

# Surgical Crown Lengthening of Multiple Teeth : A Case Report

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## Abstract

Crown lengthening procedures are done to expose the clinical crown by surgical means either by excising the tissue or removing the bone along with the tissue. The bone removal is required where there is anticipation of encroaching the biological width. Crown lengthening is mainly done on short crown which are not enough to support a prosthesis with subgingival margins. This case report presents surgical procedure where multiple lower anterior teeth were subjected to crown lengthening procedure by removing osseous tissue along with the gingival tissue.

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## Introduction

The biologic width includes both connective tissue attachment and the junctional epithelium. A review of the literature reveals differing opinions regarding the occlusoapical length of the biological width. Gargiulo and colleagues described the dimensions of the dentogingival junction. They reported the average length of the dentogingival junction to be 2.04 mm. They identified the subcomponents of the dento gingival junction as the connective-tissue attachment (mean value: 1.07 mm) and the epithelial attachment (mean value: 0.97 mm).

In gber and colleagues suggested that the term “biologic width” relates to the average value of the dentogingival junction—that is, approximately 2 mm. They suggested that an additional 1 mm be added coronal to the 2 mm dentogingival junction as an optimal distance between the bone crest and a restorative margin. The authors reasoned that “adding the 1 mm to the average 2 mm of the biologic width establishes a minimum dimension of 3 mm coronal to the alveolar crest that is necessary to permit healing and proper restoration of the tooth.”

Nevins and Skurow also described the importance of a 3-mm biological dimension separating the osseous crest by a safe distance from the plaque associated with crown margins.

The dimension of the biologic width can vary based on the position of a tooth, from tooth to tooth, and from surface to surface on the same tooth.

The indications for crown-lengthening surgery include esthetic enhancement, exposure of subgingival caries, exposure of a fracture or some combination of these. Crown-lengthening surgery has been categorized as esthetic or functional. The term “functional” relates to exposure of subgingival caries, exposure of a fracture or both. Often, the discussion of crown lengthening in the anterior sextants is presented in the context of esthetic surgery. Excess gingival display can occur when passive eruption has been delayed.

In addition to exposing supragingival tooth structure for restorative therapy, dentists excise tissues so that crown margins do not impinge on the so-called biological width.

In vasion of the biologic width due to protocols followed for tooth restorations could result in crestal bone loss, gingival recession with localized bone loss, localized gingival

hyperplasia with minimal bone loss, or a combination of the three.

Therefore for restoration of clinically short crowns a review is needed to decide for surgical crown lengthening. There are many modalities which can be undertaken to decide for the treatment course. Gingivectomy, a soft tissue removal procedure, an apically positioned flap (APF) if the amount of gingival is minimal, Flap with osseous reduction where both soft and hard tissue is removed, forced eruption by orthodontic means combined with surgery, and forced eruption combined with fiberotomy. The decision for osseous reduction is based on the clinician's assessment of clinical crown exposure required and the biological width present around the tooth. If there is a possible encroachment of the biological width then a decision is made to remove osseous structure along with the soft tissue.

## Case Report

A 18-year-old woman in good health was referred to the department of periodontics dental college for 2 mm of the clinical crown exposure of few teeth via surgery. A bridge was designed for the area 31 32 33 41 42 43 by Prosthodontis. There was missing 31 41 and 32 33 42 43 with short clinical crown required a subgingival foundation restoration (figure 1). Transgingival probing was done to assess the biological width of the teeth. It was decided that the teeth required crown lengthening by flap procedure along with 1-2 mm of bone removal surrounding the tooth structure. A preoperative periapical radiograph indicated that the root length associated with tooth no. 32,33,42,43 appeared to be adequate to allow for osseous resective therapy. Flap for 33,32,42,43 was raised using the modified widman technique. The incision was started 2mm from the gingival margin.

After assessing and correlating the osseous levels after flap reflection osseous resection was done. A 2 mm of supraosseous tooth structure was established on the buccal and distal aspects of toothno. 32, 33 and 4243. Then after the flap was sutured back.

At three months after surgery, the patient returned to the restorative dentist for fabrication of full-cast restorations of the area between 32 and 42.

## Discussion

To plan a crown-lengthening procedure a dentist must think in three dimensions. In addition, the quantity and quality of residual gingival tissues left behind after the resected

tissue has healed completely is also taken into consideration. As a result, the first concern in flap design or excision is the height of gingiva present on the facial and lingual aspects of the involved tooth. The dentist can accomplish a tissue excision via a gingivectomy by means of a scalpel, an electrosurge, a radiosurge or a laser. Lasers have made their way into conventional dental therapy for use in performing gingivectomy or gingivoplasty. Laser tissue ablation can result in adequate exposure of tooth structure with minimal or no bleeding. If the pretreatment level of gingiva is minimal, the dentist could make asulcular incision and position the flap apically to the osseous crest. This not only would preserve the amount of gingiva but also would increase the width of the attached gingiva after healing.

In this case report the gingiva around the tooth was sufficient therefore the primary incision was given 2 mm away the gingival margin this gave exposure to the clinical crown that was required. By excising the soft tissue the distance from the remaining soft tissue to the crest of the bone decreased to less than 3mm. This situation can cause biological width violation. Thus to maintain the biological width an osseous surgery was planned along with the tissue excision in this case report. Healing went uneventful. Sutures were removed 10 days after surgery. An interim restoration was given to the patient for 15 days followed by final restoration. The overall outcome of the procedure was aesthetically pleasing to patient and health of the periodontium was maintained.

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