

## Commonly Prescribed Analgesics Post Surgical, Electrosurgical & Laser Gingivectomy/Gingivoplasty- A Retrospective Study

Research Article

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### Abstract

Gingival overgrowth or enlargement is the increase in size of the gingiva. Various techniques like scalpel, electrosurgery, laser, cryosurgery are implemented in gingivectomy and gingivoplasty procedures. Analgesics of different types are prescribed postoperatively in order to reduce the pain. The aim of the study was to find the commonly prescribed analgesic. Data was obtained by reviewing 89,000 patient records and then tabulated. The sample size was 294 patients who underwent gingivectomy/gingivoplasty by any one of the three techniques. Data was imported to SPSS for statistical analysis. Descriptive statistics having frequency, percentage and correlation studies using chi-square tests were adopted. Commonly prescribed analgesics was found to be Zerodol P in surgical and electrosurgical technique. Laser technique showed a reduced usage of any analgesic itself and it was the most commonly used technique. Analgesics and types of technique showed a positive correlation ( $p$  value  $< 0.05$ ) and it was statistically significant. Zerodol P (500 mg Paracetamol + 100 mg Aceclofenac) was the most commonly prescribed analgesic.

**Keywords:** Analgesic; Electrosurgical; Gingivectomy; Gingivoplasty; Laser; Surgical.

### Introduction

Gingival overgrowth or enlargement is the increase in size of the gingiva. Gingivectomy is an operative procedure consisting of removal of soft tissue in order to reduce the periodontal pocket or remove the overgrowth/inflammation [4]. Inflammation is caused because of multifactorial reasons which get aggravated due to plaque accumulation. It is because patients do not maintain their oral hygiene effectively [3]. Gingival enlargement associated with systemic diseases like leukemia, sarcoidosis, Wegener's granulomatosis lead to recruitment and activation of neutrophils increasing with more plaque accumulation [2, 25]. Increased levels of Endothelin-1 has been found in patients with drug induced gingival enlargement [13, 14].

Gingivectomy can be performed by different methods or techniques such as scalpel, electrosurgical, laser or cryosurgery [20]. Each and every technique is associated with side effects and post operative measures which have to be followed. Proper clinical examination is required to assess the severity of the inflammation/

overgrowth. This can be graded as follows [34].

- Grade 0 - No signs of gingival overgrowth
- Grade 1 - overgrowth confined to interdental papilla
- Grade 2 - involving the interdental papilla and marginal gingiva
- Grade 3 - overgrowth covers 3/4th or more of the crown.

Periodontal therapy aims to eliminate the disease, maintenance of healthy dentition and focus on esthetic outcomes by soft tissues framing the dentition [35, 28, 27]. Gingivectomy procedure mainly seeks for dentogingival aesthetics and harmony [27]. (Pedron et al., 2010) It results in a good gingival contour for the patient, crown augmentation, remodelling of thick margins and elimination of hyperplasias [37, 8, 12, 32]. Changes occur due to imbalance in the connective tissue haemostasis which leads to increased ECM production [7]. Cytokines help in the recruitment of macrophages and neutrophils to amplify the inflammatory immune reaction [19]. The inflammatory mediators and tissue breakdown products can be detected in saliva, gingival tissues, GCF [36].

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Pain is the most common postoperative complication and differs from technique to technique. Commonly prescribed analgesics are Zerodol[100 mg Aceclofenac], Zerodol P [Paracetamol 500 mg + Aceclofenac 100 mg], Imol [Paracetamol 500mg + Ibuprofen 400mg], Imol plus [Ibuprofen 400 mg + Paracetamol 325 mg + Caffeine- Anhydrous 25 mg], Combiflam [Paracetamol 325 mg + Ibuprofen 400 mg], Dolo 650 [Paracetamol(Acetaminophen) 650 mg].

