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Case report

Management of Gingival Enlargement to Tooth Malposition Maxillary Left Lateral Incisor and Canine in an Untreated Hypertensive Patient: A Case Report

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ABSTRACT

Background: Tooth malposition leads to increased plaque retention, resulting in inflammation and gingival enlargement. Gingivectomy is an effective treatment; however, in patients with hypertension, pre-operative assessment and the selection of appropriate anaesthesia are required to reduce cardiovascular risk. **Purpose:** This case report focuses on the management of gingival overgrowth caused by plaque accumulation associated with tooth malposition, using gingivectomy in a patient with uncontrolled hypertension. **Case(s):** A 22-year-old female patient was referred with a complaint of gingival enlargement in the anterior region of the upper jaw, associated with malposition of teeth 22 and 23, which was compromising oral hygiene and aesthetics. Pre-operative examination revealed that the patient's blood pressure was within the range of uncontrolled hypertension. **Case Management:** Following initial periodontal therapy, a gingivectomy was performed under local anaesthesia contained ephinefrin at the recommended dose, with blood pressure monitored throughout the procedure. The post-operative period showed good healing, a reduction in inflammation, improved gingival contour and enhanced aesthetics, with no cardiovascular complications. **Conclusion:** Gingivectomy is an effective treatment for gingival enlargement associated with malpositioned tooth and is safe to perform in patients with uncontrolled hypertension, provided that pre-operative assessment is carried out and local anaesthesia with ephinefrin is used in accordance with recommendations.

Keywords: *Gingivectomy; Tooth malposistion; Uncontrolled Hypertension;*

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INTRODUCTION

Gingival enlargement, often referred to as gingival overgrowth, is an abnormality of the gingival tissue caused by an excessive increase in the size of the gums [1]. This leads to discomfort, aesthetic concerns and increased inflammation of the periodontal tissues [2].

Based on the most recent classification of periodontitis, gingival enlargement (GE) is classified by lesion extent as localised or generalised, whilst, based on severity, it is categorised as Grade I (mild) if it affects only the gingival papillae, Grade II (moderate) if it involves the gingival papillae and marginal gingiva, and Grade III (severe) if it involves the gingival papillae, marginal gingiva and attached gingiva [3].

Gingival enlargement is a pathological change characterised by the enlargement of gingival tissue in response to various factors, including plaque accumulation, systemic conditions, hormonal changes, medication use, and local predisposing factors[2]. One local predisposing factor contributing to periodontal disease in the form of gingival enlargement is dental malposition. Abnormal tooth positioning creates areas of plaque retention, thereby preventing proper interdental cleaning and maintenance of oral hygiene. The continuous accumulation of biofilm results in gingival inflammation as the initial stage of periodontal disease, which, in chronic cases, can progress to gingival enlargement and damage to the periodontal tissues[3].

The management of gingival enlargement is a periodontal surgical procedure known as gingivectomy. Gingivectomy is a periodontal surgical procedure performed to excise excess gingival tissue whilst removing the walls of the pseudopocket[4]. This procedure aims to improve access to the root surface so that plaque and calculus can be removed effectively. Furthermore, gingivectomy helps to restore the physiological contour of the gingiva, creating conditions that support the healing process, and improves both function and aesthetics, particularly in the anterior region [5].

Gingivectomy procedure requires local anaesthesia containing a vasoconstrictor, such as epaine. However,

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the choice of local anaesthetic requires consideration of the patient's systemic condition, particularly in patients with hypertension, as vasoconstrictors may affect the cardiovascular response[6]. The use of local anaesthetics containing pehacaine in limited doses, combined with blood pressure monitoring, appropriate aspiration techniques and slow injection, helps to minimise systemic absorption[4]. Therefore, measuring blood pressure prior to periodontal surgery is an important part of the pre-operative assessment, which may influence the choice of anaesthesia and enhance patient safety during gingivectomy procedures[7].

