



## Gingival Depigmentation in Maxillary Anterior Region Using Conventional Surgical Scraping: A Case Report

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### Abstract

**Introduction:** Gingival pigmentation can result from melanin deposits in the gingival epithelial layer. This condition is caused by tobacco in cigarettes, which stimulates melanin production by melanocytes, leading to pigmentation changes in the gingiva. Gingival depigmentation is a procedure aimed at removing pigmentation from the gingiva to achieve improved aesthetic outcomes. **Purpose:** This case report aims to discuss the management of gingival depigmentation cases using the scalpel method in patients with smoker's melanosis. **Case presentation:** A 21-year-old male patient presented with complaints of brownish discoloration on his upper and lower gingiva, which he had noticed for approximately 2 years ago. Gingival depigmentation was performed using the scraping technique to remove the gingival hyperpigmentation. **Conclusion:** Gingival depigmentation using the scalpel technique is a recommended treatment with a simple technique and tools, easy to perform, economical, and can restore gingival aesthetics.

**Keywords:** Gingival depigmentation; scalpel surgery; smoker's melanosis

### Introduction

The healthy appearance of gingiva is predominantly pink in color. The color of the gingiva is affected by various factors, including blood vessels size, the degree of keratinization, the epithelium thickness, and the presents of pigmentation. Brownish discoloration of the gingiva is often caused by melanin deposits within the gingival epithelial layer. Melanin, a natural pigment found in the basal layer of the gingival epithelium, is responsible for pigmentation in various parts of the body, including the skin, mucosa, hair, eyes, and brain. In the oral cavity, this phenomenon is referred to oral pigmentation, which involves color changes in the oral mucosa or gingiva resulting from exogenous or endogenous factors. Endogenous factors include endocrine disorders and genetic predisposition, while exogenous factors include exposure to heavy metals and smoking habits.<sup>1-3</sup>

Smoker's melanosis is a melanin pigmentation disorder of the oral mucosa that occurs due to long-term tobacco use. Tobacco stimulates melanocyte activity, increasing melanin production and resulting in pigmentation changes in the gingiva. Smoker's melanosis typically

presents as diffuse melanosis in the anterior vestibular gingiva of the upper and lower jaws but can also affect the buccal mucosa, lip commissures, lateral tongue, palate, and floor of the mouth.<sup>2,4</sup>

Gingival depigmentation is a procedure aimed at removing pigmentation from the gingiva to achieve improved aesthetic outcomes. Depigmentation techniques can be classified into surgical and chemical methods. Surgical approaches include scalpel excision, abrasion, cryosurgery, and laser treatment, while chemical methods use agents such as 90% phenol and 95% alcohol, though these are no longer commonly employed.<sup>1</sup> This case report discusses the gingival depigmentation procedure using the surgical scraping technique in a male patient with smoker's melanosis.

### Case report

A 21-year-old man came to RSKGM South Sumatra Province complaining of brownish front upper gingiva  $\pm$  2 years ago (Figure 1). The patient felt less confident when smiling due to this condition.



**Figure 1.** Clinical appearance of the patient before surgery

The patient reported being an active smoker with a smoking frequency of 2–3 times per day, consuming approximately 7–8 cigarettes daily for more than 5 years. Despite his smoking habit, the patient stated that he felt healthy and had not noticed any symptoms of gum discoloration. The possibility of gingival pigmentation recurrence after treatment was explained to the patient, who expressed no concerns about this outcome.

The patient reported brushing his teeth twice daily, in the morning and evening, using fluoride-containing toothpaste. He denied any significant medical history and was generally cooperative, communicative, and interested in undergoing dental procedures. The patient's

general condition was compos mentis. An extraoral examination revealed a symmetrical, bilaterally balanced facial structure, a convex facial profile, no temporomandibular joint abnormalities, and upright posture.

Based on anamnesis and clinical examination, the diagnosis was determined to be smoker's melanosis hyperpigmentation localized in the gingiva of the upper and lower anterior quadrants. The planned treatment was gingival depigmentation surgery using the scraping technique. Prior to the surgical procedure, phase I treatment was conducted, which included plaque control, scaling, root planing, and dental health education (DHE). Phase II treatment involved gingival depigmentation surgery.

The surgical procedure began with asepsis of the intraoral and extraoral working areas, including the lip commissures, using 10% povidone iodine. Local infiltration anesthesia was administered at the mucobuccal fold from teeth 13 to 23 using 2% lidocaine with adrenaline, followed by a check for numbness.

