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MANAGEMENT OF GINGIVAL ENLARGEMENT IN PATIENT WITH NON SURGICAL TREATMENT: A CASE REPORT

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ABSTRACT

Gingiva diseases is an inflammation in oral cavity and gingiva enlargement is one of the most common things found. Gingival enlargement is a chronic inflammatory lesion caused by bacterial plaque and calculus. It appears at the level of interdental papilla and/or marginal gingival tissue, it can be localized or generalized. This article studies a case of a patient who suffered from gingival enlargement and gingival lesions caused by bacterial plaque. This case was managed with the use of nonsurgical periodontal treatment. For five days, antibiotic therapy and manual therapy were performed. Re-evaluation one month later showed resolution of the enlargement, decrease in inflammation, suppuration, percentage of periodontal pockets and decrease gingival swelling; periodontal treatment was performed at that time. After three months, a decrease in the percentage of periodontal pockets and gingival swelling was observed; at that time maintenance periodontal therapy was performed.
Keywords: *Gingival enlargement, periodontal treatment, non surgical periodontal treatment*

ABSTRAK

Penyakit gingiva merupakan peradangan pada rongga mulut dan pembengkakan gingiva merupakan salah satu hal yang paling sering ditemukan. Pembesaran gingiva merupakan lesi inflamasi kronis yang disebabkan oleh plak bakteri dan kalkulus. Pembesaran gingiva muncul pada tingkat papila interdental dan/atau jaringan marginal gingiva, dapat terlokalisasi atau menyeluruh. Artikel ini mengkaji kasus pasien yang menderita pembesaran gingiva dan lesi gingiva yang disebabkan oleh plak bakteri. Kasus ini ditangani dengan perawatan periodontal nonsurgical. Selama lima hari, dilakukan terapi antibiotik dan terapi manual. Evaluasi ulang satu bulan kemudian menunjukkan resolusi pembesaran, penurunan peradangan, supurasi, persentase poket periodontal dan penurunan pembengkakan gingiva; perawatan periodontal dilakukan pada saat itu. Setelah tiga bulan, terjadi penurunan persentase poket periodontal dan pembengkakan gingiva; pada saat itu dilakukan terapi periodontal pemeliharaan.
Kata kunci: *Pembesaran gingiva, perawatan periodontal, perawatan periodontal non-bedah*

INTRODUCTION

Gingival enlargement represents a significant clinical finding characterized by an increase in the size or volume of the gingival tissues. This condition is relatively common and arises as the gingiva responds, often defensively, to various stimuli, most notably microbial irritation from dental plaque. While sometimes presenting acutely, gingival enlargement is frequently a chronic condition that can develop gradually (Agrawal, 2015; Seymour, 2006). Its importance in clinical practice stems not only from its prevalence but also from its potential to significantly impact oral health and patient well-being. Enlarged gingiva can compromise aesthetics, interfere with proper function such as mastication and speech, and critically, hinder effective oral hygiene, thereby creating a cycle that can perpetuate periodontal inflammation. Understanding the diverse causes and presentations of gingival enlargement is crucial for accurate diagnosis and effective management.

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The etiology of gingival enlargement is multifactorial, although chronic inflammation induced by persistent bacterial plaque accumulation is the most frequent underlying cause (Newman et al., 2010). This inflammatory hyperplasia typically manifests as a noticeable swelling, often beginning in the interdental papillae or along the marginal gingiva. The enlargement can be localized to specific areas or generalized throughout the dentition (Newman et al., 2010). Beyond plaque-induced inflammation, several other factors can initiate or exacerbate gingival overgrowth. Hormonal fluctuations associated with puberty or pregnancy can modify the tissue response to local irritants, leading to more pronounced enlargement. Furthermore, the use of certain systemic medications, including anticonvulsants (like phenytoin), immunosuppressants (like cyclosporine), and calcium channel blockers (like nifedipine), is strongly associated with drug-induced gingival overgrowth. Genetic predisposition or hereditary factors can also play a significant role in some individuals, leading to conditions like hereditary gingival fibromatosis (Savage & Daly, 2010).

The underlying tissue changes in chronic inflammatory gingival enlargement reflect processes characteristic of chronic inflammation. Histologically, these lesions often exhibit both exudative elements, such as fluid accumulation and inflammatory cell infiltration, and proliferative components (Savage & Daly, 2010). Key features include vascular changes like thickening of vessel walls and the formation of new capillaries, alongside related degenerative changes within the connective tissue. Clinically, the appearance can vary. While plaque-induced enlargement often presents initially with redness, swelling, and a tendency to bleed easily due to vascularity, long-standing chronic inflammatory enlargements may develop a significant fibrotic component. This results in tissue that appears firmer, more resilient, pinkish, and less prone to bleeding, owing to an abundance of fibroblasts and collagen fibers (Savage & Daly, 2010). The condition may fluctuate, sometimes showing periods of spontaneous, partial volume reduction followed by phases of exacerbation and further enlargement.