Lasers are the most ideal treatment option and in trend because of its various advantages. There is excellent haemostasis achieved, dry field operation and light contact of the fiber tip with tissue [6]. Various antimicrobials, antioxidants, anti collagenases and anti inflammatory agents have been tested in the management of periodontal problems [24]. Herbal products like Green tea, Triphala, Piperine are more preferred over conventional drugs because of increased safety margin and less side effects [25]. Successful treatment will lead to formation of new gingival connective tissue, restoration of bone and newly formed connective tissue fibers [21, 1, 30]. The aim of the study is to find the commonly prescribed analgesics in various techniques of Gingivectomy/Gingivoplasty. It also aims to assess the most common technique adopted for Gingivectomy/Gingivoplasty.

## Materials and Methodology

### Study Setting

This was a retrospective study of patients who had undergone Gingivectomy/Gingivoplasty. It revolved around a university setting study having patients visiting Saveetha Dental College and Hospitals, Chennai in between June 2019-April 2020. The approval for this study was given by the Institutional Ethical Com-

mittee (Ethical Approval Number - SDC/SIHEC/2020/DIAS-DATA/0619-0320).

### Data Collection and Tabulation

The case records were obtained by reviewing 89,000 patient records to obtain data of patients who underwent the treatment and analyse. The sample size of this study was found to be 294 patients. After collection of data, it was tabulated with parameters - Name of the patient, Age, Gender, type of technique and the analgesic prescribed. The three types of technique which were being compared were- surgical/electrosurgical and laser.

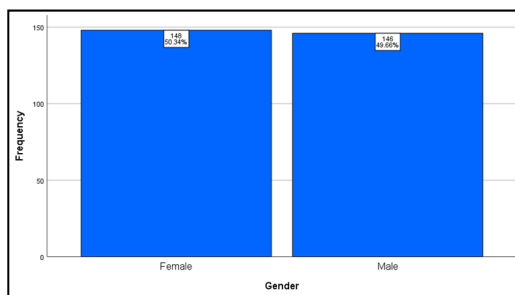
### Statistical Analysis

After further verification of data by an external reviewer, it was imported to the SPSS software by IBM for statistical analysis. Percentages, mean, Frequency of certain parameters were employed in the analysis. Chi-square test was used to detect the significance between method of technique and prescribed analgesic. p value less than 0.05 was considered to be statistically significant.

## Result Discussion

The overall analysis involved 294 patients in which 148 (50.3%) were females and 146(49.7%) were males as shown in Figure 1. Three techniques namely, surgical, electrosurgical and laser were adopted. Laser was used more often (59.2%) followed by surgical technique (26.9%) as shown in Figure 2. The most commonly prescribed analgesic was found to be Zerodol-P (33%)( Figure 3). Other analgesics like Zerodol-SP, Imol, Imol plus Combiflam were also prescribed to some patients. Zerodol -P was common in Surgical and Electrosurgical technique. In case of laser tech-

**Figure 1. The graph represents the frequency distribution of gender variation of patients undergoing Gingivectomy/Gingivoplasty where X-axis denotes gender and Y-axis denotes frequency. Blue colour denotes females and males. The graph shows that both males(49.7%) and females(50.3%) have almost equal prevalence.**



**Figure 2. The graph represents the frequency distribution of type of technique adopted for patients undergoing Gingivectomy/Gingivoplasty where X-axis denotes type of technique and Y-axis denotes frequency. Brown colour denotes Electro-surgical technique, grey colour denotes Laser technique and mustard colour denotes Surgical technique. The graph shows that Laser is the most commonly used technique for Gingivectomy/Gingivoplasty(59.2%).**

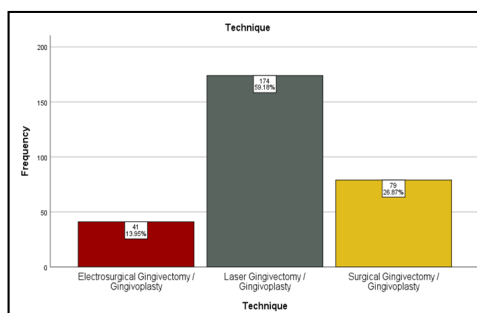


Figure 3. This graph represents frequency distribution of various analgesics prescribed for patients undergoing Gingivectomy/Gingivoplasty where X-axis denotes the Analgesics and Y-axis denotes the frequency. Indigo colour denotes the frequency for Combiflam prescribed to the patients, light green colour denotes Dolo-650, yellow denotes Imol, dark green denotes Imol plus, red denotes no analgesic prescribed, violet denotes Zerodol, black denotes Zerodol-P and brown denotes Zerodol-SP. The graph shows that Zerodol-P is the most commonly prescribed analgesic in Gingivectomy/Gingivoplasty(33%). 27.9% of the patients are not prescribed with any analgesic.

