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(CASE REPORT)

One visit gingivectomy and gingival depigmentation: A case report

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Abstract

Introduction: A charming smile is formed through the harmonious relationship between teeth and gums. Short clinical crowns, dark gingival tissue, and diastema between the maxillary central incisors can detract from a smile's appearance. This case study explains the use of a scalpel to perform gingivectomy and gingival depigmentation as part of periodontal plastic surgery in a one visit to enhance aesthetic outcomes.

Case Report: A 28-year-old man presented with complaints that his maxillary front teeth looked short and his gums were black, causing him to lose confidence. The diagnosis is gingivitis on an intact periodontium with other conditions such as gingival enlargement and hyperpigmentation of the gingiva. The treatment plan was to perform a gingivectomy along with gingival depigmentation using a conventional technique with a scalpel in one visit.

Case management: Gingivectomy and gingival depigmentation were performed under local infiltration anesthesia using a scalpel. The surgical site was covered with a periodontal pack, which was removed seven days post-surgery. A 7-month follow-up showed excellent healing, and the patient expressed satisfaction with the results.

Conclusion: Gingivectomy accompanied by gingival depigmentation using a scalpel in a one visit yields satisfactory outcomes for patients.

Keywords: Gingivectomy; Depigmentation; Gingival enlargement; Scalpel technique; Hyperpigmentation

1. Introduction

A beautiful smile is formed from a good relationship between the teeth, gingiva, and lips, influencing and supporting appearance and confidence.[1] Short clinical crowns, brownish gingiva, and the presence of diastema between the maxillary central incisors disrupt the harmony of a smile, leading to aesthetic concerns and sometimes periodontal disorders.[2]

Gingival hyperpigmentation, characterized by gingival discoloration, is a common aesthetic issue caused by various factors such as physiological pigmentation, smoking, trauma, hormonal changes, radiation, infection, inflammation, exposure to heavy metals, genetics, and certain medications like tetracyclines and antimalarial drugs.[2] Although not pathological, gingival hyperpigmentation can cause significant aesthetic concerns, particularly when it affects the labial aspect of anterior teeth, prompting patients to seek cosmetic therapy like gingival depigmentation.[3,4,5] Gingival depigmentation involves removing melanin hyperpigmentation using techniques such as scalpel surgery, bur abrasion,

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chemicals, gingival autografts, cryotherapy, electrosurgery, radiosurgery, and lasers. Among these, the scalpel technique remains a preferred choice due to its simplicity, cost-effectiveness, and precision.[2-6]

Orthodontic fixed appliances can exacerbate periodontal inflammation and gingival enlargement due to factors like plaque stagnation, mechanical irritation, food impaction, and inefficient oral hygiene.[7,8] Gingivectomy and gingival depigmentation, as part of perioesthetic interventions, address these issues.[9] Gingivectomy reshapes gingival margins for aesthetic and functional purposes and can be performed using scalpels, lasers, electrocautery, or chemosurgery.[7,9,10] The scalpel technique is regarded as the gold standard for its ease of use, accuracy, minimal impact on periodontal tissues, and affordability.[5,7,11] This case report discusses a one-visit gingivectomy and gingival depigmentation using the scalpel technique.

2. Case Report

A 28-year-old systemically healthy male presented to the Periodontology Clinic of Oral & Dental Hospital, Airlangga University with complaints that his maxillary front teeth looked short and his gums were dark. Hence, he was not confident when smiling. The patient had quit smoking 10 years prior. Intraoral examination revealed the presence of fixed orthodontic appliances, plaque, calculus, bleeding on probing (28%), tooth impaction of tooth #23, and gingival hyperpigmentation with a score of 3 based on Dummett and Gupta (1971). Measurements indicated a biological width of >5 mm for teeth #11 and #21, >4 mm for teeth #13 and #12, and 3 mm for tooth #22, all within normal limits (Figure 1).

Figure 1 Baseline clinical photograph of the region involving teeth #13, #12, #11, #21, and #22

The diagnosis was gingivitis on an intact periodontium with other conditions such as gingival enlargement and hyperpigmentation of the gingiva. The treatment plan included dental health education, scaling, and root planing, evaluation, and gingivectomy with gingival depigmentation in the region of teeth #13, #12, #11, #21, and #22 at the same time (one visit).

3. Case Management

Surgical intervention was initiated after scaling and root planing, followed by a 4-week evaluation showing good plaque control. The procedure began with extraoral and intraoral asepsis using povidone iodine 10%, followed by topical anesthesia (Xylonor® Spray) and local infiltration anesthesia using Articaine hydrochloride 4% with epinephrine 1:100,000 (Orabloc®). Bleeding points were created using a Pocket Marker Forceps (PMF) (Hu-Friedy PMGF2 #2 Goldman Fox Pocket Marker Right and Left) on three sides (mesial, facial, distal) of the target region (Figure 2A-2F).