This case report aims to highlight the role of gingivectomy in the management of gingival enlargement caused by dental malposition in a patient in whom hypertension was newly diagnosed during the pre-operative examination, and to emphasise the importance of blood pressure screening and the appropriate selection of local anaesthesia in ensuring the safety and success of periodontal procedures.

CASE

A 26-year-old female patient reffered RSGM Soelastri Surakarta with complaints of swollen gums on the upper left side, covering more than half of her tooth. The patient reported that the area was difficult to clean due to plaque build-up; she also complained of frequent bleeding gums whilst brushing her teeth. The patient stated that she brushes her teeth twice a day, in the morning and in the evening. The patient stated that she had no systemic diseases and was not currently taking any medication. She mentioned a history of itching shortly after taking amoxicillin.

A general examination revealed the patient's blood pressure to be 130/203 mmHg, which is classified as pre-hypertension. According to the patient's medical history, she stated that she was unaware of her high blood pressure, rarely had her vital signs checked, and had no accompanying symptoms. It was established that the patient's hypertension was uncontrolled.

Figure 1. Clinical Appearance at the First Visit

The extra-oral examination revealed no abnormalities. The intra-oral examination revealed malposition of teeth 22 and 23; tooth 22 palatoversion and tooth

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23 had labioversion. In this condition, the area is difficult to reach with a toothbrush for cleaning, meaning food debris is easily trapped. The labial gingiva surrounding tooth 22 is enlarged, firm in consistency, and reddened. Probing measurements for tooth 22 were 3 mm mesially, 3 mm mid-facial, and 5 mm distally. The probing examination indicates the presence of a pseudopocket. Oral hygiene was assessed using the OHI index by Greene & Vermillion, yielding a score of 2.67, which falls within the moderate category. The plaque index, measured with O'Leary method using a disclosing agent, was 16 per cent. The gingival index by Loe & Silness was 1.46, indicating moderate gingivitis

Based on the patient's medical history and the results of the examination, the diagnosis is chronic inflammatory gingivitis accompanied by gingival enlargement caused by malposition of tooth 22. According to the AAP classification 2017, this is periodontitis, stage II, grade A.

CASE MANAGEMENT

The treatment plan consists of an initial therapy involving scaling and root planing, with the purpose of removing plaque and calculus—the main causes of the patient's symptoms. Dental Health Education (DHE) is provided to the patient, advising them to brush the affected area more frequently, switch to a smaller toothbrush to reach the area, and use dental floss between the teeth. The patient is advised to see a doctor to reduce the patient's high blood pressure to a normal The next phase is the surgical phase where gingivectomy is performed to remove gingival enlargement and achieve a good gingival contour. This phase is carried out two weeks after the initial treatment, following an evaluation of the condition of the oral cavity. On the labial gingiva of tooth 22, the inflammation had subsided, as indicated by the gingiva having returned to a normal colour, similar to the gingiva in other areas of the mouth. The patient reported having consulted a doctor and been taking the antihypertensive medication amlodipine 5 mg; the patient's blood pressure was found to be within the normal range.

Before the procedure is performed, the patient is provided with information regarding the purpose, procedure, prognosis, risks and possible complications. The patient consents to the procedure by signing an informed consent form. The procedure is performed using sterile instruments and materials.

Aseptic technique is applied by using povidone-iodine on the surgical site and the

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anaesthesia site. This is proceeded by topical anaesthesia and local anaesthesia using pehacaine (lidocaine 2% with

Figure 2. Infiltration Anesthesia Procedure at the Mucobuccal Fold of Teeth 22 and 23

epinephrine) on the labial and palatal surfaces of tooth 22 in the mucobuccal fold. Anaesthesia is assessed using a probe to check whether the patient feels any pain, and confirmation is obtained from the patient that the area is numb.

