**Volume 06, Issue 06 (November-December 2023), PP 52-60** **www.ijmsdr.org**
**ISSN: 2581-902X**

*International Journal of Medical Science and Dental Research*

# GINGIVAL HYPERPLASIA, IMPACT ON SMILE AESTHETICS: CLINICAL CASE REPORT.

[1.] Vinícius Corrêa Dalbom, [2.] Anna Karla Sampaio da Rocha, [3]. Ana Beatriz Costa da Silva, [4].Lucas Lima de Sousa, [5.] Karine Gomes da Silva, 6. Alyne Vasconcelos de Oliveira, [7]. Ana Luiza Becker, [8.] Roberta Furtado Carvalho

*[1,] Graduado em Odontologia Instituição: Unisul - Campus Ilha Endereço: Salvatina Feliciana dos Santos, 525, Itacorubi, Florianópolis – SC, CEP: 88034-600*

*[2,3,4,5] Graduanda em Odontologia Instituição: Universidade Ceuma Endereço: R. Barão do Rio Branco, quadra 12, nº 100, Maranhão Novo, Imperatriz - MA, CEP: 65903-093*

*[6,]Graduando em Odontologia Instituição: Faculdade Santa Rita de Cássia Endereço: Avenida, R. Adelina Alves Viléla, 393, Res. Jardim Primavera, Itumbiara - GO, CEP: 75524-500*

*[7,]Graduada em Odontologia Instituição: Universidade de Passo Fundo Endereço: BR 285, Km 292,7, Campus I, São José, Passo Fundo - RS, CEP: 99052-900*

*[8,]Doutora em Odontologia Instituição: Universidade Ceuma (UNICEUMA) Endereço: R. Barão do Rio Branco, quadra 12, nº 100, Maranhão Novo, Imperatriz - MA, CEP: 65903-093*

**SUMMARY**

**Introduction:**Gingival hyperplasia is common in patients with fixed orthodontic appliances who have poor oral hygiene. This gingival enlargement is characterized by a slow, continuous and sometimes asymptomatic development. Clinically, gingival hyperplasia presents as an irregular contour and swelling, making it necessary to adopt a surgical approach to provide regular contouring of the gingival margin, returning esthetics and function to the periodontal tissue. The classification of hyperplasias is defined according to the causal factor, and in this case it is a hyperplasia caused by orthodontic trauma associated with poor hygiene. Objective: The aim of this paper is to report a clinical case of a patient with gingival hyperplasia, with an aesthetic complaint and treated surgically by surgical excision. Case Report: A 22-year-old female patient was wearing an orthodontic appliance and during clinical examination it was found that there was an increase in gingival tissue and extension with the periodontal probe, in addition to the presence of biofilm on the brackets and gingival margin. The treatment of choice was gingivoplasty, in which a surgical excision of the swollen gingiva was performed, respecting the biological space of 3 mm, without any complications. Postoperative recommendations were made, and a satisfactory postoperative period was achieved, reaching the expected results. Conclusion: In addition to surgery, it is necessary that the patient maintain adequate oral hygiene to prevent recurrence of gingival hyperplasia.

**Keywords:** Gingival hyperplasia. Fixed orthodontic appliance. Dental biofilm.

## I. INTRODUCTION

Gingival hyperplasia is a reaction of the fibrous connective tissue, a benign lesion that can be caused by chronic trauma, dental fractures, ill-fitting prostheses, inadequate oral hygiene associated with the use of fixed orthodontic appliances, and other factors (NASCIMENTO et al., 2016). This gingival tissue overgrowth poses a threat to periodontal health and aesthetics (JORDÃO et al., 2007).

The use of orthodontic appliances contributes to the accumulation of biofilm, consequently triggering inflammatory proliferative processes in the gingival region (SANTOS, 2014; GOMES et al., 2017). The oral cavity, under hygienic conditions, hosts a variety of microorganisms that live in harmony with the host. However, under unfavorable conditions, an imbalance in this microbiota can have a negative impact on gingival health (DIAS et al., 2020).

According to Pedron and colleagues (2010), individuals with orthodontic appliances must exercise greater care in their oral hygiene, although they often face greater difficulties. Raszl-Henrique et al. (2018) attribute this difficulty to the brackets becoming niches for biofilm accumulation, and the neglect of oral hygiene becomes a contributing factor to the onset of gingival hyperplasia.

Periodontal plastic surgeries restore the form and function of altered periodontal tissue, enhancing smile aesthetics. Gingivoplasty is the periodontal surgical technique used to achieve proper gingival contouring without involving bone, thereby establishing harmony in the smile (SANCHES; MEZA; MIRANDA, 2019). Through this technique, it is possible to promote the remodeling, anatomy, and physiological contour of the gums (SOUZA, 2018).

The objective of this study is to report a clinical case of a female patient with fixed orthodontic braces who presented with gingival hyperplasia and expressed discomfort with the excessive gingival display during smiling. The clinical characteristics, impact on the patient's smile aesthetics, and the chosen treatment plan for correcting periodontal health and gingival aesthetics will be highlighted.