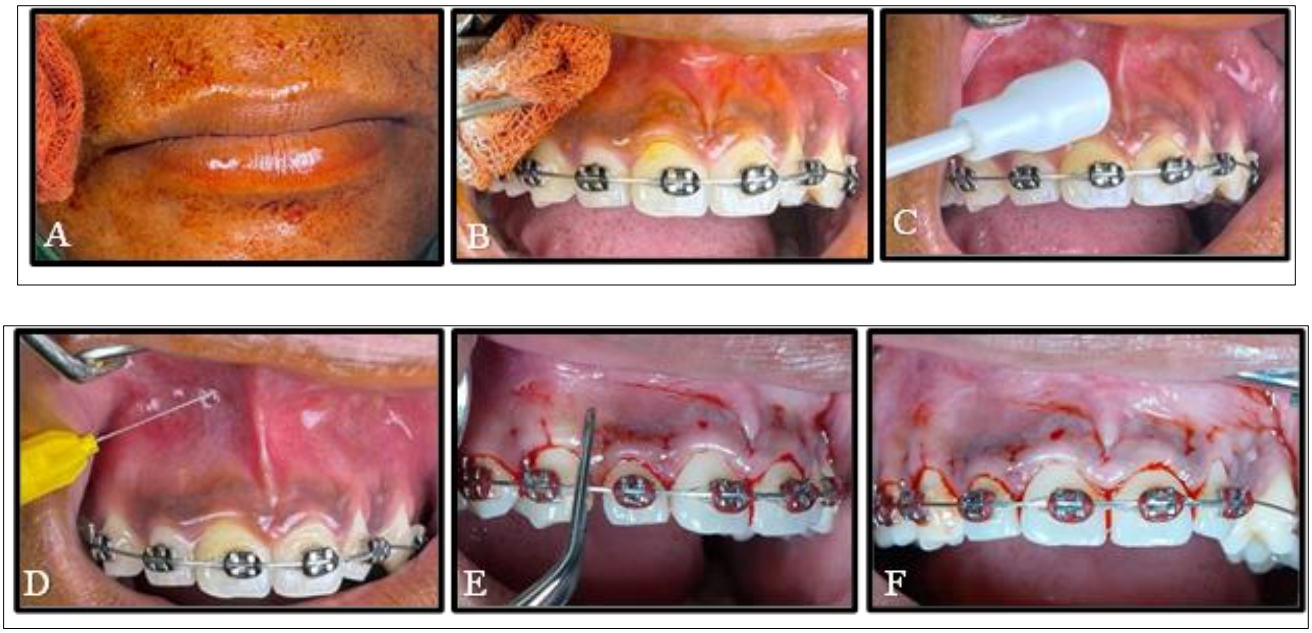

Figure 2A-2F Gingivectomy and gingival depigmentation procedure in the region of teeth #13, #12, #11, #21, and #22: (A) Extraoral asepsis, (B) intraoral asepsis, (C) topical anesthesia, (D) local infiltration anesthesia, (E) use of Pocket Marker Forceps (PMF), and (F) bleeding points.

A No. 15c scalpel blade was used to perform an external excision with a gingival bevel 1 mm apical to the bleeding points at a 45° angle. Gingivoplasty was performed to contour the gingival margins, and depigmentation of the hyperpigmented gingiva was achieved using a scalpel and Kirkland knife. The interdental areas were shaped with an Orban knife. Saline irrigation was used to clear the surgical site, and a periodontal pack was applied post-procedure (Figure 2G-2K).

