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Case Report

A Combined Periodontal – Prosthetic Treatment Approach to Manage Unusual Gingival Visibility in Resting Lip Position and Inversely Inclined Upper Anterior Teeth: A Case Report with Discussion

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Abstract:

Excessive gingival visibility during smile is a common esthetic complaint in dentistry, but excessive gingival visibility in resting lip position is relatively uncommon condition. Several exclusive radical to conservative surgical treatment or its combination with orthodontic therapy to treat this condition are within the reach of every patient nowadays. A case report of an excessive gingival visibility because of altered passive eruption along with inversely inclined maxillary anterior teeth is presented here. A relatively simple treatment approach combining periodontal and restorative therapy is used here to achieve the desirable aesthetic results. The gingival exposure resulting from altered passive eruption was completely managed by a gingivectomy, but the inclined appearance of teeth was still an aesthetic complaint. After complete healing of gingivectomy surgery, appropriately designed crowns were given to rectify the inversely inclined appearance. A complete rehabilitation of patient's smile could be achieved, the case was followed up for 3 years and the condition was found satisfactory.

Key Words: Altered passive eruption, gingival pocket, gummy smile, inclined teeth

Introduction

Apart from an esthetic concern, excessive gingival exposure with lip incompetence is considered an instigation factor for gingivitis in anterior maxillary region.[1,2] Osteotomy surgery combined with orthodontic therapy is considered the standard treatment in the management of maxillary excess. But this treatment modality has got its own limitations, especially when the patient does not have suitable posterior teeth to support the treatment, the teeth under consideration are periodontally weak or the patient is apprehensive in undergoing a complex surgical procedure.[3-5] Still the prime consideration of treatment was Orthognathic surgery, provided the periodontal condition become favourable. A proper periodontal management by itself changed the clinical presentation of the case, and few well-designed crowns on four upper incisors could completely manage the case avoiding the need of surgery.

Case Report

An 18-year-old girl presented with a complaint of "excessive gum visibility while smiling as well as in resting lip position." The central portion of her upper lip was raised exposing good amount of gingiva, and her lower lips were hiding upper front teeth while smiling (Figure 1). She had severe anterior deep bite and several posterior teeth had severe attrition and were malposition. Gingiva in the anterior sextant showed reduced stippling, rolled out crest with flat architecture.

She had undergone orthodontic therapy with myofunctional and fixed appliances for 2 years to upright her inclined teeth. The orthodontic treatment had to be called off in between because of poor response to treatment. She had then consulted for the possibilities of orthognathic surgery to correct the gingival appearance and deep bite, but lack of proper posterior teeth occlusion, compound gingival pockets and high expectation of treatment outcome challenged the option of maxillary osteotomy surgery. The surgical option that would require removal of two premolars was not preferred in the present condition. Anyway, she was referred for periodontal management of deep pockets before its further planning.

On examination of gingiva, pockets ranging from 3 to 5 mm were found on all aspects of teeth without attachment loss indicating the unusual anatomical crown length of anterior

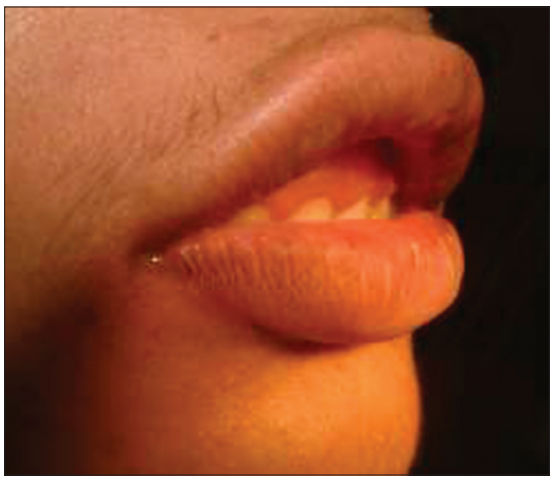

Figure 1: Gingival visibility in resting lip position.

teeth. Trans gingival probing indicated the presence of alveolar bone at very higher level than the present gingival margin (Figure 2). Gingivectomy, to expose anterior teeth till the cementoenamel junction (CEJ) and to obtain more physiologic gingival contour was proposed to eliminate the gingival pocket.

