

## **MANAGEMENT OF GINGIVAL ENLARGEMENT IN AN ORTHODONTIC PATIENT: A CASE REPORT**

**Kumari Pallavi\***, Janardhana Amaranath B.J., Neelam Das, Koushik Mukherjee

Rama dental college hospital and research centre, Rama University,  
Mandhana, Kanpur, Uttar Pradesh India

### **Abstract: -**

One of the orthodontic side effects is gingival enlargement. Both acute and chronic inflammatory reactions can result in gingival enlargement, with chronic reactions being more frequent. Gingival hyperplasia, or overgrowth of the gingiva, is one of the most prevalent soft tissue variables linked to fixed orthodontic appliances. There have been reported incidences of 10%. Maintaining adequate dental hygiene is challenging due to gingival enlargement caused by orthodontic treatments. Using mouth rinses in conjunction with patiently maintaining dental hygiene is the primary line of treatment for gingival enlargement. Gingivectomy is an additional treatment for gingival enlargement. The goal of a gingivectomy is to remove pathologically enlarged gingival tissue in order to create physiological, functional, and aesthetic gingival tissue. The procedure involves excising the affected gingival tissue. The 17 years old female patient, visited the periodontal department at Rama Dental College in Mandhana, Kanpur, to have treatment for gingivectomy. In order to remove multiple gingival enlargements at the lower anterior region, gingivectomy was performed. Using a pocket marker forceps to measure gingival enlargement, the bleeding spot was identified. The difference between pre- and post-treatment was compared in the final assessment.

**Keywords:** Gingival enlargement; Chronic inflammatory; Orthodontic appliance; Gingivectomy therapy

### **Introduction:**

Gingival enlargement is a typical condition induced by gingival inflammation. Mastication, aesthetic and physiological issues can be affected by this enlargement. The most common gingival enlargement can occur due to a plaque-induced inflammatory reaction where it can occur locally or spread throughout the tooth with multifactorial causes including interactions between the host and the environment and its response to stimuli. Chronic or acute inflammatory responses might trigger gingival enlargement, while chronic changes are far more common.<sup>1</sup>

Gingival enlargement or hyperplasia is one of the most prevalent soft tissue problems connected with fixed orthodontic appliances. A 10% prevalence rate has been reported. Gingival enlargement is formed by orthodontic treatment, and it has a substantial impact on oral care. It also has an impact on occlusion, mastication, and phonetics, and in the majority of cases, it can cause cosmetic and psychological problems, as well as risk for orthodontic tooth movement.<sup>2</sup>

Gingivectomy is a surgical procedure through the excision of pathologically enlarged gingival tissue, which aims to eliminate pockets and gingival inflammation so that physiological, functional and aesthetic gingival tissue is obtained. A scalpel (scalpel),

electrosurgery (cautery), laser, or chemosurgery can all be used to perform gingivectomy. A scalpel is used to complete conventional gingivectomy, which is the most common method. The advantages of performing a gingivectomy with a scalpel include the relatively simple technique, the incision can be made with precision on the marginal gingiva that has been determined, the healing is relatively good and fast. However, there are drawbacks to this technique, including the possibility of bleeding that occurs during the surgical procedure so that it interferes with the operator's view. In addition, the presence of pain that occurs after surgery and the possibility of a prolonged healing process are also factors that need to be considered.<sup>3</sup>

### Case Presentation:

The 17-year-old female patient presented with a chief complaint of excessive gingival tissue covering the lower anterior teeth, which not only affected her smile, aesthetics but also posed challenges in maintaining adequate oral hygiene. (Figure.1) The patient has been examined by an orthodontist and directed to do gingival surgery because it will hinder the orthodontist treatment carried out. The patient has undergone preliminary treatment in the form of scaling and root planing 1 week ago. (Figure. 2)



**Figure 1.** Preoperative View Initial Before Gingivectomy Surgery



**Figure 2.** Ultrasonic scaling and root planing (After 1 week)

Clinical examination showed gingival enlargement 31,32,41,42, bleeding on probing and inflammation, calculus and plaque in maxillary and mandibular teeth. The etiology was identified to be dental plaque, and the prognosis was good. Scaling and root planing as a non-surgical therapy were included in the treatment plan. Gingivectomy on the anterior mandibular area was proposed during the surgical phase. Maintenance and observation were suggested every four months for regular check.