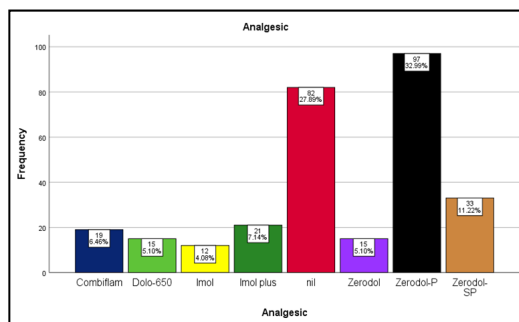


Table 1. This table shows the frequency and percentage distribution of various analgesics prescribed for patients undergoing Surgical technique of Gingivectomy/Gingivoplasty. In this technique, Zerodol P is the most commonly prescribed (54.4%) and Combiflam is the least common (1.3%).

	Frequency	Percentage (%)
Combiflam	1	1.3
Dolo 650	2	2.5
Imol	5	6.3
Imol plus	6	7.6
Nil	1	1.3
Zerodol	7	8.9
Zerodol P	43	54.4
Zerodol SP	14	17.7
TOTAL	79	100.0

Table 2. This table shows the frequency and percentage distribution of various analgesics prescribed for patients undergoing Electrosurgical technique of Gingivectomy/Gingivoplasty. Zerodol P is the most commonly prescribed analgesic(31.8%) and Imol & Imol plus account for the least commonly prescribed analgesic (2.3%) in this technique.

	Frequency	Percentage(%)
Combiflam	6	13.6
Dolo 650	2	4.5
Imol	1	2.3
Imol plus	1	2.3
Nil	8	18.2
Zerodol	6	13.6
Zerodol P	14	31.8
Zerodol SP	6	13.6
TOTAL	44	100.0

nique, there was no analgesic prescribed in 41.9% of the surgical technique cases followed by Zerodol-P with 22.9%. Table 4 shows the correlation between technique and analgesics done using chi-square test which showed a significance (p value <0.05).

Gingival enlargement can be caused due to multifactorial reasons. Few of the reasons being due to orthodontic treatment, drug induced, pathological, systemic disease associated etc [31, 5]. The ideal way to treat is associated with basic periodontal therapy, scaling,root planing and most importantly to obtain a healthy

gingival condition. Gingivectomy or gingivoplasty was performed for 50.3% females and 49.7% males as seen in Figure 1. Figure 2 shows the frequency of the Laser technique being the highest (59.2%), surgical technique (26.9%) and Electrosurgical technique accounting for 13.9%. It is suggested that both surgical and electrosurgical techniques show the same satisfactory results and is generally adopted as per patient-professional harmony. High frequency of laser technique adopted as shown in Figure 2 suggests that both surgical and electrosurgical technique is not commonly preferred over laser technique and it is more advantageous. It is

Table 3. This table shows the frequency and percentage distribution of various analgesics prescribed for patients undergoing Laser technique of Gingivectomy/Gingivoplasty. 41.9% of the patients who got treated by laser technique were not prescribed with any analgesic(Nil) followed by 22.9% for Zerodol P and least common as Zerodol (1.1%).