Because she had undergone orthodontic therapy for 2 years period to upright the front teeth without much improvement and the treatment had to be stopped in between, a thorough periodontal assessment was crucial.[6] Clinical and radiographical assessment of the concerned area was carried out to rule out any major pathology of the region. Thorough oral prophylaxis was performed to make the pocket area and the gingival margin firm. Since there was no attachment loss of gingiva and the future gingival level has to be positioned in CEJ, gingivectomy surgery was preferred over flap surgery.[1,7] Owing to the extended bevelling required to shape the gingival margin and the thickness of gingiva under consideration, scalpel surgery was decided.[7-9]

Gingivectomy surgery bevelling the gingiva upto a level 3 mm coronal to the alveolar bone crest was done, preserving adequate biologic width of dento gingival unit.[10,11] The CEJ was barely visible and sufficient exposure of crown was achieved to rectify the unaesthetic gingival exposure in resting lip position.

The case was reviewed after 1 month; though the gingival visibility became normal, and gingival margin was healthy, the inversely inclined position of teeth was more visible (Figure 3). A treatment plan of prosthetic crowns on four incisor teeth with a straightened profile was suggested to correct the inclined profile of teeth, and she was ready for the procedure. Since the crown preparation was planned in an esthetic zone and subgingival restorations were to be placed, patient was recalled after 6 months for prosthetic treatment.[12]

The four upper incisors were prepared with labial angulations to receive crowns following the principles of subgingival crown

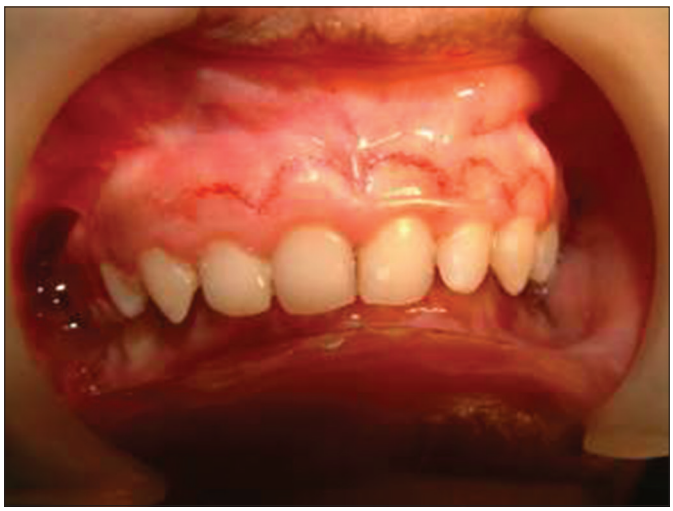

Figure 2: After trans gingival probing the level of alveolar crest is marked with a sharp explorer.

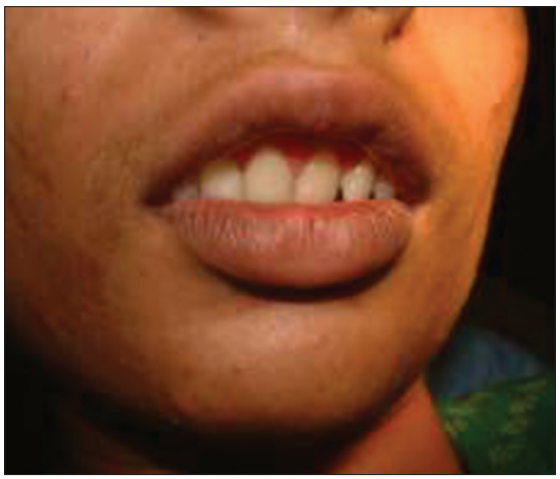

Figure 3: One month post-operative view; after healing of gingivectomy area.

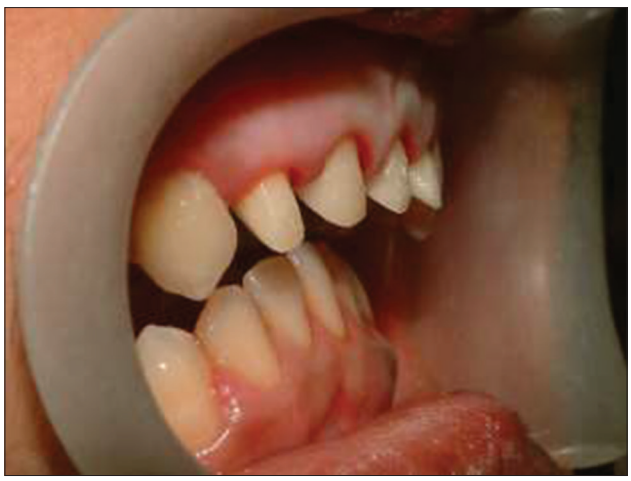

Figure 4: Crown preparation to favour the required labial inclination of crowns.

preparation to favour gingival health (Figure 4).[13] Porcelain fused to metal crowns was fabricated with required lip fullness and the labial inclination towards incisor tip. The crowns were