To create a bleeding point, a periodontal pocket marker is placed in the pocket aligned with the tooth axis down to the base of the pocket, with the sharp edge remaining outside; pressure is then applied to the gingiva in the mesial, midfacial and distal areas until a bleeding point is established for the incision site. The gingival incision is an external bevel incision performed using a No. 15 blade, with the tip of the blade positioned 2 mm more apically than the bleeding point, forming a 45-degree angle in the coronal direction. The pocket is reduced to a zero pocket. Next, excision is performed using a Kirkland scalpel or No. 15 blade on the

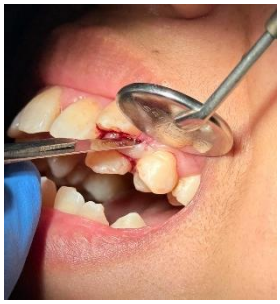

Figure 3. Incision and Excision Procedure

facial aspect and a Kirkland scalpel on the interdental aspect. Following this, root planing is carried out using Gracey curettes Nos. 1–2 to remove any remaining calculus and adherent remaining tissue.

Contouring of the gingiva through gingivoplasty to achieve an ideal anatomical gingival contour. Irrigate the area using saline. Thereafter, bleeding is controlled by applying pressure with a sterile gauze pad to the post-operative gingival area for 5 minutes until haemostasis is achieved. Another objective is to facilitate reattachment of the gingiva. Next, a prepared periodontal pack is applied, covering the gingiva up to the interdental area, not extending beyond one-third of the tooth and not reaching the fornix.

Figure 2. Application of a Periodontal Pack to the Surgical Area, Covering Teeth 21 and 24 to Prevent Contamination

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The patient was prescribed Cefadroxil 500 mg, Diclofenac Sodium 50 mg, and a chlorhexidine gluconate mouthwash. Post-operative instructions included advice to brush the treated area gently, avoid vigorous rinsing and excessive spitting for the first 24 hours, avoid hot, spicy, hard and sharp-edged foods, consume soft foods, return to the clinic if the periodontal pack came loose before the scheduled follow-up appointment, and take medication as advised. The patient was scheduled for a follow-up appointment two weeks after the procedure.

Two weeks after the procedure, an evaluation was undertaken. The patient reported no subjective complaints. Clinical examination revealed no gingival enlargement, no redness, and no signs of inflammation on the interdental papillae.

Figure 3. Gingival Condition After a Two-Week Follow-Up

Intraoral examination showed an OHI score of 1.32, which falls within the 'good' category, and a plaque index of 8%. Probing depths at tooth 22 decreased to 1 mm mesially, 1 mm midfacial, and 2 mm distally. The gingival index was recorded as 0.11, which falls within the mild gingivitis category, and no bleeding was observed during probing of this tooth. These findings indicate significant clinical improvement following the gingivectomy.

DISCUSSION

Gingival enlargement caused by tooth malposition is a relatively common condition. Tooth malposition is closely associated with plaque build-up, particularly in the marginal areas of the teeth, and increases plaque retention. These conditions are linked to increased gingival inflammation and can progress to gingival overgrowth if plaque control is inadequate [4].

The proper management begins with initial therapy—namely scaling and root planing—followed by gingivectomy surgery. However, reports on the management of gingivectomy in patients with hypertension newly identified during pre-operative examination remain limited. This case demonstrates that measuring blood pressure prior to periodontal treatment not only plays a role in determining suitability for surgery, but also

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forms the basis for selecting a safe and effective infiltration anaesthetic.

Gingival enlargement is caused by plaque, calculus and other factors such as malocclusion, malposition and crowding [8]. Clinical features include diffuse erythema, swelling, an unattractive gingival contour and bleeding on probing. The increase in gingival size results in a deepening of the sulcus, forming a false pocket or pseudopocket[5].

Malposition is a condition when teeth are not in their ideal position, resulting in poor contact with the opposing teeth and creating areas that are difficult to reach when brushing teeth twice a day[9]. This condition leads to a build-up of plaque and biofilm that is more severe than in tooth with a normal position, contributing to an increase in plaque and gingival index scores[10]. Continuous plaque build-up leads to chronic gingival inflammation and may result in gingival enlargement[11]. Besides affecting the health of the periodontal tissues, changes in the shape and contour of the gums, particularly in the anterior region, may also compromise aesthetics condition [12].