The cornerstone of managing plaque-induced gingival enlargement is addressing the primary etiological factor: bacterial plaque and associated calculus. Treatment commences with the thorough removal of these local irritants through professional procedures such as scaling and root planing (periodontal debridement). Concurrently, emphasis is placed on improving the patient's personal oral hygiene practices through detailed instruction and motivation (Savage & Daly, 2010). This initial phase of non-surgical periodontal therapy aims to reduce the microbial load and control the inflammatory response within the gingival tissues. In cases where inflammation is the predominant cause, significant resolution of the enlargement can often be achieved through these fundamental measures alone.

Despite the effectiveness of non-surgical therapy in controlling inflammation, it frequently falls short of completely restoring normal gingival architecture, particularly when significant fibrotic tissue exists or when the enlargement is influenced by drugs or genetic factors (Angulo & Torre, 2016). Excessive residual gingival tissue poses several clinical challenges. Firstly, the altered contour creates niches that hinder effective plaque removal by the patient, thereby increasing the risk of recurrent inflammation and potentially contributing to further periodontal breakdown. Secondly, prominent gingival overgrowth, especially in the anterior region, can lead to significant aesthetic concerns for the patient. Lastly, in severe cases, the enlarged tissue can interfere with normal oral functions like speaking and chewing, impacting the patient's quality of life. These persistent issues often necessitate further evaluation and consideration of surgical interventions to re-establish a healthy and functional gingival form.

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RESEARCH METHODS

This study used a case study design to assess the clinical response of a patient to non-surgical periodontal treatment. The subjects were patients identified as having gingival enlargement and gingival lesions caused by chronic irritation due to accumulation of bacterial plaque and calculus. The main focus was to document the treatment process and evaluate the changes in the patient's gingival condition after the interventions given, which included both acute phase treatment and short-term maintenance. The selection of cases was based on the common clinical presentation of chronic inflammatory gingival enlargement. The main intervention applied was non-surgical periodontal treatment. The initial stage of treatment involved systemic antibiotic therapy given for five days, combined with manual therapy (most likely scaling and root planing or debridement) during the same period to eliminate the primary etiological factor. Evaluation of treatment outcomes was carried out periodically. Observation and measurement of key clinical parameters, such as resolution of enlargement, degree of inflammation, presence of suppuration, percentage of periodontal pockets (measured by probing), and degree of gingival swelling, were recorded at one month after the initial treatment. A follow-up evaluation was carried out at three months, during which maintenance periodontal therapy was also given. Data analysis was performed descriptively to describe changes in clinical parameters over time in response to the treatment provided.

RESULTS AND DISCUSSION

Result

Clinical Case Presentation

A 59 years old male patient attended the dental clinic with complaining of pain in the gums, bleeding on brushing and lesion around the teeth . During history, the patient had no history of taking medication and last visited the dentist approximately five years ago.

Initial intraoral examination revealed gingival inflammation surrounding most teeth, as well as a soft tissue lesion located at the marginal and inserted vestibular gingiva surrounding tooth number 1.2, 1.3, 1.4, 1.5 with present suppuration, the gingival swelling was grade III (*Figure 1*). There is a periapical abscess with a pulp necrosis in tooth 1.4.

Figure 1. Generalized chronic periodontitis and gingival enlargement.

Periodontal assessment established presence of periodontal pockets of up to 12mm depth in 40% assessed sites. Grade 1 mobility was observed in tooth with periapical abscess and bleeding upon probing. According to O'Leary's index, the patient exhibited an 75% (Poor) oral hygiene index. After assessing all obtained information a diagnosis of severe generalized chronic periodontitis was established, as well as acquired mucogingival deformities and lesions surrounding the teeth (gingival enlargement). The following treatment plan was devised: oral hygiene instruction, root flattening and scaling by sextants with systemic antibiotic therapy combined with a chemical agent. Re-evaluation and first maintenance session were conducted 14 days and 30 days later. Moreover, surgical removal of the lesion was initially planned.

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Treatment

Phase 1, periodontal therapy was initiated with oral hygiene instruction, O' Leary's index was used to record and reflect improvement. The instruction for the patient to use of an ultra soft dental brush was recommended and teath the patient the right technique of brushing teeth. Moreover, as supplementary instruments for increase the hygiene, use of dental floss and interdental brushes were recommended.

