# Interactions between the gingiva and the margin of Permanent restorations after Laser soft tissue Crown lengthening

A thesis Submitted

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# DEDICATION

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# List of Abbreviations

| Abb. | Full term |
|---|---|
| µm | Micro Meter |
| ANOVA | Analysis of Variance |
| APE | Altered passive eruption |
| BW | Biologic width |
| CI | Confidence Interval |
| CL | Crown lengthening |
| Co | Collagen |
| $CO_2$ | Carbon dioxide lasers |
| DLs | Dye lasers |
| DS | Doctor Smile |
| ECL | Esthetic crown lengthening |
| FCL | Functional crown lengthening |
| Fi | Fibroblasts |
| H | Height |
| HL | Horizontal Location |
| HS | Highly Significant |
| Kg | Kilo Gram |
| L | Length |
| Ly | Lymphocytes |
| MGI | Modified gingival index |
| MGI | Modified Gingival Index |
| Mø | Macrophages |
| Mø | Mononuclear leukocytes |
| nm | Nano Meter |
| NS | Non-Significant |
| P | Peak |
| PBS | Phosphate buffered saline |
| Pc | Plasma cells |
| PD | Probing depth |

# List of Abbreviations Cont...

| Abb. | Full term |
|---|---|
| PMN | Polymorph nuclear leukocytes |
| PPs | Pulses per second |
| PRL | Pulsed ruby laser |
| RBCs | Red blood cells |
| S | Significant |
| SD | Standard deviation |
| SEM | Scanning electron microscope |
| SGH | Supracrestal gingival height |
| SGT | Supracrestal gingival tissues |
| SOG | Supraosseous gingiva |
| TEM | Transmission electron microscope |
| TGGPI | Turesky-Gilmore-Glickman plaque index |
| V | Vascular structures |
| VL | Vertical Location |
| W | WATT |
| YLLs | Yellow light lasers |

# Introduction

Improvements in technology and materials have given the general, as well as cosmetic, dentist many more options for treatment. This has improved the efficiency and predictability of aesthetic restorative dentistry for clinicians. One technology that has become increasingly utilized in clinical dentistry is the use of lasers. The laser offers many advantages over other modalities of treatment; procedures can now be completed in a more comfortable manner and in a more timely fashion. However, we believe the greatest impact the laser has made is its ability to be used for both hard and soft tissue, often without the need for anesthesia, offering a reduced healing time for the patient.

A good laser technique is easy to learn, although there are some tips on settings and technique that need to be mastered the application of the laser in gingival recontouring has become the treatment of choice for the aesthetic clinician as a means to optimize the smile design process since the mid-1990s. Prior to the use of the laser, tissue reencountering often resulted in times of discomfort for the patient and lack of predictability for the clinician. The use of the laser – more specifically the diode laser (Sirolase, Sirona or DioDent II [Hoya ConBio]) – has provided a means to predictably reshape and recontour the gingival tissue to optimize symmetry and maximize aesthetics (if tissue changes of up to 1mm are required).

The hemostatic nature of the laser eliminates the need for a retraction cord during restorative procedures, and the minimal necrosis zone of the actual laser ‘cut’ provides a very stable final contour that will