Research Article

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A Comparative Study of Gingivectomy, Apically Repositioned Flap And Surgical Extrusion Using Periotome for Crown Lengthening

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ABSTRACT

Background: The relationship between periodontal health and the restoration of teeth is intimate and inseparable. The present study compared techniques of crown lengthening procedures in adult patients.

Material & Methods: This study was conducted on 60 patients which were randomly divided into three groups. Group I patients treated with gingivectomy, group II with apically repositioned flap and group III with surgical extrusion using Periotome. Length of clinical crown, width of attached gingival and interdental papilla height was recorded preoperatively and postoperatively.

Results: There was no change in the width of attached gingiva and minimal change in the interdental papilla height between pre-operative and post-operative measurements in the crown lengthening procedure done by surgical extrusion using Periotome when compared to the other conventional surgical procedures. The difference among three techniques was significant (p-0.01).

Conclusion: Author suggested that crown lengthening using surgical extrusion technique is effective in ensuring success of prostheses.

Keywords: Apically repositioned flap, clinical crown lengthening, Periotome.

INTRODUCTION

The relationship between periodontal health and the restoration of teeth is intimate and inseparable. Although it is widely accepted that the best restorative margin is one that is placed coronal to marginal tissue, most restorations have margins in the gingival crevice, and permanent tissue damage is common.[1]

The need for crown lengthening arises when the clinical crown is insufficient for the placement of crown.[1] A short clinical crown may lead to poor retention form thereby leading to improper tooth preparation. Surgical crown lengthening procedure is done to increase the clinical crown length without violating the biologic width. The indications for crown lengthening are restorative needs, to increase clinical crown height lost due to caries, fracture or wear, to access subgingival caries, to produce a ferrule for restoration, to access a perforation in the coronal third of the root, to relocate margins of restorations that are impinging on biological width, esthetics, short teeth, uneven gingival contour and gummy smile.[2]

Friedman proposed the term apically repositioned flap to more appropriately describe the surgical technique introduced by Nabers.[3] The apically positioned flap technique with bone recontouring (resection) may be used to expose sound tooth structure. As a general rule, at least 4 mm of sound tooth structure must be exposed at time of surgery. A clinician is presented with three options for margin placement: supragingival, equigingival (even with the tissue), and subgingival locations.

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The supragingival margin has the least impact on the periodontium.[4] The present study compared techniques of crown lengthening procedures inn adult patients.

MATERIALS & METHODS

The present study was conducted in the department of Periodontics. It included 60 patients of both genders. They were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study.

General information such as name, age, gender etc. was recorded. Patients were divided into three groups of 20 each. Group I patients were treated with gingivectomy, group II with apically repositioned flap and group III with surgical extrusion using Periotome. Length of clinical crown, width of attached gingival and interdental papilla height was recorded preoperatively and postoperatively. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Group I	Group II	Group III
20	20	20
Gingivectomy	Apically repositioned flap	Extrusion using Periotome

Table I, graph I shows that each group had 20 patients.

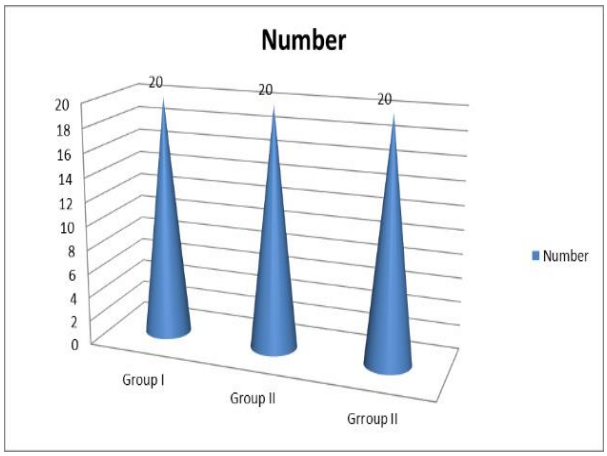
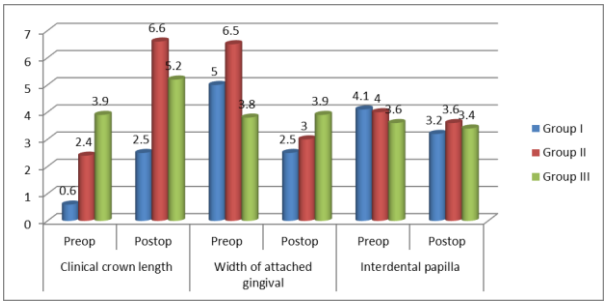