Phase II, root flattening and scaling by sextants was established, as well as polishing all teeth. Root flattening and scaling was achieved with manual instruments using specific Jacquet scalers and Gracey curettes. Simultaneously, use of azythromycin tablets 500mg (by oral) once per day for five days was prescribed along with 0.12% chlorhexidine rinses every 12hours, 15ml for 1 minute during 14 days.

Phase III, root canal treatment tooth 1.4 to treat the periapical abscess.

Re-evaluation after one month

O'Leary's index was once more applied as well as a periodontal study. In this assessment a 12% percentage of periodontal pockets was found, with depths of up to 6 mm; there was absence of suppuration and 31.6% O' Leary oral hygiene index, the gingival swelling was grade II *(Figure 2)*. Moreover gingival enlargement remission was observed, with the gingiva exhibiting a coral pink hue, firm consistency, even margins and healthy aspect. New root flattening and scraping was undertaken in areas with presence of dental plaque and active periodontal pockets.

Figure 2. Generalized chronic periodontitis and gingival enlargement.

Re-evaluation after three months

The following was observed at this re-evaluation: 8 % percentage of periodontal pockets, with depth of up to 4 mm, absence of suppuration, oral hygiene index of 10% (O'Leary), the gingival swelling was grade I *(Figure 3)*. Periodontal maintenance therapy was once more conducted with manual instrumentation. The following re-evaluation appointment was programmed for three months later.

Figure 3. Gingiva after treatment

Discussion

Gingival disease is generally associated with dental plaque, endogenous hormonal fluctuations, drugs, systemic diseases and malnutrition have many important characteristics. Universal characteristics of these gingival diseases include: clinical signs of inflammation,

reversibility of the disease through elimination of the etiology, the presence of bacterial plaque to initiate and worsen the severity of the lesion and a possible role as a precursor to insertion loss (Murakami et al, 2018) Clinical signs of gingival inflammation include enlarged gingival contours due to edema or fibrosis, turning reddish or bluish red, bleeding on probing and increase of gingival exudates (Tungare & Paranjpe, 2022).

Gingival enlargement is a common cases, the treatment is dependent on etiology. The most common form of gingival enlargement is caused by inflammatory hyperplasia, which tends to be located at the level of interdental papillae. This clinical enlargement can be aggravated by hormonal causes such as puberty or pregnancy, as well as by the use of certain medications. Plaque-induced inflammatory hyperplasia should be treated by plaque and calculus removal, and improved oral hygiene of the patient (Savage & Daly, 2010). Excessive gingival growth will damage the aesthetics is a significant adverse outcome, this is especially associated with the use of anticonvulsant drugs, immunosuppressants and calcium channel blockers (Murakami et al, 2018).

In this case, the following was observed: gingival inflammation, bleeding on probing, presence of periodontal pockets, suppuration, dental mobility and gingival enlargement at papillary level and on attached gingiva. Dental plaque can be considered as an etiologic factor of this lesion due to absence of other possible related factors.

The patient with gingival enlargement cases, modification of tissue topography through surgical remodeling can be performed to create an oral environment suitable for treatment. Recurrence is common in patients with drug-induced gingival enlargement. For these patients, consultation with a physician is necessary to determine the feasibility of using alternative pharmacological therapies that will not enlarge the gingival tissue; otherwise, the surgical procedure may need to be repeated (Negara & March, 2022).

In periodontal patients, nonsurgical mechanical pocket treatment reduces inflammation and probing depth and increases clinical insertion rates. However, residual plaque and calculi may still be present despite careful nonsurgical instrumentation. Therefore, surgical treatment may be recommended in cases of persistent inflammation (Mayfield & Lang, 2000).

Mayfield et al assessed the effectiveness of surgical versus nonsurgical treatments for the treatment of chronic periodontitis through a systematic review. For the treatment of deep pockets (>6 mm) they reported that 12 months after treatment, surgical therapy resulted in an additional 0.6 mm decrease in depth at examination, and an additional 0.2 mm increase in clinical attachment when compared with nonsurgical therapy. In periodontal pockets measuring 4-6 mm, scaling and root planing resulted in a 0.4 mm increase in clinical insertion and 0.4 mm less depth at examination when compared with surgical therapy. Based on this, it was concluded that scaling and root planing alone and scaling and planing combined with flap procedures are efficient methods for the treatment of chronic periodontitis in terms of increase in insertion and reduction in gingival inflammation. In addition, it was observed that in deep pockets (>6 mm) flap debridement resulted in a greater decrease in depth at examination as well as an increase in the level of clinical insertion (Mayfield & Lang, 2000).