## II. CASE REPORT

A 22-year-old female patient attended the Integrated Ana Lúcia Chaves Fecury School Clinic at CEUMA University with a complaint of excessive gingival growth after orthodontic treatment, expressing dissatisfaction with her smile aesthetics. During the medical history, the patient mentioned being asthmatic and allergic to amoxicillin. Following data collection, a clinical examination was conducted. Probing with a millimeter probe revealed gingival overgrowth ranging from 2 to 3 mm in depth between dental units 16 to 24 in the upper region and 33 to 43 in the lower region. The irregular contour was the primary cause of dissatisfaction (Image 1, 2, 3, and 4). The treatment plan for the patient included basic periodontal therapy and gingivoplasty of the upper and lower dental units, to be performed in two sessions. The patient was advised by the specialist to remove the orthodontic appliance, with a warning about the potential recurrence of hyperplasia if she continued its use and neglected oral hygiene.

Image 1: Initial appearance of the smile. Frontal view. Source: Personal collection.

Image 2: Intraoral appearance. Frontal view.

Source: Personal collection.

Image 3: Intraoral appearance. Left lateral view.

Source: Personal collection.

Image 4: Intraoral appearance. Right lateral view.

Source: Personal collection.

## III. PRE-OPERATIVE PROCEDURE

As a pre-operative medication, Dexamethasone 4mg was administered orally one hour before the procedure as a single dose, serving as an anti-inflammatory agent. Subsequently, a mouthwash with 0.12% chlorhexidine digluconate and extra-oral antisepsis with 2% chlorhexidine was performed. Topical anesthetic benzotop® 200mg/g (DFL, Rio de Janeiro/RJ, Brazil) was applied, followed by the blockage of the superior anterior and middle alveolar nerves using 2% lidocaine with 1:100,000 epinephrine (DFL®, Rio de Janeiro/RJ).

After the anesthetic procedure and allowing sufficient time for the anesthetic to take effect, probing was conducted using a millimeter probe (Golgram®, São Caetano do Sul/SP, Brazil), marking the bleeding point. Subsequently, an incision with an internal bevel was made using a 15C scalpel blade (Solidor®, São Bernardo do Campo/SP, Brazil), and the edematous tissue was removed with a McCall curette (Golgram®, São Caetano do Sul/SP, Brazil) (Images 5, 6, 7, and 8). Following this, the biological space distance was assessed through bone probing, indicating a 3mm distance from the gingival margin to the bone crest. Osteotomy was not required.

Image 5: Frontal view. Immediate postoperative period of gingivoplasty for the upper teeth.

Source: Personal collection.

Image 6: Right lateral view. Immediate postoperative period.

Source: Personal collection.

Image 7: Left lateral view. Immediate postoperative period.

Source: Personal collection.

Image 8: Smile appearance in the immediate postoperative period.
Source: Personal collection.

## IV. POST-OPERATIVE MEDICATION

The chosen post-operative medication was Ibuprofen 600mg (Medley®, Suzano/SP, Brazil), one tablet every 8 hours for 3 days. Additionally, mouthwash with 0.12% Chlorhexidine Digluconate (Periogard®– Colgate, São Bernardo do Campo/SP, Brazil) was recommended, to be performed 24 hours after the surgery and 30 minutes

after brushing, aiming to reduce post-operative bacteremias in situations where effective oral hygiene becomes difficult and uncomfortable.

Post-operative instructions were provided, including guidance on the potential recurrence of hyperplasia if the orthodontic appliance were not removed.

The patient returned to the clinic for evaluation 7 days after the surgery. She had removed the orthodontic appliance with her orthodontist and reported satisfaction with the results. It was noticeable that there was a reduction in edematous gingiva in the lower anterior teeth, a result achieved through plaque control and orthodontic appliance removal (Images 10, 11, and 12). It is important to note that the patient was already nearing the end of orthodontic treatment, and that's why the appliance was removed.

Image 9: Smile appearance after 7 days postoperative.

Source: Personal collection.

Image 10: Frontal view of the smile after 7 days postoperative.
Source: Personal collection.

Image 11: Left lateral view of the smile after 7 days postoperative.

Source: Personal collection.

Image 12: Right lateral view of the smile after 7 days postoperative.

Source: Personal collection.

## V. DISCUSSION

In this case report, the surgical technique of gingivoplasty was performed to correct gingival smile caused by orthodontic trauma associated with poor hygiene. Uncontrolled gingival growth can be influenced by local and host factors, such as the use of orthodontic appliances and the accumulation of biofilm on brackets, bands, elastics, and other orthodontic accessories (DA MATA et al., 2021). Brackets have a shape that facilitates biofilm retention, and when not properly cleaned with interdental brushes and floss threaders, they become a bias for the stomatognathic apparatus, leading to the development of gingival inflammation (SANTOS; XAVIER; RIBEIRO, 2014; DA MATA et al., 2021).

The primary way to induce regression of orthodontically induced gingival inflammation is the elimination of the cause through correct brushing, interdental brush use, and flossing with threaders for biofilm control (DA MATA et al., 2021). However, when regression does not occur, gingivoplasty or gingivectomy may be indicated, involving the removal of bone in the operative process (SOUZA, 2019).