The proper management, namely gingivectomy, is a surgical procedure to remove excess gingival tissue by excising the pseudopocket, resulting in a zero-pocket condition. The purpose of gingivectomy is to restore the morphology of the teeth, thereby restoring their aesthetics[5]. Gingivectomy is performed by making an incision using a blade or a Kirkland scalpel with an external bevel. An external bevel is used for gingival enlargement involving free gingiva[13]. A drawback of this method is that it leaves an open wound in the gingival area of the operation[1].

A gingivectomy is performed in conjunction with gingivoplasty. Gingivoplasty involves reshaping the gingival margin to create a sharp edge that follows the natural contour of the gums[14]. The outcome of the treatment, as evaluated on day 7 or day 14 following treatment, is determined by a reduction in pocket depth, the resolution of oedema, a pink colour, and the absence of red inflammation [1].

Before the procedure, the patient's vital signs should be checked; if the patient's blood pressure is high and classified as hypertension, special care is required during the procedure. The management of patients with uncontrolled hypertension undergoing dental procedures requires meticulous preoperative assessment because uncontrolled pain and anxiety can stimulate endogenous catecholamine release, resulting in greater

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increases in blood pressure and heart rate than those produced by the low-dose epinephrine contained in dental local anesthetics[6]. Therefore, achieving profound local anesthesia is essential not only for pain control but also for reducing physiological stress and maintaining hemodynamic stability throughout the procedure[7]

In the present case, infiltration anesthesia using Pehacaine (2% lidocaine with epinephrine) was selected because lidocaine remains one of the safest and most predictable local anesthetics for medically compromised patients, while infiltration anesthesia provides effective analgesia using the lowest effective anesthetic dose[7]. To minimize the risk of systemic epinephrine absorption and inadvertent intravascular injection, the anesthetic solution was administered slowly following negative aspiration, and the patient's blood pressure and heart rate were continuously monitored throughout the procedure, consistent with current recommendations for hypertensive patients requiring urgent dental treatment[15].

Traditionally, the use of epinephrine-containing local anesthetics has been approached with caution in patients with hypertension because of concerns regarding potential cardiovascular complications. However, accumulating evidence suggests that when administered in minimal effective doses using appropriate injection techniques, lidocaine with epinephrine produces only transient and clinically insignificant hemodynamic changes in most patients[6]. Two cartridges of 2% lidocaine with 1:100,000 epinephrine resulted only in temporary increases in blood pressure and heart rate without serious cardiovascular complications, even in patients with stage 2 hypertension, suggesting that adequate pain control may reduce stress-induced cardiovascular responses more effectively than avoiding vasoconstrictors altogether[15].

This case highlights that managing gingival enlargement requires addressing both the inflammatory condition and its local aetiological factors, including dental malposition that promotes plaque accumulation. In this case, periodontal surgery can be safely performed on patients with controlled hypertension following appropriate pre-operative blood pressure assessment and adherence to the recommended maximum dose of pehacaine. Clinically, gingivectomy provides favourable functional and aesthetic outcomes by restoring the physiological contour of the gums,

facilitating oral hygiene maintenance, and boosting the patient's self-confidence [16].

CONCLUSION

Gingival enlargement resulting from plaque build-up influenced by tooth malposition can be effectively managed through gingivectomy following initial periodontal therapy. This case report highlights that the procedure can be safely performed in patients with controlled hypertension through appropriate pre-operative assessment, blood pressure monitoring, and the use of local anaesthesia with pehacaine at the recommended dosage. Gingivectomy effectively improves gingival contour, enhances plaque control, reduces inflammation and improves aesthetics; therefore, treatment planning that takes into account both local factors and systemic conditions is essential to achieve optimal clinical and aesthetic outcomes.

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