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A CASE REPORT

Crown Lengthening As An Aesthetic Procedure: A Case Report

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Abstract

Maintaining a healthy periodontium around teeth is essential for regular functioning and aesthetics. Crown lengthening is a procedure that is attempted in order to improve both functioning as well as aesthetics. The procedure that will be employed for crown lengthening requires a sound knowledge of biologic width which has to be appropriately maintained under all circumstances. The ideal situation for the periodontium is localizing the filling/ prosthesis supragingivally, which is at least 3 mm from the alveolar process ridge. The gingival margin may be at times uneven and can hamper any other aesthetic procedure. Crown lengthening can be used to attain contoured gingival margin maintaining the biologic width.

This case report aims to present a case where in uneven gingival margins were corrected through crown lengthening by means of gingivectomy prior to veneering in order to obtain a satisfactory result.

Keywords: Crown Lengthening, Biologic Width, Gingivectomy, Aesthetics

Key Message: This case report will help us understand of using a procedure that was used to enhance the restoration of a tooth can also be used effectively as a cosmetic procedure.

Introduction

One of the most commonly practiced procedures in modern day Periodontal practice is crown lengthening[1]. In a survey conducted by American Academy of Periodontology, it was reported that nearly 10% of all periodontal surgical procedures are being performed to achieve gain in crown length[2]. Treatment of crown or root fractures, altered passive eruption, subgingival caries, cervical root resorption and short clinical abutment as well as irregular gingival margin remain the main indications for employing procedures bringing about crown lengthening[1]. It remains a matter of intense discussion whether crown lengthening can be performed in the anterior region simply for aesthetic purposes meanwhile its implication in the posterior areas have been studied to a substantial extent[1].

A visionary study conducted by Gargiulo et al[3] stated that biologic width is the physiologic measure of the connective tissue attachment and junctional epithelium. The average dimension of the junctional epithelium and connective tissue attachment in humans were found in the study to be 0.97 mm and 1.07 mm respectively[3]. An average dimension of 2.04 mm was obtained after summing up the values as a result for the biologic width[3]. The integrity of the biologic width is considered a necessary step in restorative and prosthetic rehabilitations, to obtain and maintain healthy soft tissues[1].

A number of surgical techniques includes the broad subject of aesthetic crown lengthening, the aim of which is to provide better aesthetic appearance of the gingiva accompanied by the teeth and at the same time provide the patient with satisfaction and quality of life[4]. Cases where there is either excessive display of gingiva also known as “gummy smile”, asymmetry of tooth length and gingiva or incomplete passive eruption or 'short tooth appearance' can be seen as areas that may require aesthetic crown legthening[4].

This case report describes the procedure of aesthetic crown lengthening in a case of asymmetry of gingival margin.

Case Report

An 18 years old female patient was referred to the Department of Periodontology for the correction of the irregular gingival margin in relation to anterior teeth in the maxilla. The patient first reported to the Department of Conservative Dentistry with the complaint of wearing off of tooth surface in the anterior

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teeth. On examination it was observed that the patient had moderate fluorosis.

In order to improve the aesthetic of the patient while addressing the problem of wearing off of teeth, it was decided that the patient would be given composite veneers. The patient was referred to Periodontology in order to improve the irregular position of the gingival margin in relation to the anterior teeth in the maxilla before composite veneering was done.

The 'golden standard' aesthetic proportion in relation to tooth numbers 11 and 21 was more than 80%, thus indicating that the width is more than the length of the crown and similar conclusion was drawn for the maxillary lateral incisors**(Fig1)**. On trans-gingival probing the bone level was seen to be appropriate and thus, gingivectomy method was decided to increase the crown length. The routine investigations the patient was asked to undergo were complete blood picture and viral makers. An ortho-pantamogram was also taken to further assess the level of bone. The entire procedure was explained to the patient in detail and an informed consent was taken.

The intraoral anti-sepsis was performed with 0.2% Chlorhexidine rinse for 1 minute. Infraorbital block was achieved by giving 1.8ml of 2% Lidocaine with 1:200,000 epinephrine bilaterally for anaesthesia. The surgical procedure was started after marking the pockets with Crane Kaplan pocket marker along the gingival margins of the involved teeth**(Fig2)**. Gingivectomy using #15 bard parker blade was performed while maintaining the proper contour of the gingival margin along the maxillary anterior teeth**(Fig3)**. The external bevel incision was utilized for the gingivectomy. Approximately 2mm of the gingiva was removed in order to gain the desired length of the tooth. Once the procedure was completed Coe-pak was applied and the patient was recalled after 14 days**(Fig 4)**.

The post-operative prescription included analgesics and an antimicrobial rinse (Chlorhexidine Mouthwash 0.2%) for 7days. The postoperative instructions included application of ice pack, soft diet, warm saline rinses 24 hours after surgery. Amoxicillin (500mg TDS for 5 days) and combination of Ibuprofen and Paracetamol (400 mg + 325 mg TDS for 5 days) was prescribed to the patient. Postoperative healing was uneventful. The patient did not complain of any pain or discomfort.

The patient was re-evaluated 14 days after the gingivectomy. The patient demonstrated good healing and improved gingival contour in relation to the maxillary anterior teeth. The composite veneering was completed in the Department of Conservative Dentistry one week after the follow up**(Fig5)**. The patient demonstrated good aesthetics and was satisfied with the same.

