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Research Paper

Esthetic Crown Lengthning: a Treatment for "Gummy Smile" – A Case Report

Medical Science

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ABSTRACT

The esthetic demands in smile are continually rising, thus, critical factors such as; dental midline, smile line, incisal embrasures, tooth position, width to length ratio of crown, symmetry of contra-lateral gingival margins, and gingival display need to be taken into consideration. It is well- recognized that excessive gingival display can have a negative impact on a patient's smile. Excessive gingival display due to gingival enlargement or altrered passive eruption (dentogingival causes) can be corrected effectively through periodontal surgeries. A case report of short clinical crown with gummy smile is discussed in this article.

Introduction:

Smile esthetics has been shown to play a major role in the perception of beauty and attractiveness.[1] Several factors that can influence smile esthetics include tooth form,tooth position and gingival tissue levels.[2] When considering soft tissue, an excessive gingival display and asymmetry of the gingival margins can impair the esthetic value of the smile. The etiology of the excessive gingival display can include vertical maxillary excess, anterior dentoalveolar extrusion, a short or hyperactive upper lip, altered passive eruption, or a combination of these factors.[3]

Any band of gingiva, other than the papillary tips, that appears at rest is unnecessary. Thus 2mm of gingival display above the tooth margin upon smiling is considered to be excessive, and called a "Gummy smile"[4].

Amongst all the causes most common is altered passive eruption.[5] When the dentogingival junction remains in Stage I of passive eruption, even after adulthood sets in, altered passive eruption takes place. According to Coslet et al (1977)[6] it can be **Type I** when the gingival margin is in a coronary position with respect to CEJ with a wider band of gingiva, and mucogingival junction is usually apical to the alveolar crest. **Type II** when the gingival margin is in a coronary position with respect to CEJ with a normal band of gingiva, and the mucogingival junction is located at the level of CEJ. It can again be sub-classified as Type **A** when the distance from alveolar crest to CEJ is 1.5-2.0 mm and Type **B** when alveolar crest is at the level of CEJ.

Different options for treatment of altered passive eruption are as follows;[7]

Type I A - Gingivectomy or gingivoplasty

Type I B - Bone resection to establish proper biological thickness.

Type II A - Crown lengthening with apically displaced flap.

Type II B - Crown lengthening with apically displaced flap, Bone resection to establish proper biological thickness.

In this case we are going to describe how periodontal plastic surgery can remodel the attachment apparatus, re-establish the correct biologic width, eliminate the excessive show of gingiva, and expose correct dimensions of teeth.

Case Report :

A 27 years old female patient came to the Department of Periodontics, Bharati Vidyapeeth Deemed University Dental College, and Hospital Pune; with the complaint of short crowns and gummy smile in the upper anterior region of the jaw (fig1). The patient was tall and her short clinical crowns were disproportionate to her face and her smile.

Fig 1 Preoperative view

The patient exhibited adequate oral hygiene. Tooth was measured clinically and radiographically, there was adequate width of attached gingiva. Probing depth was 4mm. gingival contour was flat, gingival margin was thick so giving teeth more squarish look. Thick band of gingiva was present on tooth. So it was dignosed as a case of altered passive eruption Type I B. When Crown Lengthening Procedure is planned to increase the length of the available tooth, the biological width needs to be considered and not encroached upon, as this may lead to periodontal breakdown.[7] Thus removal of at least 1mm of alveolar bone with 11,13,21,23 to restore the correct minimum biologic width and to allow correct bone remodelling in order to provide scalloping and architecture was considered.

Surgical Technique

After explaining the procedure and achieving a written informed consent, local anasthetia was administered. After measuring probing depth, scalloped markings were done with marker (fig.2). Incisions were made following the marking with no 15c blade and soft tissue was removed with a currete. Thus true clinical crowns were exposed. Full mucoperiosteal flap was reflected to expose the alveolar bone. Osseous crest was found approximately at the level of CEJ with 11,13,21,23, thus not allowing proper biologic width. Osseous recontouring was done. This

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allowed 2mm of space between bone level and cemento- enamel junction. After debridement flaps were repositioned at the same level and sutured (fig3). Periodontal dressing was given.