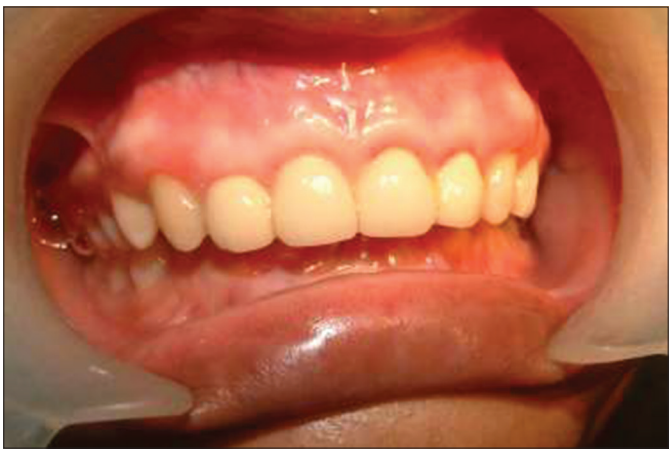

Figure 5: The position of gingiva and visibility of teeth in resting lip position after treatment.

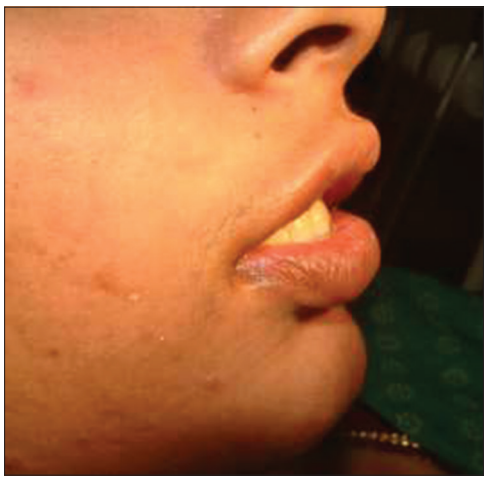

Figure 6: Post-operative view.

tried for its marginal fit, aesthetics and patient judgment, and upon finding completely satisfied, they were permanently cemented (Figure 5).

The marginal gingiva - crown relationship was found satisfactory, and crown contours were favourable for gingival maintenance. Her complaint of gingival visibility during resting lip position and the inclined teeth profile were well attended with absolute satisfaction (Figure 6).

The patient was given post treatment instructions highlighting the importance of maintaining gingival health and the importance of periodic review. She was reviewed after a month, and 3 years follow-up of the case has been completed, and she is found satisfied with the prosthesis and also maintains good gingival health.

Discussion

Vertical maxillary excess with open bite is a common condition whereas the condition described here is relatively rare with maxillary excess being visible in resting lip position and the upper anterior teeth hidden under lower lip while smiling.[1,14,15]

The condition presented here is commonly referred to as altered passive eruption. Altered passive eruption is a condition wherein the gingiva does not recede apically as the teeth erupt to reach its final position. This gives rise to gingival pockets that may lead to complaints ranging from unaesthetic gingival position to gingival inflammation.[1,2,15]

The commonly seen causes of excessive gingival exposure are short upper lip, hyper-mobile lip, maxillary skeletal excess and altered passive eruption sequence resulting in unattached gingival coverage over teeth crown.[15,16] The objectives of its treatment would be to enhance facial appearance, chewing ability, speech articulation, favor nasal air flow and obtain needed lip closure.[2,17,18]

The conventional method for treating vertical maxillary excess is orthognathic surgery. Orthodontic treatment is usually combined with the surgery to gain optimum result.[3] The present case was treated orthodontically for 2 years, but the anterior teeth resisted any movement and also developed gingival inflammation in relation to untreated gingival pockets.

The possibilities of non-conventional techniques like Botox therapy and lip repositioning surgery were considered and were found not appropriate for the present case.[19,20] The case was further referred for orthognathic surgical management, but the planning of surgery required elimination of gingival pockets. The multiple deep gingival pockets in the upper anterior teeth dragged the attention of the treatment plan to attempt gingivectomy procedure as the prime treatment in managing the case.

Upon attaining a complete correction of gingival excess visibility after the gingivectomy procedure, an attempt to upright its appearance through prosthetic treatment of four incisors were found more suitable compared to orthognathic surgery. Orthognathic surgery of the present case demanded extraction of upper 2 premolars and also the possibility of pre-maxilla being positioned without lip support.[4,5] The patient had limited occlusion in posterior teeth and premolars were crucial for her, moreover achieving lip support was one of the objectives of treatment. This lead to a more favorable and limited treatment plan of giving crowns on upper for incisors.