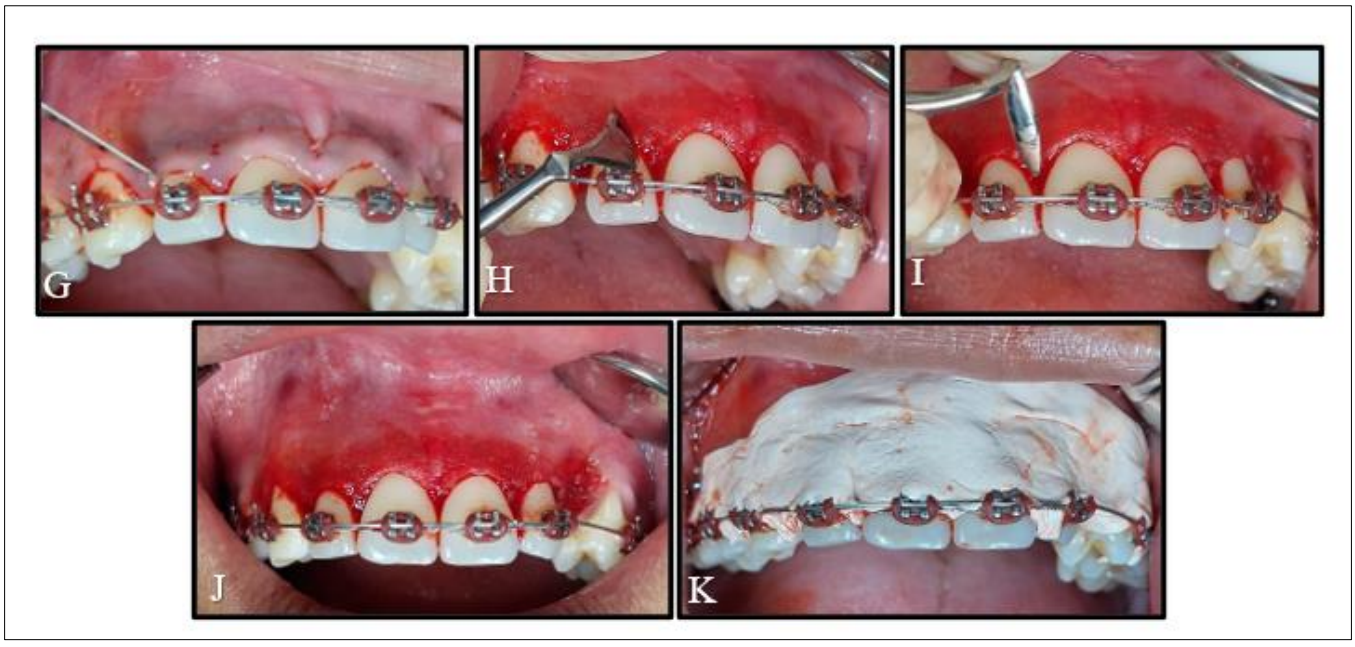

Figure 2G-2K Continuation of the gingivectomy and gingival depigmentation procedure in the region of teeth #13, #12, #11, #21, and #22: (G) gingivectomy using a scalpel, (H) gingivoplasty of the gingival margin and depigmentation using a Kirkland knife and scalpel, (I) interdental contouring using an Orban knife, (J) postoperative evaluation, and (K) application of a periodontal pack.

Postoperative instructions included avoiding hot, spicy, and acidic foods, maintaining a soft diet, and taking prescribed medications (mefenamic acid 500 mg, 3 times a day). The patient was advised to avoid brushing the surgical site and to contact the operator in case of bleeding or discomfort. A follow-up visit was scheduled for seven days.

The patient reported no complaints during the healing period. At the 7-day control visit, the periodontal pack was removed (Figure 3A). A 3-month follow-up showed excellent healing and patient satisfaction (Figure 3B).

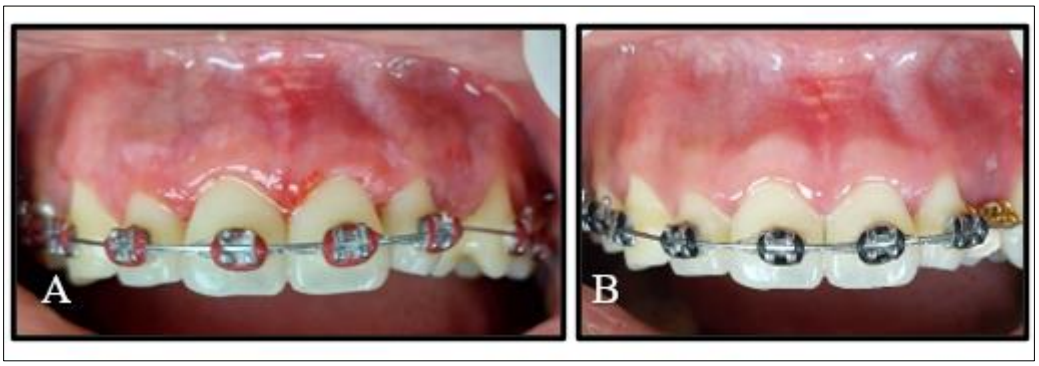

Figure 3(A) 7-day follow-up. (B) 3-month follow-up

At the 7-month follow-up, no recurrence of gingival hyperpigmentation was observed, and the patient remained satisfied with the results (Figure 4).