Fig 2: Incision marking with marker

Fig 3 : Suturing done

The sutures were removed 7 days after the procedure. The surgical site was examined and it was uneventful. There were no post-operative complications and healing was satisfactory. The patient did not have any post-operative morbidity. The patient was instructed to use soft tooth brush for mechanical plaque control in the surgical area. Satisfactory results were observed after 6 months (Fig 4).

Fig 4: Healing after 6 months

Discussion :

Altered passive eruption is an uncommon condition.[8] Proper diagnosis is very important. Incidence of this condition is 12% between the ages of 6 to 16 years. Tooth eruption and formation of dentogingival junction should be clearly understood prior to any treatment.

Several procedures have been proposed for Crown Lengthening Procedure. In this case internal bevel incision is given to remove excess tissue and full thickness flap with osseous recontouring as the treatment of choice, in order to maintain the periodontal health and post-operative esthetics of the patient. The amount of attached gingiva needs to be measured as a part of the assessment. It has been shown that, to maintain periodontal health, there should be 2-3mm of attached gingiva.[9] In this case adequate attached gingiva was present. Ideally, the gingival margin is 2mm coronal to CEJ. Whereas in this case it was 4mm from CEJ. So, in order to eliminate the existing pocket depth i.e. 4mm, the procedure was accomplished with an internal bevel incision in order to excise 2-3mm of thick gingival tissue, in a scalloped pattern. When flap was raised, it was determined that the anatomic crown was also a bit longer than its normal size. When full exposure of the anatomic crown was achieved surgically, there was a dramatic improvement in esthetics by the concomitant lengthening of the teeth and reduction of the gingival exposure, which significantly altered the ratio of crown to marginal tissue in favour of teeth. Symmetrical smiles are deemed esthetically pleasing. The post-operative esthetic result was satisfactory for the patient.

Conclusion :

This paper provides clinical and biologic presentation on the treatment of altered passive eruption, using periodontal plastic procedure such that is esthetic crown lengthening. The dentogingival complex was taken into consideration while diagnosis and treatment planning of the case. After correct bone and soft tissue removal we established proper biologic width and exposure of exact clinical crown. The results which we got are excellent in clinical, biologic and esthetic outcomes.

REFERENCE

1. Kokich VO, Kokich VG, Kiyak HA. Perceptions of dental professionals and laypersons to altered dental esthetics: Asymmetric and symmetric situations. Am J Orthod Dentofacial Orthop 2006;130:141-51. | 2. Garber DA, Salama MA. The aesthetic smile: Diagnosis and treatment. Periodontol 2000, 1996;11:18-28. | 3. Garber DA, Salama MA. The aesthetic smile: Diagnosis and treatment. Periodontol 2000, 1996;11:18-28. | 4. Kokich VG. Esthetics: the orthodontic-periodontic restorative connection. Semin , Orthod. 1996;2(1):21-30. | 5. McGuire MK. Periodontal plastic surgery. Dent Clin North Am. 1998;42(3): 411-465. | 6. Coslet JG, et al. Diagnosis and classification of delayed passive eruption of the dentogingival junction in the adult. Alpha omegan 1977;3:24-28. | 7. Levine R, McGuire M. The diagnosis and treatment of the gummy smile. Compendium 1997; 18 (8): 757-764. | 8. Volchanky A, cleaton-jones p. Delayed passive eruption a predisposing factor to vincents infection. J Dent Assoc S Africa 1974;29: 291-294. | 9. Maynard JG Jr, Wilson RDK. Physiological dimensions of the periodontium significant to the restorative dentist. J Periodontol 1979; 50; 170-177. |