibuprofen ®250mg twice daily for one week.

4.Antibiotics were prescribed Amoxicillin 500mg every 8 hours was continued for 5 to 7 days post-surgery.

5.Sutures were removed after 7 days and patients were examined every week during first 3 weeks following surgery then monthly until termination of study.

Follow up and evaluation:

The patient evaluation was done 3,6 and 12 months for follow up.

RESULTS

Demographic Data:

Frequency of age and sex among to study groups:

This study groups included 30 patients divided into 2 groups:

Group I: 15 patients with severe burn and gingival recession miller class I and II were treated with platelet rich fibrin with modified coronallypositioned flap at recession sites.

Group II: 15 patients with gingival recession miller class I and II were treated with platelet rich fibrin with modified coronallypositioned flap at recession sites.

Group I included 7 female and 8 males. Group II included 7 females and 8 males as showed in Fig.1a
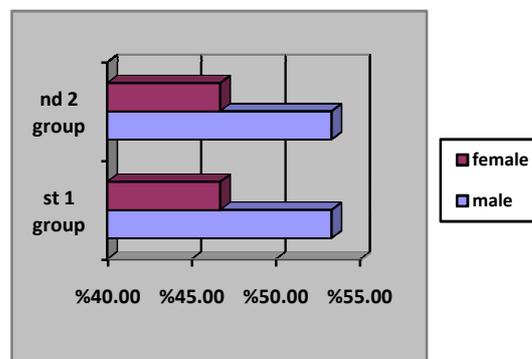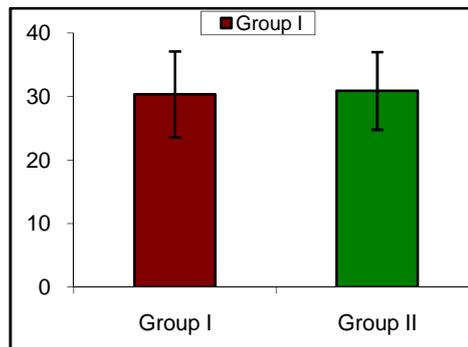

Fig. (1a): Mean sex of two groups

The mean age for group I (mean ± SD) was 30.33 ± 6.76, while it was (30.87 ± 6.12) for group II (p>0.822) with no significant difference between both groups as illustrated in table (I)

Table (1) Showed age distribution among the two study groups.

		Range	Mean ± S. D	t. test	p. value
Age	Group A	20 – 40	30.33 ± 6.76	0.227	0.822
	Group B	22 – 40	30.87 ± 6.12		

Fig. (1b) Mean age of two groups

Gingival index (GI)

Table (2): Showed gingival index (GI) at baseline of both groups.

			Group A	Group B	X^2	P-value
Gingival index	**1**	**N**	9	0	17.077	0.001*
		%	60.0%	.0%		
	2	**N**	6	7		
		%	40.0%	46.7%		
	3	**N**	0	8		
		%	.0%	53.3%		

Table 2: comparison between (GI) of two groups.

In comparing the results statistically significant difference between the two groups was observed through out the study period as shown by table (2).

Probing depth:

Table (3): Showed values of probing depth of both groups.

			Group A	Group B	X^2	P-value
Probing depth	**3**	**N**	9	0	19.091	0.001*
		%	60.0%	.0%		
	4	**N**	6	5		
		%	40.0%	33.3%		
	5	**N**	0	10		
		%	.0%	66.7%		

Table 3: comparison between probing depths of two groups.

In comparing the probing depth between the two groups statistically significant difference was observed through out the study period as shown by table (3) and Fig 3.
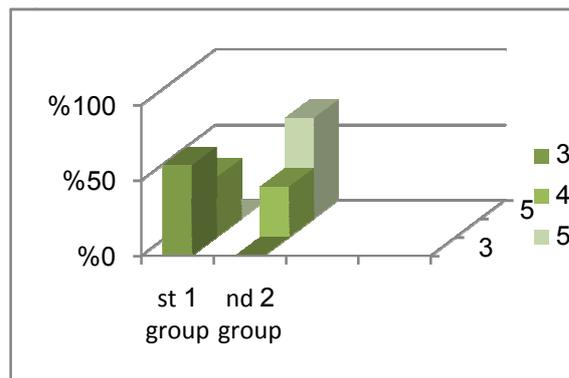
Fig. (3): Histogram of Mean PD of the two groups

Clinical attachment level (CAL)

Comparison between the two groups:

Table (4): Showed values of clinical attachment level (CAL) at of both groups.

