



Prevalence of different methods of crown lengthening and its preference among dental specialties

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ABSTRACT

Short clinical crowns often lead to poor retention form, leading to improper tooth preparation. Crown lengthening is carried out to increase the clinical crown length without violating the biologic width. Several techniques have been proposed for crown lengthening such as gingivectomy procedures. A Cross-sectional, descriptive study was conducted in a university, on randomly selected individuals. The study group consisted of patients getting treated at the Department of Prosthodontics from June 2019 – March 2020. 86,000 case sheets were reviewed, and samples were selected using simple random sampling. The two variables were compared using the chi-square test. Laser gingivectomy was the most common 55.9% form of crown lengthening procedure. Awareness of crown lengthening was found more among postgraduates at 78.7%. Among all the departments, crown lengthening was required more for periodontal procedures 42.3%. In this era of quickly developing technologies and innovative ideas, the requirement for faster treatment has not only become a requirement but a necessity. Treatment with lasers is well accepted by patients as it is less time-consuming and painless. Lasers have taken over a lot of procedures so is crown lengthening. Postgraduates know more about crown lengthening and hence do in more number of cases. There are various reasons to get crown lengthening done with periodontitis being the most common specialty for its need.



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INTRODUCTION

Short clinical crowns may be caused due to, deep subgingival caries, tooth fracture, plaque, calculus, defective restoration or foreign bodies may cause localized gingival over growths. Crown lengthening procedures are carried out to increase the crown length without violating the biologic width (Çelik *et al.*, 2014; Nemcovsky *et al.*, 2000; Doufexi *et al.*, 2005). These gingival over growths can occasionally adversely affect speech or mastication of an individual (Drăghici *et al.*, 2016; Ariga *et al.*, 2018). There are several techniques for a successful gingivectomy procedure. Selection of technique depends on multiple patient-related factors such as aesthetics, clinical crown to root ratio, root morphology, root prox-

imity etc. The three most popular methods of cutting soft tissue in dentistry are the scalpel, electro-surgery (ES) and laser. They are all effective but vary in hemostasis, healing time, the cost of instruments, the width of the cut, anesthetic required and disagreeable characteristics, such as smoke production, odor and undesirable taste. The scalpel gingivectomy method can be performed either using gingivectomy knives (e.g Kirkland knife and Orbans knife) or using surgical blades.

The primary objectives in restorative dentistry include incision (or excision) and coagulation of tissue. Both mono polar and bipolar modes can achieve cutting and coagulation of tissue. However, the mono polar mode is more effective than the bipolar mode for cutting action (Pearce and Hamer-mesh, 1987; Duraisamy *et al.*, 2019). A greater variety of electrode shapes is available in mono polar compared to bipolar mode. Although cutting can be accomplished by the bipolar mode, it is much more inefficient and restrictive in the application. Bipolar coagulation is slower than mono polar activity (Coluzzi, 2017; Ganapathy *et al.*, 2017). The primary objective of modern dentistry is to carry out safe and minimally invasive procedures. Newer materials have been developed to achieve this goal (Peters and Mclean, 2001; Subasree *et al.*, 2016).

Laser is a newly developed technology which is used in multiple fields of dentistry such as dental bleaching, a crown lengthening (CL), restoratives, endodontic and implant surgeries (Lizarelli *et al.*, 2008; Stübinger, 2010; Ruschel *et al.*, 2016). Lasers have multiple advantages over rotary techniques such as; increased safety, decreased pain, increased comfort, decrease noise and vibrations (Stübinger, 2010; Parhami *et al.*, 2014; Fekrazad *et al.*, 2018). The use of laser helps in the effective management of soft tissue during restorative procedures (Ranganathan *et al.*, 2017). Thus, the aim of the present study is to evaluate the prevalence of different types of crown lengthening procedures performed and what choice do patients make when it comes to their health.

MATERIALS AND METHODS

The study was carried out in a university setting at Saveetha dental college and hospital, Chennai, India by the department. The study consisted of 1 data collector and 1 data reviewer. The disadvantage of the study was the geographical limitation. This study was approved by the ethical board of Saveetha Institute of Medical and Technical Sciences (SIMAT). Data of patients visiting the hospital between June

2019-March 2020 was collected by the method of simple random sampling. A total of 26,000 case sheets were reviewed. Cross verification of error of data was done by telephonic conversation and images of the patient. Measure taken to minimize bias was that all patients undergoing the procedure were included.

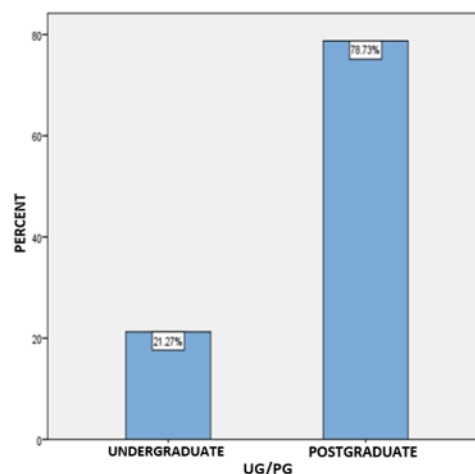


Figure 1: Prevalence of crown lengthening performed by under graduates and post graduates.