Excessive gingival tissue can trigger adverse effects not only on aesthetics but also on periodontal health, affecting masticatory function where the protective barrier against trauma decreases as a consequence. Additionally, false periodontal pockets may form, serving as a focus for bacterial proliferation (SOUZA, 2019). Therefore, before the surgical procedure, it is essential to perform basic periodontal therapy in a session prior to the day of surgery (SOUZA, 2019).

The choice of treatment was based on the patient's history, who reported the gingival growth occurring after the use of orthodontic appliances. Thus, gingivoplasty involves surgical excision by marking a marginal contour, shaping the gum, and removing excess tissue, promoting the proper anatomical contour of the interdental papilla and attached gingiva (CARRANZA et al., 2012). Osteotomy was not necessary as the gingival enlargement was caused by orthodontic trauma without bone involvement.

As mentioned, the patient is asthmatic; however, during the planning of the protocol, it was determined that a large amount of anesthesia was not required. Therefore, lidocaine with the vasoconstrictor epinephrine does not pose a risk to asthmatics. It is essential to control the patient's anxiety to avoid triggering crises and potential complications during the procedure (COELHO et al., 2021).

The chosen medication was Ibuprofen 600mg, known for its anti-inflammatory and analgesic properties. The drug therapy, combined with mouthwashes containing 0.12% chlorhexidine digluconate, contributed to good healing, preventing infectious foci (DIAS et al., 2020). The postoperative period was satisfactory, with rapid and successful healing, without any complications during or after surgery.

## VI. CONCLUSION

Literature highlights that patients with orthodontic appliances have a higher likelihood of developing gingival hyperplasia. This condition can worsen when associated with poor oral hygiene. In conclusion, it is evident that basic periodontal therapy, instructions for proper oral hygiene, and the surgical technique of gingivoplasty contribute to a favorable prognosis, improved periodontal aesthetics, and function, ultimately bringing satisfaction to the patient.

## REFERENCES

[1.] CARRANZA, F.A.; NEWMAN, M.G.; TAKEI, H.H.; KLOKKEVOLD, P.R. Periodontia clínica. 11. ed. Rio de Janeiro: Editora Elsevier, 2012. p. 685-688.

[2.] DO NASCIMENTO COELHO, Sabrina Ketulen et al. A utilização dos anestésicos locais em odontologia: revisão de literatura. Revista Eletrônica Acervo Saúde, v. 13, n. 1, p. e5402-e5402, 2021.

[3.] DIAS, Mayra Scali Vilar. et al. cirurgia corretiva para hiperplasia gengival inflamatória após uso de aparelho ortodôntico fixo: relato de caso clínico. Revista Saúde Multidisciplinar, v. 8, n. 2, 2020.

[4.] DA MATA, Marli Castro et al. Hiperplasia gengival inflamatória induzida por biofilme em pacientes ortodônticos: revisão de literatura. Trabalho de Conclusão de Curso (Bacharel em Odontologia) - Paripiranga, BA. Curso de Odontologia do Centro Universitário AGES 2021.

[5.] GOMES, Zybia Muryethy Rocha. et al. Inter-relação ortodontia e periodontia: revisão de literatura. Journal of Orofacial Investigation, v. 4, n. 1, p. 30-40, 2017.

[6.] JORDÃO, K.C.F.; SPIN NETO, R.; MARCANTONIO JUNIOR, E. Aumento de coroa clínica com finalidade estética e funcional: relato de caso clínico. Revista de Odontologia da UNESP, v. 36, n. esp. p. 1, 2007.

[7.] NASCIMENTO, JMQ et al. Terapêutica cirúrgica de hiperplasia fibrosa inflamação gengival. Ciência e Cultura, v. 12, n. 1, 2016.

[8.] PEDRON, Irineu Gregnanin. et al. Processos proliferativos gengivais não neoplásicos em paciente sob tratamento ortodôntico. Dental Press Journal of Orthodontics, v. 15, n. 6, p. 80-87, 2010.

[9.] SANTOS, Filipe de Sousa Carvalho; XAVIER, Fernanda Villibor; RIBEIRO, Ana Lúcia Roselino. Instrução de higiene oral para portadores de aparelhos ortodônticos. Journal of Orofacial Investigation, v. 1, n. 2, p. 27, 2014.

[10.] SANCHES, K. A. D. C. C., MEZA, E. J., & DE MIRANDA, T. S. (2019). Correção do sorriso gengival através da técnica minimamente invasiva: relato de caso. Revista Saúde-UNGSer, 12(1 (ESP)), 21.

[11.] SOUZA, N. C. (2018). Gengivoplasty with surgical: guide case report. 9f. Trabalho de Conclusão de Curso (Bacharel em Odontologia) - Centro Universitário do Planalto Central Apparecido dos Santos.

[12.] RASZL-HENRIQUE, Patrícia et al. Influência dos braquetes convencionais ou autoligados nos parâmetros periodontais revisão. Periodontia, p. 28-34, 2018.