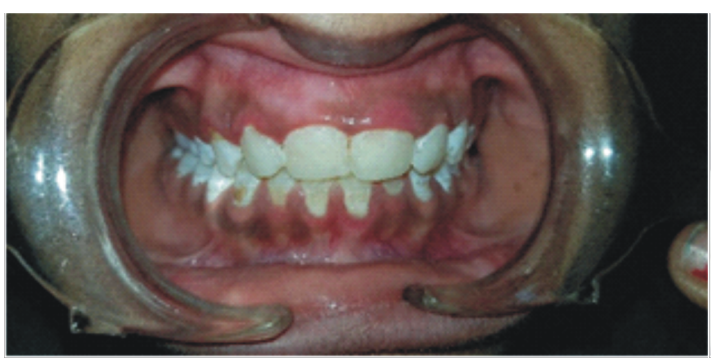

Fig 1 : Pre-operative

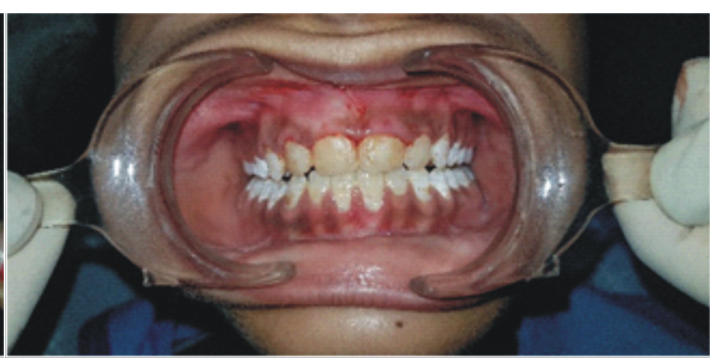

Fig 2 : Pocket marked using Pocket marker

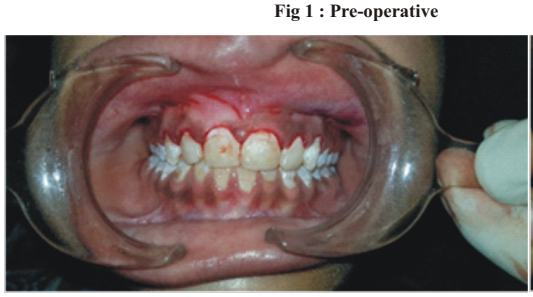

Fig 3 : After removal of the lining

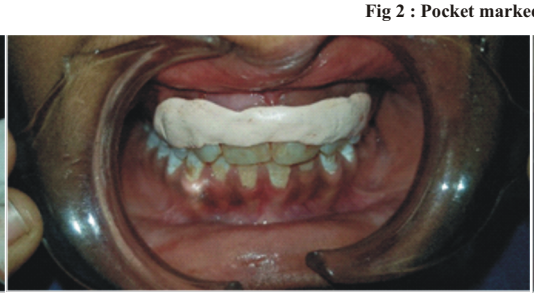

Fig 4 : Coe Pak placement

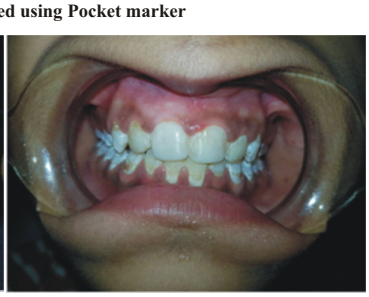

Fig 5 : Follow up after 1 month

Discussion

Since aesthetic crown lengthening is an elective procedure meant to improve the aesthetics of the patient's gingiva and teeth, the patient should thus receive this treatment only if they believe that the treatment will make them more satisfied.

For aesthetic crown lengthening the gingivectomy procedure helps in exposing the required additional tooth structure, therefore the amount of keratinized tissue that must be present is around 2 to 5 mm for the gingiva to remain healthy[5,6]. The papilla is an essential aspect of the surgery. The reason as to why the procedure is to be done has to be understood first, before the technique to perform is decided. There are three main causes wherein the need for aesthetic crown can be needed, they are excessive gingival display or gummy smile, asymmetry of tooth length and gingival margins, passive eruption or short teeth.

The method that maybe employed for enhancing the length of the teeth can be by gingivectomy method wherein the resection of bone is not required. When the bone level is found to be less than 3mm from the freshly created level of the gingival margin, a full thickness flap has to be opted for in order to preserve the biologic width and also bring about the desired amount of crown lengthening by means of bone resection[7]. Gingivectomy is performed using blades or specially designed knives, Kirkland and Orban knives. Some clinicians prefer to use diode lasers for procedures like gingivectomy/gingivoplasty instead of knives due to its advantages of having strokes that are gentle and providing a bloodless intra-operative field[4]. The minimal apically displaced flap is very practical when a small amount of gingival margin is to be removed and bone resection is needed.

In this case report gingivectomy method was preferred for the process of increasing the length of the crowns in the aesthetic zone as the bone was sufficient which was found out by transgingival probing. Care should be taken to ensure that the new gingival margin does not extend to or beyond the mucogingival junction.

Conclusion

In conclusion it should be remembered that each case should be evaluated individually, in order to understand whether crown lengthening is required or not. The choice of procedure depends on the clinician's experience and expertise. However, the knowledge of each procedure is essential as it would help to modify the procedure during the course of treatment if the need arises.

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