The data were collected and entered in the MS Excel spreadsheet and tabulated. The data was imported in SPSS software version 26 and variables were defined. Statistical analysis of the data was carried out. Descriptive statistics tests were performed. Independent variable being race, age and time; Dependent variable being sex and choice for treatment. Frequency analysis was used to evaluate the data. Chi-square test was applied, and the level of significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

Functionality and aesthetics are the main two indications for CL; each category focuses on specific treatments. Aesthetic considerations of short clinical crowns, include improving gingival symmetry and correcting uneven gingival margins (Mathews *et al.*, 2014). These procedures can be performed using scalpels or lasers. Laser procedures have multiple advantages over traditional techniques such as increased precision, greater sterilization, bloodless surgical procedures decreased pain-swelling and better prognosis (Pick and Colvard, 1993).

Awareness of crown lengthening was found more among postgraduates at 78.7% Figure 1. Laser gingivectomy was the most common 55.9% form of a crown lengthening procedure Figure 2. Among all the specialties crown lengthening was preferred more for periodontal procedures, 42.3% Figure 3.

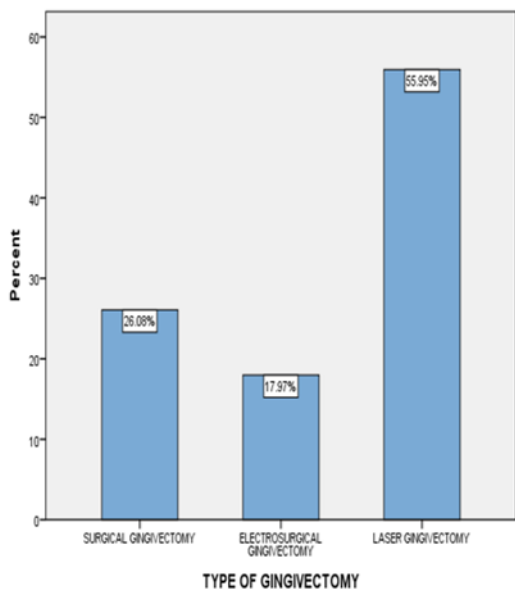


Figure 2: Prevalence of different types of crown lengthening procedures.

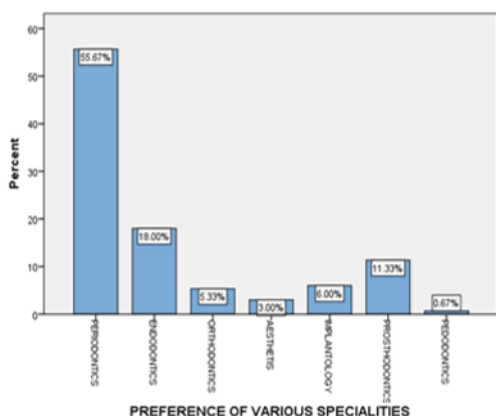


Figure 3: Preference of crown lengthening procedures among various specialties.

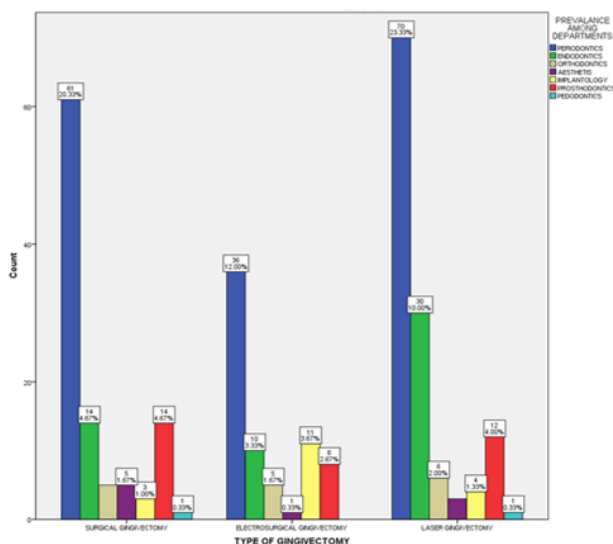


Figure 4: Association between different departments and the type of crown lengthening procedure.

There is a statistically significant association between different departments of and type of gingivectomy. Pearson Chi-Square value=22.5, p value=0.032 (p<0.05, statistical significant) Figure 4. Local stimuli cause interactions which cause localized gingival over growths. The two main indications for crown lengthening are functional and aesthetic (Ashok and Suvitha, 2016; Coluzzi, 2017). Lasers can be used effectively in patients with low cooperation tendencies such as pediatric or apprehensive adult patients (Karthik, 2019; Hassan and Bhateja, 2020). It is necessary to have sufficient knowledge regarding the interaction between laser-tissue (soft and hard tissues).

This results in a good prognosis. Hence, it is essential to follow basic protocols while using newer technology to achieve the best results. The main limitation of this study was that it was done on a small sample and since the laser is a new advancement more prospective randomized controlled studies are needed to categorize this approach as standard procedure for crown lengthening (Mcguire and Scheyer, 2011; Ajay et al., 2017). In my opinion, it is necessary to have sufficient knowledge regarding the interaction between laser-tissue (soft and hard tissues). This results in a good prognosis. Hence, it is essential to follow basic protocols while using newer technology to achieve the best results.

CONCLUSION

The use of Er; Cr: YSGG laser can be considered as a valuable asset for both soft and hard tissue surgery due to its multiple advantages like decreased pain and bleeding, less postoperative complications and accelerated healing compared to conventional methods.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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