Periodontal – prosthetic interrelationship always remain a challenge unless the marginal gingival relationship with crown margin is in harmony and the dentogingival unit area is spared in crown preparation.[21,22] Considering these two factors, enough time for new healthy sulcus formation was given before crown preparation. As supported by literature in this regards, a healing period of 6 months were allowed following the periodontal surgical procedure for the final maturation and

location of the free gingival margins.[12] A proper maintenance protocol was also scheduled to ensure optimum gingival health.

Conclusion

Dentistry is a multi speciality science practice with a variety of treatment modality available for similar clinical situations. An understanding of the real aetiology behind the presenting disease, various treatment techniques available in its management, the feasibility and prognosis of each of these techniques, all combined with the need and acceptability of the patient should be the guideline in framing a tailor made treatment plan of each case.

The present case could have been approached in many ways, but short listing various treatment possibilities and limiting it to patient's absolute demand was given the importance. This case report point at situations where conventional treatment modalities fall short in meeting the patient's demand, but combining relatively simple techniques of two different disciplines of same science could derive an alternative approach to address it.

References

1. Evian CI, Cutler SA, Rosenberg ES, Shah RK. Altered passive eruption: The undiagnosed entity. J Am Dent Assoc 1993;124(10):107-10.
2. Levine RA, McGuire M. The diagnosis and treatment of the gummy smile. Compend Contin Educ Dent 1997;18(8):757-62, 764.
3. Bailey L', Cevidanes LH, Proffit WR. Stability and predictability of orthognathic surgery. Am J Orthod Dentofacial Orthop 2004;126(3):273-7.
4. Panula K, Finne K, Oikarinen K. Incidence of complications and problems related to orthognathic surgery: A review of 655 patients. J Oral Maxillofac Surg 2001;59(10):1128-36.
5. Cureton SL, Terhune W. Extraction of maxillary first bicuspids and mandibular lateral incisors, combined with orthognathic surgery to correct a severe class II skeletal malocclusion. Am J Orthod Dentofacial Orthop 2000;117(3):312-9.
6. Melsen B. Tissue reaction to orthodontic tooth movement – A new paradigm. Eur J Orthod 2001;23(6):671-81.
7. Sonick M. Esthetic crown lengthening for maxillary anterior teeth. Compend Contin Educ Dent 1997;18(8):807-12,814.
8. Pontoriero R, Carnevale G. Surgical crown lengthening: A 12-month clinical wound healing study. J Periodontol 2001;72(7):841-8.
9. Brägger U, Lauchenauer D, Lang NP. Surgical lengthening of the clinical crown. J Clin Periodontol 1992;19(1):58-63.
10. Oh SL. Biologic width and crown lengthening: Case reports and review. Gen Dent 2010;58(5):e200-5.
11. Smukler H, Chaibi M. Periodontal and dental considerations in clinical crown extension: a rational basis for treatment. Int J Periodontics Restorative Dent 1997;17(5):464-77.
12. Jorgensen MG, Nowzari H. Aesthetic crown lengthening. Periodontol 2000 2001;27:45-58.
13. Tjan AH, Miller GD, The JG. Some esthetic factors in a smile. J Prosthet Dent 1984;51(1):24-8.
14. Kao RT, Dault S, Frangadakis K, Salehieh JJ. Esthetic crown lengthening: appropriate diagnosis for achieving gingival balance. J Calif Dent Assoc 2008;36(3):187-91.
15. Dolt AH 3rd, Robbins JW. Altered passive eruption: an etiology of short clinical crowns. Quintessence Int 1997;28(6):363-72.
16. Ahmad I. Anterior dental aesthetics: Dentofacial perspective. Br Dent J 2005;199(2):81-8.
17. Peck S, Peck L, Kataja M. The gingival smile line. Angle Orthod 1992;62(2):91-100.
18. Monaco A, Streni O, Marci MC, Marzo G, Gatto R, Giannoni M. Gummy smile: Clinical parameters useful for diagnosis and therapeutical approach. J Clin Pediatr Dent 2004;29(1):19-25.
19. Polo M. Botulinum toxin type A in the treatment of excessive gingival display. Am J Orthod Dentofacial Orthop 2005;127(2):214-8.
20. Rosenblatt A, Simon Z. Lip repositioning for reduction of excessive gingival display: A clinical report. Int J Periodontics Restorative Dent 2006;26(5):433-7.
21. Gracis S, Fradeani M, Celletti R, Bracchetti G. Biological integration of aesthetic restorations: Factors influencing appearance and long-term success. Periodontol 2000 2001;27:29-44.
22. Wagenberg BD, Eskow RN, Langer B. Exposing adequate tooth stru cture for restorative dentistry. Int J Periodontics Restorative Dent 1989;9(5):322-31.