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Case Report

ESTHETIC CROWN LENGTHENING FOR SMILE ENHANCEMENT AND TO PREVENT THE VIOLATION OF BIOLOGICAL WIDTH: A CASE REPORT

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A B S T R A C T

A harmonious smile is considered a symbol of beauty in modern society. Generally, a smileis considered pleasant when it normally exposes all of the maxillary teeth, as well as around 1 mm of facial gingiva. Crown-lengthening surgery is used in combination with perio-aesthetic procedures to repair gingival asymmetries and realign the dentogingival complex. This case report presents a case of esthetic crown lengthening from central to first premolar by scalpel method. In this case, the correct execution of a restorative or prosthetic rehabilitation requires an increasing of the crown length. Procedure was performed under local anaesthesia and proved to be safe and efficient with no post-operative complication and healing was complete following 1 month.

INTRODUCTION

The common causes of short clinical crown include caries, erosion, tooth malformation, fracture, attrition, excessive tooth reduction, eruption disharmony, exostosis, and genetic variation[1]. Therefore, this deficiency in clinical crown length should be increased when margins of caries or margins of the tooth fractures are subgingivally placed, the crown is too short for retention of the restoration, there is an excess of gingiva, and anatomical tooth crown is partially erupted [2].Clinical crown lengthening is performed to achieve margins on sound tooth structure, maintenance of the biologic width, access for impression techniques, and esthetics[3]. Clinical crown-lengthening procedures include gingivectomy, an apically positioned flap (APF), an APF with osseous reduction, forced eruption combined with surgery, and forced eruption combined with fiberotomy. This article presents three cases in which crown-lengthening procedures were used to restore teeth with subgingival caries and/or fractures below the gingival margin.
Biologic width is defined as the physiologic dimension of the junctional epithelium and connective tissue attachment, according to the pioneering study conducted by Gargiulo et al.[4]. In this study, the authors demonstrated that humans, in average, show a connective tissue attachment of 1.07 mm, above the alveolar bone crest, and a junctional epithelium, below the base of the gingival sulcus, of 0.97 mm. The combination of these two measurements constitutes the biologic width, that is, 2.04 mm in average. Ingber et al. suggested that an additional 1 mm might be coronally added to the 2 mm dentogingivaljunction, as an optimal distance between the bone crest and the margin of a restoration, to permit healing and proper restoration of the tooth [5]. In addition, during an esthetic crown lengthening procedure, bone removal plays an important role in the final location of the free gingival margin after healing. Therefore, the aim of this case report was to describe the surgical sequence of crown lengthening to apically reposition the dentogingival complex, in addition to an esthetic restorative procedure.The ultimate goal of crown lengthening is to provide a tooth crown dimension adequate for a stable dentogingival complex and for the placement of a restorative margin, so as to achieve the best marginal seal and an aesthetically pleasing final restoration [6]. Several studies have also shown that a band of attached gingiva from 2 to 3 mm is preferable to successfully maintain the restored tooth. Since the resetting nature of this procedure, there is a risk of reducing the attached gingiva width; thus, this width should be carefully diagnosed and evaluated when planning crown lengthening procedure [7,8].

Goals of Crown Lengthening Facilitating an ideal restorative result

- To gain access to subgingival caries, root resorption and /or post /pin restoration.
- To increase clinical crown height that lost from caries, fracture or excessive wear.
- To provide additional tooth structure for a ―ferrule effectbeyond post or core, etc.
- To improve axial retention and resistence form for better long-term predictability.

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Preserving the health of the periodontium

- Adjust bone height and soft tissues position away from the proposed crown margins to prevent biologic width impingement after crown cementation.
- To eliminate chronic irritation/ inflammation, tissue discomfort and pain, and bone lossaround an existing crown causing biologic width impingement.
- To avoid worsening tooth prognosis while maintaining a crown to root ratio of at least 1:1 and while minimizing the reduction of bone and soft tissues of the adjacent teeth.

Contraindications of Crown Lengthening

- When there is an unfavourable crown/ root ratio because of short roots or reduced bone support. Without sufficient periodontal support, it seems unreasonable to achieve appropriate results.
- Presence of furcation in a multi-rooted tooth.
- Single anterior tooth CL causes uneven gingival contour, which is esthetically unpleasing, especially on patients with a high smile line.
- Moreover, CL is contraindicated on anterior teeth with long clinical crowns since it causes already long crowns to be even longer and results in an inappropriate esthetic view[9].

CASE REPORT

A male patient 29 years old reported to the Department of periodontology, with chief complain of dislodged restoration w.r.t;11, 21 and 22 which was RCT treated 4 years back. These teeth had probing depths of 2–3 mm and 4–7 mm of attached gingiva on the labial side (Fig. 1).No periapical radiolucency at radiographic examination was detected, the periodontal ligament was found within normal limit.Deep probing depths, no mobility, and adequate amounts of keratinized attached gingiva were found during clinical exams. The patient was diagnosed as a gummy smile. After evaluation of the patient's medical and family history, it was concluded that she was medically fit for surgery. The patient was given an explanation of the treatment plan and signs an informed consent for the procedures.