Table II Comparison of parameters

Groups	Clinical crown length		Width of attached gingival		Interdental papilla	
	Preop	Postop	Preop	Postop	Preop	Postop
Group I	0.6	2.5	5	2.5	4.1	3.2
Group II	2.4	6.6	6.5	3.0	4	3.6
Group III	3.9	5.2	3.8	3.9	3.6	3.4

Table II, graph II shows that there was no change in the width of attached gingiva and minimal change in the interdental papilla height between pre-operative and post-operative measurements in the crown lengthening procedure done by surgical extrusion using periotome when compared to the other conventional surgical procedures. The difference among three techniques was significant (P<0.05).

Graph II Comparison of parameters



DISCUSSION

It has been suggested that the margin of the final prosthesis/ restoration should be placed 1 to 2 mm supragingivally wherever possible as locating the margins too close to the bone may cause periodontal destruction because of hindrance to plaque removal by routine oral hygiene procedures. If required, for esthetic considerations, the margin can be placed at the gingival crest or, at the most, 0.25 mm to 0.5 mm into the gingival sulcus. This ensures that the biologic width remains healthy. Therefore, the most critical factor regarding the long-term gingival health is the relationship between the supracrestal fiber attachment and margin location and the location of the base of the sulcus.[5] If the tooth preparation margins are placed into the zone of the biologic width, a very important

biologic principle is being violated. When the biologic width is violated, an inflammatory response results in alveolar bone resorption, increased pocket depths, increased loss of periodontal support, exacerbation of accumulation of subgingival bacteria, increased chronic inflammation, and further localized periodontal breakdown.[6]

We recorded length of clinical crown, width of attached gingival and interdental papilla height preoperatively and postoperatively. There was no change in the width of attached gingiva and minimal change in the interdental papilla height between pre-operative and post-operative measurements in the crown lengthening procedure done by surgical extrusion using periotome when compared to the other conventional surgical procedures.[7] The present study compared techniques of crown lengthening procedures inn adult patients.

In present study, there were 60 patients, which were divided into 3 groups. We found that the clinical finding presented here suggest that clinical crown lengthening by surgical extrusion using periotome offers several advantages over the other conventional surgical approaches such as there was no change in the width of attached gingiva, interdental papilla height in pre- and post-operative measurements. This technique can be used to successfully treat a tooth with poor retention form and grossly damaged crown structure as a result of tooth fracture, dental caries and iatrogenic factors especially in the anterior region, where esthetics is of great concern when compared with other conventional surgical techniques such as gingivectomy and apically repositioned flap with or without respective osseous surgery.[8]

Gargiulo et al[9] reported the following mean dimensions: a sulcus depth of 0.69mm, an epithelial attachment of 0.97mm, and a connective tissue attachment of 1.07mm. Based on this work, the biologic width is commonly stated to be 2.04mm, which represents the sum of the epithelial and connective tissue measurements. One must realize however that significant variations of dimensions were observed, particularly the epithelial attachment, which ranged from 1.0 to 9.0mm. The connective tissue attachment, on the other hand, was relatively constant.

The use of equigingival margins traditionally was not desirable because they were thought to train more plaque than supragingival or subgingival margins and therefore result in greater gingival inflammation. There was also the concern that any minor gingival recession would create an unsightly margin display. These concerns are not valid today, not only because the restoration margins can be esthetically blended with the tooth but also because restorations can be finished easily to provide a smooth, polished interface at the gingival margin. From a periodontal viewpoint, both supragingival and equigingival margins are well tolerated. The greatest biologic risk occurs when placing subgingival or equigingival margins for finishing procedures, and in addition, if the margin is placed too far below the gingival tissue crest, it violates the gingival attachment apparatus.[10]

CONCLUSION

Author suggested that crown lengthening using surgical extrusion technique is effective in ensuring success of prostheses.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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