			Group A	Group B	X^2	P-value
Clinical attachment level	**2**	**N**	15	0	30.001	0.001*
		%	100.0%	.0%		
	3	**N**	0	15		
		%	.0%	100.0%		

Table 4: comparison between (CAL) of the two groups.

Comparison between two groups showed that statistically significant difference was observed between the two groups through out the study period.

Gingival recession height (GRH)

Table (5): Showed values of gingival recession height (GRH) at baseline of both groups.

			Group A	Group B	X^2	P-value
Gingival recession	**1**	**N**	9	0	19.091	0.001*
		%	60.0%	.0%		
	2	**N**	6	5		
		%	40.0%	33.3%		
	3	**N**	0	10		
		%	.0%	66.7%		

Table5: comparison between (GRH) of two groups.

statistically significant difference between the two group through out the study period as shown by table (5) and Fig 5.
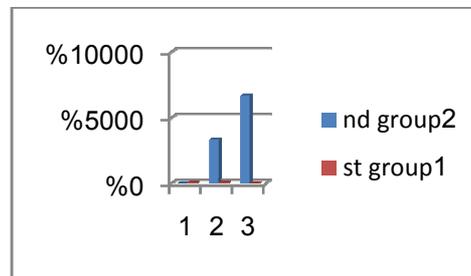
**Fig.(5):** Histogram of GRH between two groups.

Thickness of the keratinized tissue (TKT):

Table (9): Showed mean ±SD values of (TKT) at baseline, 3 months, 6 months and 12 months of both groups.

		Range		Mean	±	S. D	t. test	p. value
Thickness of gingival flap	Group A	4.4	– 5.9	5.18	±	0.49	10.416	0.001*
	Group B	3	– 4.2	3.59	±	0.33		

Table 9: Comparison between mean ± SD of (TKT) of two groups

Comparing the base line of group I (5.18±0.49) and group II (3.59± 0.33) showed significance difference between both groups.
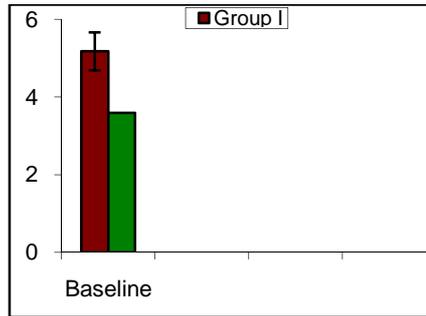
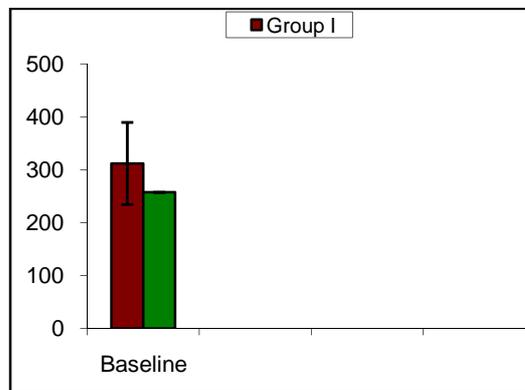**Fig. (9):**Histogram of Mean of TKT of two groups.

Platelet count

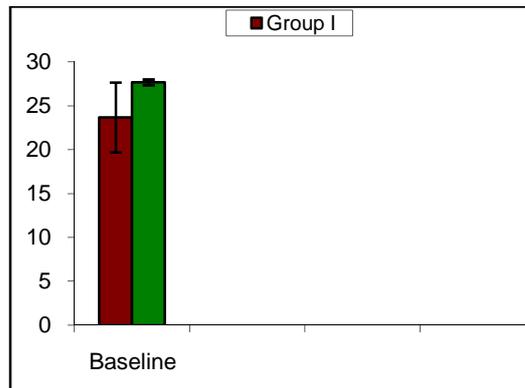|		Range	Mean ± S. D	t. test	p. value
Platelet count	Group A	201 – 432	311.93 ± 77.61	2.074	0.047 *
	Group B	178 – 399	257.40 ± 65.95		

Comparing the Platelet count base line of group I (311.93±77.61) and group II (257.40± 65.95) showed significance difference between both groups

Duration of procedure

|		Range	Mean ± S. D	t. test	p. value
Duration of procedure	Group A	20 – 30	23.67 ± 3.99	3.027	0.005 *
	Group B	25 – 35	27.67 ± 3.20		