There are reports in literature on the additional use of systemic antimicrobial agents in periodontal therapy.[10] However, in certain cases, periodontal surgery may be necessary; in these cases there is controversy as to when it is more effective to prescribe systemic antimicrobial agents; either in combination with basic periodontal therapy or with the surgical phase (Patil, 2013).

Indirect evidence suggests that antibiotic intake must be completed in a short period of time (preferably lesser than a week) (Khilnani et al, 20119) Therefore, in this case, five days of systemic antibiotic therapy is recommended during non-surgical therapy, thus further supporting the results achieved.

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Re-evaluation of the results after initial treatment is essential to select appropriate additional therapy and establish the best long-term prognosis. Traditionally, re-evaluation is performed several months after initial periodontal treatment. Although data support the fact that healing can continue for up to nine months after initial treatment, most healing is complete by three months after treatment (Negara & March, 2022).

The studies have assessed the effectiveness of initial periodontal treatment (IPT) followed by maintenance periodontal therapy (MPT). In general MPT seems to be efficient in the prevention of recurrent periodontitis, if MPT is absent, risk of tooth loss increases. It has been shown that in patients with teeth severely affected by periodontal disease, control of microbial concentrations and the use of systemic antibiotics as a supplement to nonsurgical MPT can reduce the need for tooth extraction. This shows that MPT is essential for the success of periodontal treatment (Herz et al, 2025).

Based on all the above, re-evaluation of this case after three month showed significant improvement in the following: decrease in the percentage and depth of periodontal pockets, absence of suppuration, decrease in gingival swelling, absence of recurrence of enlargement and lower percentage of oral hygiene index (Table I). The improvement in this patient highlights the importance of observing maintenance periodontal therapy and the need for regular and permanent follow-up in this type of patients to maintain long-term periodontal health.

Table I. Evaluation indicators and periodontal health state follow-up.

Evaluation	Oral hygiene (O'Leary) (%)	Presence of pockets (%)	Probing depth (mm)	Bleeding upon probing	Suppuration	Gingival Swelling
Initial	75.0	40	6-12	+++	+	III
1 month	31.6	12	4-6	++	-	II
3 months	10	5	3-4	+	-	I

The initial evaluation revealed a patient presenting with severe periodontal compromise, characterized by poor oral hygiene evidenced by a high O'Leary Index score of 75%. This correlated with significant periodontal destruction, including 40% of sites exhibiting periodontal pockets, deep probing depths ranging from 6-12 mm, severe bleeding on probing (+++), the presence of active suppuration (+), and pronounced gingival swelling (Index III). This clinical presentation is indicative of advanced periodontal inflammation resulting from substantial bacterial plaque accumulation. Following the initial phase of non-surgical periodontal therapy (NSPT), a marked improvement was observed at the one-month evaluation. Significant positive changes included a drastic reduction in the O'Leary score to 31.6%, a decrease in pocket prevalence to 12%, shallower probing depths (4-6 mm), reduced bleeding (++), complete resolution of suppuration (-), and diminished swelling (Index II). Such initial clinical improvements, including the resolution of acute inflammatory signs like suppuration and significant swelling reduction, are consistent with the expected early response following effective NSPT, which aims to reduce the subgingival microbial load and control inflammation, often becoming apparent within weeks of treatment completion (Preshaw et al., 2012; Sanz et al., 2020).

The positive trajectory of healing continued, demonstrating further consolidation of periodontal health by the three-month evaluation. At this point, the patient achieved excellent oral hygiene maintenance (O'Leary: 10%), exhibiting minimal residual pocketing (5%) and shallow probing depths (3-4 mm). Concurrently, bleeding on probing was mild (+), and gingival swelling was minimal (Index I), with suppuration remaining absent. This progressive

improvement over three months aligns with established evidence demonstrating the efficacy of NSPT, particularly scaling and root planing, in achieving significant reductions in probing depth and bleeding on probing within this typical initial healing timeframe (Suvan et al., 2019; Sanz et al., 2020). Furthermore, the patient's substantial improvement in oral hygiene practices, reflected by the low O'Leary score, is recognized as a critical factor for achieving and sustaining successful clinical outcomes following periodontal therapy (Cherry et al., 2013). Overall, the presented data strongly indicates a substantial and progressive enhancement in the patient's periodontal status, consistent with a positive and expected response to the implemented NSPT regimen.

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