



## Pre-Prosthetic Crown Lengthening Procedure: A Case Report

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### Abstract

Pre-prosthetic crown lengthening is a procedure performed where there is insufficient crown length for the fabrication of the prosthesis. This process is based on the concept of preserving the biologic width. If not, it may lead to the formation of periodontal pocket, bone loss, gingival inflammation or gingival recession. Surgical procedure may require either gingivectomy or the apically positioned flap with or without ostectomy. Proper selection of the case and execution of the procedure is required for the success of the treatment. In the present case report, the pre-prosthetic crown lengthening procedure promotes a more adequate dental exposure and creates a harmonical smile on the patient. After the completion of the procedures, it was concluded that technique used was suitable based on the comfort and satisfaction of the patient to obtain an aesthetic smile.

**Keywords:** Apically positioned flap, biologic width, and crown lengthening procedure, esthetic, pre-prosthetic.

### INTRODUCTION

Crown lengthening procedure (CLP) also known as periodontal plastic surgery is of a great importance in any clinical practice. According to the American Academy of Periodontology (AAP), crown lengthening is “a surgical procedure design to increase the extent of the supra gingival tooth structure for restorative or esthetic purposes by apically positioning the gingival margin, removing supporting bone or bone” (Tseng, 1995). In 1962, D. W. Cohen [1] first introduced the concept of crown lengthening which is recently indicated for cases with inadequate crown height for prosthetic crown fabrication, subgingival caries, root fractures, gummy smile. For prosthetic restoration to be successful, adequate crown length is required to prepare proper crown margin and ferrule. The inadequacy of crown height can sometimes be responsible for the failure of prosthesis. Certain factors such as biologic width, crown-root ratio and attached gingiva are necessary to be evaluated for the case selection. From the classic histological study of Garguilo et al. (1961) [2], the concept of biologic width came into light in

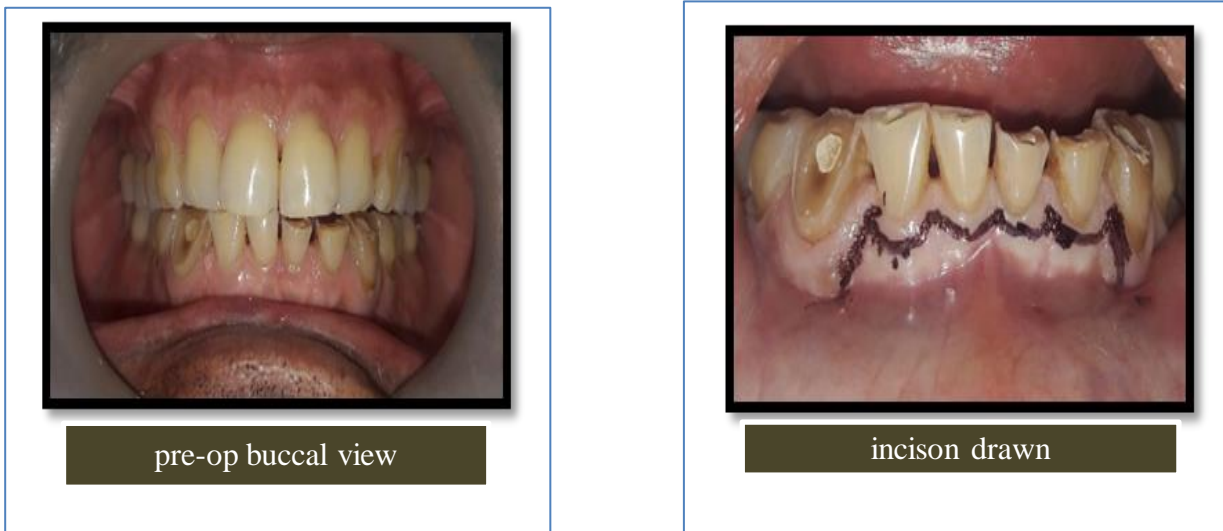
which he measured the average dimension of the junctional epithelium (0.97 mm ) and the connective tissue attachment (1.07 mm ) in humans. The violation of biologic width can lead to bone resorption [3], gingival recession or inflammation (Marzadori et al., 2000). The two main techniques that are followed for CLP are: (i) Internal bevel gingivectomy (Undisplaced flap) with or without ostectomy, (ii) Apically repositioned flap with or without ostectomy. In the present case in order to preserve maximum amount of keratinized gingiva, apically repositioned flap was performed and adequate amount of tooth structure for prosthetic crown placement was obtained.