Figure 1 Preoperative. Overexposure of the maxillary gingiva on tooth 11 ,21,22 ,23 and 24.

Surgical Procedure

The surgical area was disinfected extraoral and intraorally, then anesthetized withlignocaine and epinephrine 1:80,000.A 1 mm submarginal incision was made on the labial side and a 2 mm submarginal incision was made on the palatal side from teeth No. 11,21,22,23 and 24by using 15 no. scalpel, followed by gingival contouring(Fig. 2).

Figure 2 After a 1 mm submarginal incision was made on the labial side of teeth No. 11,21,22,23,24 and 2 mm submarginal incision was made on the palatal side.

After Flap retraction revealed that these teeth had a sufficient amount of sound tooth structure above the alveolar crest so that an ostectomy was not necessary (Fig:3). Periodontal dressing was placed (Fig:4) after completion of surgery.

Figure 3 After removal of the extra scalloped incisional gingival margin.

Figure 4 Periodontal dressing was placed w.r.t 11,21,22,23 and 24.

All post-operative medications (i.e.; Tab: Oflox OZ 1 BD, Tab: Flozen AA 1 BD, Cap: Becozinc 1 OD, Cap: Omez 1OD for 5 days) and instructions were given properly and patient is also advised to do betadine gargles in (1:2) ratio for 1 weeks,

and warm saline rinses after 24 hrs of surgery for 15 days. Patient was recalled after 7 days for follow up. After 2 weeks follow up the remaining crown surfaces were built with composite and impression were taken with Alginatefor bridge fabrication (Fig: 5). when proper healing was occurred with no complication and discomfort developed to patient, a bridge is placed with a leuting GIC w.r.t 11,21,22,23 and 24 (Fig:6).

Figure 5 Post-Operative follow up after 2 weeks

Figure 6 Bridge placement w.r.t 11,21,23 and 24

CONCLUSION

In world of dentistry, we know that Gingival contour and tooth abnormalities play an important role in the social life of the patients. Predictable long-term restorative success requires a combination of restorative principles with the correct management of the periodontal tissues. Improper management of the periodontal tissues during restorative procedures is a common cause of failure.

More amount of gingival exposure causes unwanted gummy smile appearance, which results in unesthetic gingival display, and also surgical crown lengthening can be a viable option for facilitating restorative therapy or improving esthetic appearance. CL is a common periodontal surgery in routine dental practice. It is safe to conclude that the success rate of the treatment is high if appropriate case selection is considered. So, being an periodontist it is an important for us to treat the gummy smile of a patient and provide them an good smile design with full satisfaction.

References

1. M. Davarpanah, C. E. Jansen, F. M. A. Vidjak, D. Etienne, M. Kebir, and H. Martinez, “Restorative and periodontal considerations of short clinical crowns,” *International Journal of Periodontics and Restorative Dentistry*, vol. 18, no. 5, pp. 425– 433, 1998.
2. Tomar, T. Bansal, M. Bhandari, and A. Sharma, “The perio-esthetic-restorative approach for anterior rehabilitation,” *Journal of Indian Society of Periodontology*, vol. 17, no. 4, pp. 535– 538, 2013.
3. Becker W, Ochsenbein C, Becker BE. Crown lengthening: The periodontal-restorative connection. Compend Contin Educ Dent 1998; 19(3):239-246.
4. A. W. Gargiulo, F. M. Wentz, and B. Orban, “Dimensions and relations of the dentogingival junction in humans,” *Journal of Periodontology*, vol. 32, no. 3, pp. 261–267, 1961.
5. J. S. Ingber, L. F. Rose, and J. G. Coslet, “The ‘biologic width’: a concept in periodontics and restorative dentistry,” Alpha Omegan, vol. 70, no. 3, pp. 62–65, 1977.
6. K. Pradeep, N. Patil, T. Sood, U. Akula, and R. Gedela, “Full mouth rehabilitation of severe fluorozed teeth with an interdisciplinary approach (6 handed dentistry),” Journal of Clinical and Diagnostic Research, vol. 7, no. 10, pp. 2387–2389, 2013.
7. S. Yeh and S. Andreana, “Crown lengthening: basic principles, indications, techniques and clinical case reports,” New York State Dental Journal, vol. 70, no. 8, pp. 30–36, 2004.
8. J. Kois, “New paradigms for anterior tooth preparation: rationale and technique,” Oral Health, vol. 88, pp. 19–30, 1998.
9. Lee EA. Aesthetic crown lengthening: classification, biologic rationale, and treatment planning considerations. Practical Procedures & Aesthetic Dentistry: PPAD. 2004;16(10):769-78.

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