Gingival depigmentation was performed on the anterior upper quadrant using the scraping technique. A #15 blade and scalpel handle #3 were used to remove pigmentation from the gingiva of teeth 23 to 13, extending as deep as the stratum basal with controlled pressure (Figure 2). The surgical site was irrigated with 0.9% saline solution using a 10cc syringe. The clinical appearance following surgery and irrigation is shown in Figure 3. Once the area was clean and dried, a periodontal dressing (Coe-Pak) was applied to the surgical site (Figure 4). The patient was prescribed antibiotics and analgesics for 5 days and advised to use 0.2% chlorhexidine gluconate mouthwash to aid in postoperative care.



**Figure 2.** Gingival scraping with blade no. 15



**Figure 3.** Clinical appearance after depigmentation



**Figure 4.** Clinical appearance after periodontal pack application

The patient was instructed not to eat and drink hot food and asked to come for a follow-up one week after surgery to remove the periodontal pack and observe post-surgery. The 1-week follow-up showed that the gingiva appeared pink, and the patient did not feel any complaints after surgery (Figure 5).



**Figure 5.** One-week follow-up

The patient was instructed to continue chlorhexidine gluconate 0.2% mouthwash for 1 week. A 3-month postoperative control was performed for oral prophylaxis and plaque control, and the gingiva appeared brownish indicating signs of recurrence (Figure 6).



**Figure 6. Three month follow-up**

### Discussion

The gingiva plays a vital role in achieving smile harmony, with pigmentation serving as one of the macro elements of dentofacial aesthetics. Excessive gingival pigmentation is often perceived unaesthetic by patients and can negatively impact their psychological well-being. Hyperpigmentation is defined as a darker-than-normal coloration of gingiva.<sup>2,6,7</sup> This condition can arise from physiological factors such as the presence of melanin, melanoid, carotene, oxyhemoglobin, reduced hemoglobin, bilirubin, or iron, as well as from diseases or pathological conditions. Environmental risk factors, such as smoking, can also lead to gingival hyperpigmentation commonly referred to as smoker's melanosis. The heat generated during smoking activates melanocytes in the basal epithelial layer, increasing melanin production and deposition.<sup>1</sup>

The extent of smoker's melanosis is influenced by the number of cigarettes smoked per day. A higher frequency of smoking is associated with a greater risk of melanin pigmentation. Additionally, Nadeem et al. have reported a correlation between the duration of smoking and the severity of smoker's melanosis.<sup>8-9</sup>

Treatment options for gingival hyperpigmentation include gingival depigmentation, a procedure designed to remove hyperpigmentation from the gingiva. Gingival depigmentation is often selected by patients with aesthetic concerns. The techniques for depigmentation can be categorized into chemical and surgical methods. Chemical methods involve the use of agents such as alcohol, phenol, and ascorbic acid. Surgical methods include lasers, cryosurgery,



electrosurgery, radiosurgery, and conventional techniques such as gingival abrasion, scalpel surgical techniques, and free gingival grafting. In this case, the scalpel surgical technique was chosen for gingival depigmentation.<sup>1,2,10</sup>

The scalpel technique is highly recommended for its simplicity, ease of use, cost-effectiveness, and ability to achieve aesthetically pleasing results. Moreover, this technique offers a faster wound healing period compared to other approaches like electrocautery. However, scalpel surgery is associated with intraoperative and postoperative bleeding, necessitating the application of a periodontal dressing for 7–10 days to protect the surgical site.<sup>5,6</sup>

In this case report, gingival depigmentation was performed on the upper jaw, from the right canine to the left canine. The procedure utilized a no. 3 scalpel handle and a no. 15 blade. The pigmented gingival tissue was removed with a scraping motion until all pigment deposits were eliminated. During the procedure, the surgical site was cleansed with sterile gauze. The wound was then covered with a periodontal dressing, which was left in place for 7 days. At the 1-week postoperative follow-up, the periodontal dressing was removed, and the surgical site showed signs of healing. The gingiva appeared coral pink, and the patient expressed great satisfaction with the results. However, at the 3-month postoperative control, pigment recurrence was observed.

### **Conclusion**

Smoker's melanosis is a discoloration of the oral mucosa exposed to cigarette smoke, the main result of melanin deposition in the basal cell layer of the mucosa. Scalpel gingival depigmentation treatment is recommended, using simple, easy-to-do, economical techniques, and tools to restore gingival aesthetics.



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