Comparing the Duration of procedure base line of group I (23.67±3.99) and group II (27.67± 3.20) showed significance difference between both groups

Time of healing

		Range	Mean ± S. D	t. test	p. value
Time of healing in days	Group A	14 – 22	16.60 ± 2.47	8.402	0.001*
	Group B	21 – 30	25.20 ± 3.10		

Comparing the Time of healing in days of group I (16.60±2.47) and group II (25.20± 3.10) showed significance difference between both groups
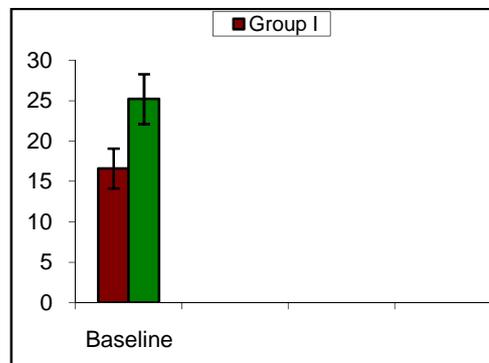
Recurrence

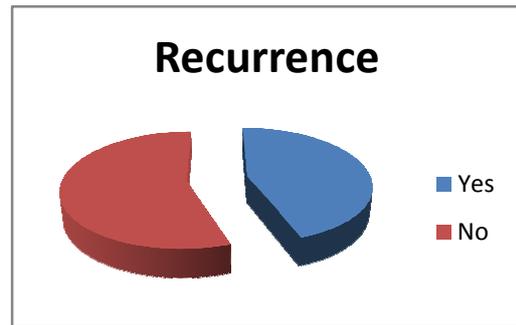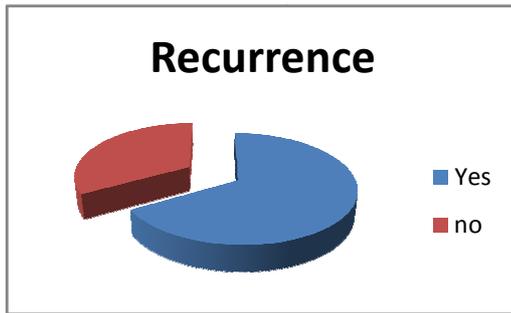|			Group A	Group B	X^2	P-value
Recurrence	Yes	N	10	4	4.821	0.028*
		%	66.7%	26.7%		
	No	N	5	11		
		%	33.3%	73.3%		

Fig. (10): Miller class I recession related to upper Right premolar.

Fig. (11): Modified coronally positioned flap

Fig. (12): Platelet rich fibrin (PRF) adapted on recession area.

Fig. (13): Miller class I recession related to upper left 1stpremolar.

Fig. (14): Moidifiedcoronally positioned flap

Fig. (15): Platelet rich fibrin (PRF).

Fig. (16): Platelet rich fibrin (PRF) adapted on recession

Fig. (17): Flap sutured coronal to CEJ.

Fig (18):Pack applied to the flap

Fig. (19): 12 months postoperative

Conclusion

The present study was designed to evaluate the treatment of Miller Class I and IImarginal tissue recession using a coronally positioned flap with platelet rich fibrin (PRF) in a burned patient.

PRF is an immune and platelet concentrate collected in a single layer of fibrin, containing all the constituents of a blood sample which are favorable to healing and immunity. [50]

PRF is in the form of platelet gel which has been widely used over the years in the treatment of periodontal this is due to its several benefits, such as promoting wound healing, bone growth and maturation, wound closure and haemostasis, and transferring better management properties to connective tissue. . It can also be used as a membrane. [50]

Platelet cells, or thrombocytes, play an additional role in hemostasis. After a burn injury, the platelet count drops to nadir in 2-5 days and then rises to the top within 10-18 days. [9]

When platelet rich fibrin (PRF) is associated with a coronally placed flap, the upper flap that provides an additional source of blood supply promote healing and allograftincorporation. [51]

our study showed statistically difference in Thickness of gingival flap ,Duration of procedure, Time of healing in days, Gingival index ,Probing depth , Clinical attachment level,Occurance of Side effects ,and Recurrencebetween both groups which may be attributed to burn and its effect in platelet count but still the coronally positioned flap is one of the valid surgical options to cover exposed-root surfaces .[48]
It has many advantages in treatment of gingival recession; it does not require a separate surgical site to obtain a graft, the tissue of the pedicle provides a perfect color/contour match with the surrounding tissue, the procedure is simple to perform, and does not require an extended surgical or recovery time .[49]

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