### CASE REPORT:

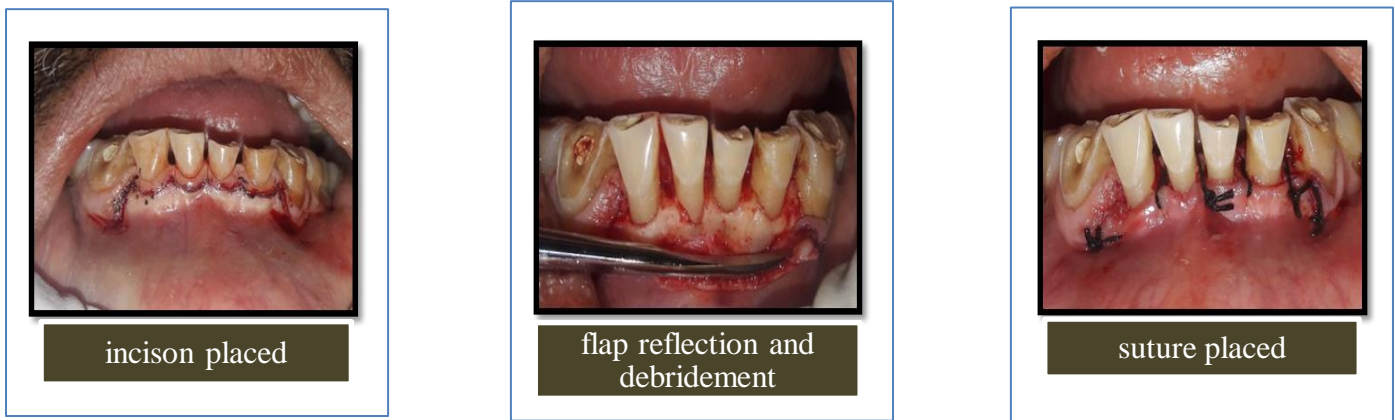
A 48 years old male patient reported to the department of periodontology at Ahmedabad Dental College and Hospital with the need of crown lengthening of mandibular anterior teeth. Patient gave history of having sensitivity for which he had to undergone root canal treatment. After discussing the

case with the restorative dentist apically repositioned flap was recommended for a healthy relationship between the teeth and the periodontium. Initially scaling was done followed by oral hygiene instructions. After 15-20 days of phase-1 therapy, patient was clinically health with no visible plaque (Figure 1) and was recalled for next phase of surgical procedure aiming to displace the flap apically. On the labial side the incision was marked (Figure 1) and a crevicular incision was given and two vertical releasing incisions limiting the extent from 32 to 42 into the alveolar mucosa were made at each of the end points of the incision (Figure 2) by using Bard Parker blade (No.15), thereby making possible the apical positioning of the flap. A full thickness mucoperiosteal flap of alveolar mucosa was raised by means of a mucoperiosteal elevator (Figure 2). The