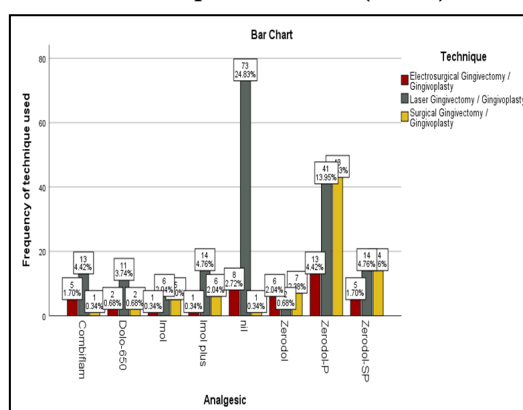
	Frequency	Percentage(%)
Combiflam	13	7.3
Dolo 650	12	6.7
Imol	6	3.4
Imol plus	16	8.9
Nil	75	41.9
Zerodol	2	1.1
Zerodol P	41	22.9
Zerodol SP	14	7.8
TOTAL	179	100.0

Table 4. This table shows the correlation of analgesic prescribed and technique used for patients undergoing Gingivectomy/Gingivoplasty treatment - Chi-square test- significant relation- ( p value < 0.05).

		TECHNIQUE			
		Electrosurgical	Laser	Surgical	TOTAL
ANALGESIC	Combiflam	5	13	1	19
	Dolo 650	2	11	2	15
	Imol	1	6	5	12
	Imol plus	1	14	6	21
	Nil	8	73	1	82
	Zerodol	6	2	7	15
	Zerodol P	13	41	43	97
	Zerodol SP	5	14	14	33
TOTAL		41	174	79	294

Pearson Chi-square - Significance - 0.000

Figure 4. This graph represents the association of various Analgesics prescribed and technique used for patients undergoing Gingivectomy/Gingivoplasty treatment where X-axis denotes Analgesics and Y-axis denotes the technique adopted. Brown colour denotes Electrosurgical technique, grey colour denotes Laser technique and mustard colour denotes Surgical technique. It is shown from the graph that Zerodol P is the most commonly prescribed analgesic in all the 3 techniques. Laser technique shows that 24.83% of the patients are not prescribed with any analgesic. Chi-square test shows a significant relation - p value - 0.000 (< 0.05).



better absorbed by the tissues and removes gingival soft tissue with ease without causing deep burns [9, 2]. It also has the capacity to transform an infected area into a sterile wound accompanied with little scar formation, no surgical cementation, minimal post operative swelling, uncomplicated wound healing [17] and mild pain existing only for a few seconds after surgery.

This is the reason that explains that 41.9% of Laser Gingivectomy/Gingivoplasty had no or reduced analgesic prescribed post treatment as shown in Table 3. This is in concordance with another study by Marogiannis et al who said that laser technique helps in reducing the use of analgesics and reoccurrence of gingival en-

largement too [16]. Whereas, in surgical and electrosurgical technique, Zerodol P was the most commonly prescribed analgesic as shown in Table 1 and 2. This is because conventional surgical technique causes more surgical trauma, bleeding and postoperative pain [15, 20].

Current findings of dental research suggest that NSAIDS decrease the inflammation of gingiva and the resorption of alveolar bone (29.11). Zerodol P [Paracetamol 500 mg + Aceclofenac 100 mg] is considered to be the most common and standard drug as shown in Table 4 and Figure 4 and this combination is proven to have a high success rate [10]. Aceclofenac has a higher and faster potent effect, interferes with neutrophil adhesion to endothelium showing excellent anti-inflammatory profile. The combination of aceclofenac, paracetamol and chlorzoxazone is emerging as one of the widely prescribed combinations in a single dosage form [33]. The limitations of present study is that it involves a small sample size and single centered. Therefore, more extensive research is to be done in this field involving a larger population. Newer concept and pain assessment scales have to be encouraged in order to assess the levels of pain, reduce complications postsurgically as only prescribing analgesics and knowing subjectively wouldn't be enough to come to a final conclusion.

## Conclusion

Within the limitations of the study, Zerodol P [Paracetamol 500 mg + Aceclofenac 100 mg] is the most commonly prescribed analgesic post surgical and electrosurgical Gingivectomy/Gingivoplasty. The most common technique adopted was found to be the Laser technique which showed minimal usage of analgesics.

## Author Contribution

Shreya Kothari contributed in the concept design of the study, sequence alignment, statistical analysis and drafted the manuscript. Dr. Balaji Ganesh participated in the design & coordination of the study, statistical framework, manuscript drafting and proof-reading. All authors read and approved the final manuscript.

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