**Methods:**

Initial treatment of scaling root planning and dental health education prior to surgery phase was done. Gingivectomy performed one week after initial treatment. After achieving adequate anesthetic effect, pocket marking forceps is used to create bleeding spots. Pocket marking is done after touching the bottom of the pocket to generate bleeding points as projections from the base of the pocket. The external bevel incision made with blade scalpel no.15c at a position of 1-2 mm apical from the bleeding point forming an angle of 45 degrees towards the coronal to form a zero pocket. Incisions were given with Kirkland and Urban knives. Gingival tissue that has been cut off is released with a Gracey curette. (Figure. 3)



**Figure 3.** Gingivectomy by Scalpel Instrument

**Result:**

The patient experienced a smooth post-operative recovery, characterized by minimal discomfort and swelling. She reported a noticeable improvement in smile aesthetics and expressed satisfaction with the overall outcome. Follow-up examinations conducted at 14<sup>th</sup> days (Figure 4) and 1-month post-surgery (Figure 5) revealed favourable healing outcomes, with stable gingival contours and no signs of complications.



**Figure 4.** 14<sup>th</sup> day Postoperative View



**Figure 5.** Follow up after 1 month

**Discussion :**

Gingival enlargement or overgrowth occurs in a variety of ways<sup>3</sup>. Gingival enlargement can be localized or general. Hypertrophy (an increase in cell size) and hyperplasia (an increase in the number of cells) cause gingival enlargement.<sup>3</sup> Mostly caused by inflammation due to plaque. Plaque accumulation for a longer time, leading to chronic inflammation and the proliferation of fibrous connective tissue.<sup>4</sup> Plaques and bacteria that accumulate for long time lead to infectious infiltration of the cell. This condition can be controlled with conventional first-line treatments such as scaling and root planning.<sup>4</sup> Periodontal surgical treatment, which includes gingivectomy, flap method with laser, and electrocautery, is used when gingival enlargement persists beyond conventional treatment. Gingivectomy is performed in this condition.<sup>4</sup>

In this case gingival hyperplasia occurs because on clinical examination found tissue in gingiva dense and full, gingival stippling is more visible, not bleeding easily, paler color unlike in cases of hypertrophy where gingival color is redder. Orthodontic treatment induces gingival inflammation in the margins, which leads to hypertrophy of gingival margins.<sup>2</sup>

The use of orthodontic appliance is also one of the local factors for gingival enlargement. There is a positive relationship between the length of use of orthodontic appliance and the rate of gingival enlargement events.<sup>5</sup> Placement of orthodontic appliance will facilitate the accumulation of biofilms and colonization of bacteria that will trigger inflammation. With gingival enlargement, it will complicate access to the tooth surface and complicate self-cleansing which results in increased plaque buildup.<sup>6</sup> This is the beginning of gingival enlargement, but after scaling and root planning the gingiva of patient does not show a decrease in its size, may be the possibility of calculus that is still left behind in the subgingival area hence the gingivectomy is needed.<sup>5</sup>

In this case, the gingivectomy is performed using conventional scalpel procedures. The advantage of employing conventional method is that they are very inexpensive and simple to implement. In conventional gingivectomy techniques, epithelial regeneration is easier to achieve. Gingivectomy with lasers, electrocauters, or acidic materials causes necrosis, which is not seen in conventional gingivectomy methods.<sup>3</sup>

Conventional gingivectomy is performed by removing the lateral wall of the pocket. This aims to eliminate pocket and inflammation of gingiva so that gingival tissue is obtained that is physiological, functional and aesthetically good. This procedure also aims to optimize the field of view on the entire surface of the tooth crown so that it is easier to remove the deposits found on the surface of the gingiva. Another important reason is that the elimination of this pocket aims to make the depth of gingival sulcus become normal again so that the maintenance of daily health and oral hygiene can be done.<sup>3</sup> Gingival surgery External bevel, is commonly used for the elimination of gingival enlargement which only includes free gingiva.<sup>7</sup>

**Conclusion:**

Plaque accumulation on the brackets used in orthodontic therapy might cause gingival hypertrophy in patients receiving treatment. A gingivectomy is the choice of periodontal surgery that tries to remove pockets and enlarged gingiva to achieve optimal physiological, functional, and cosmetic gingiva

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