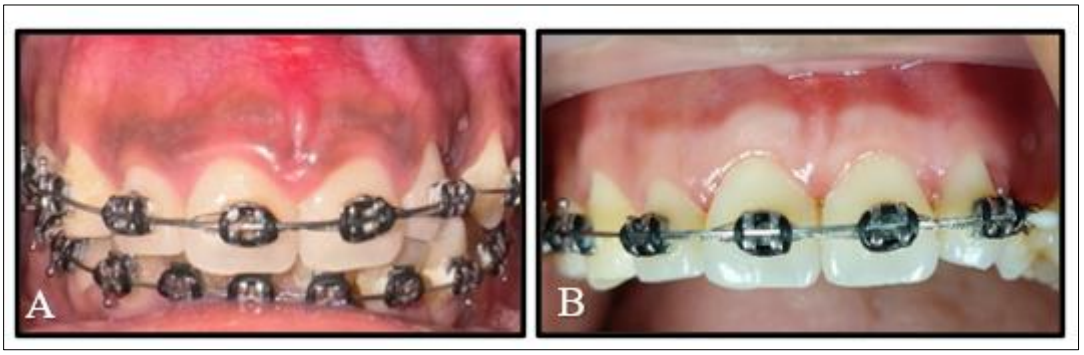

Figure 4 (A) Before surgery. (B) Follow-up 7 months post-surgery

4. Discussion

Hyperpigmentation is an aesthetic problem that has a significant psychological impact on individuals. Dummett and Gupta introduced the oral pigmentation index in 1971 as scores for gingival pigmentation according to its color degree; score 1 is given to pink gingiva (no pigmentation), score 2 indicates light brown pigmentation (mild), score 3 represents medium brown or mixed brown pink and brown pigmentation (moderate pigmentation), and score 4 indicates deep brown or bluish-black pigmentation (heavy pigmentation).[4] This case involved moderate pigmentation (score 3).

Depigmentation in this case was performed with a scraping method using a scalpel, aiming to remove the gingival epithelium and a layer of connective tissue. The procedure was conducted carefully down to the basal layer where the melanin pigment cells reside, avoiding deeper tissues to prevent excessive bleeding and exposure of bone. To ensure complete removal of hyperpigmentation, saline irrigation was utilized for enhanced visibility, and saline-soaked gauze was applied to manage bleeding.[1]

The de-epithelialization technique with a scalpel is considered the gold standard due to its numerous advantages, including simplicity, cost-effectiveness, short procedural time, and effective removal of pigmentation with secondary healing. Additionally, it offers good healing without significant infection or excessive pain[1,2,3,5] However, this technique has some drawbacks, such as potential alveolar bone loss, prolonged healing, pain, excessive bleeding, tissue destruction, and swelling. It also requires high technical skills and specialized instruments.[2,3,5] Conversely, laser depigmentation minimizes bleeding as it seals blood vessels during the procedure, offering hemostasis as a primary

benefit. Despite this, laser treatments may result in faster repigmentation because melanocytes remain unaffected by the heat generated during the procedure, leading to migration of active melanocytes to the treated area.[3]

Changes in gingival symmetry and contour significantly affect the aesthetic appearance of teeth.[11] Prolonged orthodontic treatment duration correlates with increased frequency of gingival enlargement, particularly anterior hypertrophy.[8,12] Patients undergoing orthodontic therapy may also experience complaints such as short clinical crowns and excessive gingival display, commonly known as a gummy smile. Metallic orthodontic brackets contribute to changes in the oral environment, such as lowered pH, higher plaque accumulation, and increased colonization of *Streptococcus mutans*.[11] Utilizing bone sounding helps determine whether gingivectomy is necessary, as it measures the biological width. The typical biological width is approximately 2 mm, composed of a sulcus depth of 0.69 mm, epithelial attachment of 0.97 mm, and connective tissue of 1.07 mm.[13]

The conventional scalpel method for gingivectomy has its advantages, such as precise incision control, minimal thermal damage compared to lasers, and relatively lower pain post-surgery.[7,12,14] However, bleeding during the procedure may obscure the operator's view, and postoperative pain or a prolonged healing process can occur. In contrast, electrocautery results in more discomfort within the first day post-surgery.[7,12]

In this case report, the patient reported no pain from the first day to the seventh day after surgery and adhered to all postoperative instructions. After gingivectomy and gingival depigmentation, it is crucial for patients to follow care guidelines, including maintaining good oral hygiene and avoiding hard foods for a few days. Proper adherence to postoperative care accelerates healing and minimizes complications.[15] Clinical healing typically takes around four weeks, while histological healing occurs over six weeks.[11]

5. Conclusion

Gingivectomy and gingival depigmentation using a scalpel can be effectively performed in a single visit. This approach reduces the frequency of surgical interventions, minimizes costs, and offers satisfactory aesthetic and functional outcomes for patients. The scalpel technique's simplicity and affordability make it a viable choice in resource-limited settings.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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