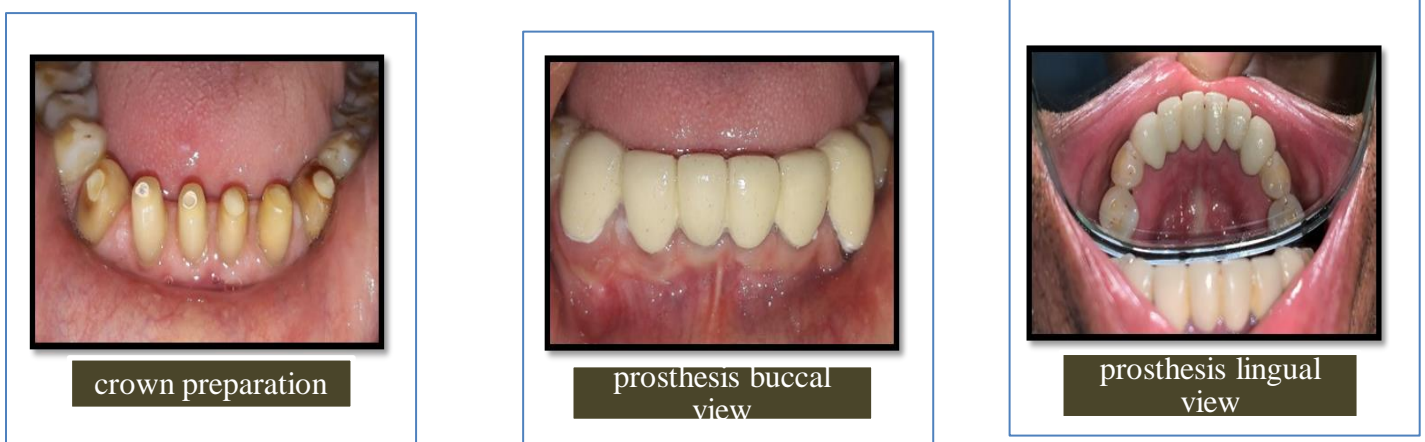
marginal collar of tissue, including pocket epithelium and granulation tissue, was removed with curettes, and the exposed root surfaces are carefully scaled and planed. Following careful adjustment, the labial flap was positioned apically and sutured (Figure 2) to the level of the newly re-contoured alveolar bone crest. The sutures were removed after 7 days and the surgical site was irrigated with saline. The healing of the surgical site was quite uneventful & satisfactory. Final preparation of the teeth was done later, to confirm the final position of gingival margin following post-surgical recession (Figure 3). Care was taken to ensure that the margins of the temporary crown were smooth and closely adapted to ensure gingival health. Final cementation of the crowns was performed (Figure 3).



**Figure 1 pre-operative view**



**Figure 2 surgical procedure**



**Figure 3 post-operative view**

**DISCUSSION:**

In order to make correct planning of the case, it is important to consider the amount of keratinized tissue, gingival zenith and the biological space. Certain studies have showed that 2-3 mm of attached gingiva around the restored teeth is sufficient for a healthy periodontium [4]. So, it is preferable to perform the crown lengthening procedure along with

apically repositioned flap to maintain adequate attached gingiva. It is important for the procedure to be used within the biologic patterns and avoid root exposures or the gingival retractions. Earlier it was assumed that there will be permanent apical shift of the mucogingival junction (MGJ) when apical repositioning of the flap is performed. The major reason why MGJ on the ARF side is not located 2-3 mm more apically than on the gingivectomy side is

that when the muscle attachments are artificially repositioned, they tend to push back the MGJ to its original position [5]. Crown lengthening may involve surgical removal of hard and soft tissues to achieve the supra-crestal tooth length for prosthetic rehabilitation without violating the biologic width. The purpose is that to improve the patient self-esteem occurs by getting a more harmonious smile which demonstrates a more comfortable and esthetic smile [6][7].

#### **CONCLUSION:**

There is a direct relationship between the restorative dentistry and the periodontal health. Periodontal surgeries are often performed to support and improve the long term prognosis of the prosthesis. Surgical crown lengthening done with apically repositioned flap is performed to reestablish the biologic width along with the increase in width of keratinized tissue and apical shift of the mucogingival junction. Thus we are able to achieve stable margins and exposing the tooth structure for further restorative therapy.

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