

**PREFERENCE OF LA TECHNIQUE IN LASER GINGIVECTOMY PROCEDURES**

Running Title: Preference of LA Technique in laser gingivectomy

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**Abstract:**

**Introduction:** Gingivectomy is a surgical procedure of excising the unsupported gingival tissue which can be done by many methods such as scalpel, laser etc. The aim of this study is to assess the preference of LA technique in laser gingivectomy procedures using a novel method.

**Materials and methods:** This is a retrospective clinical study carried out by a private dental institution. The study analysed the data of patients who had undergone laser gingivectomy procedure. The data is collected over a period of 2 years. Details such as age, gender, type of LA given, type of LA technique used were all recorded. Descriptive analysis and Chi-square analysis was done.

**Results:** A total of 250 patients have undergone laser gingivectomy procedure in which 49.6% were males and 50.4% were females, 18-40 years age group had the highest prevalence (76%). 96.4% patients were injected with LA with adrenaline, 53.6% had only LA without any topical anesthesia and 46.4% were injected with topical along with LA. 80% had used infiltration techniques and 20% used nerve blocks.

**Conclusion:** Infiltration was the most preferred type of LA technique used in laser gingivectomy procedure.

**Keywords:** laser, Gingivectomy, Anesthesia, Adrenaline, Novel method.

**INTRODUCTION:**

Gingivectomy procedure is one of the main periodontal procedures where it can help in treating periodontitis, excessive gingival growth and can also be used for esthetic corrections. Periodontitis is a chronic multifactorial disease of the periodontium. Gingivectomy can help in removing the excess or diseased gingival tissue

Gingivectomy is a surgical procedure which includes excising the unsupported gingival tissue to a level where it is attached and creates a whole new gingival margin that is apical to the old position(1,2). While performing gingivectomy, the biological width should not be altered, if altered can lead to gingival recession and other periodontal problems(3). Gingivectomy can be

performed by various methods such as scalpel and laser. The scalpel technique which is the conventional method is the most common method where a surgical blade and other periodontal surgical instruments are used to cut the tissue with well defined margins and minimum lateral tissue damage. Disadvantages of this technique include excessive bleeding during the procedure, post operative pain which can lead to discomfort of the patient, long healing time and the need for anesthesia(2,4–6). Another type of technique which can be used for gingivectomy is the use of LASER which stands for light amplification by stimulated emission of radiation. The use of lasers in dentistry has increased in the past few years due to reduced patient discomfort, less postoperative pain, less bleeding and better healing. Patients required only less or no anesthesia when compared to the conventional method. Disadvantages of laser can include its high cost, chances of retinal eye damage(7–12).

Healing of the gingiva after the treatment is an important factor in the treatment which indicates the success of the treatment. But using laser technique, healing of gingiva is faster and much appreciated than using a scalpel which can increase the chances of success in the procedure. Our team has extensive knowledge and research experience that has translated into high quality publications(13–22),(23–26),(27–31),(32). Hence The aim of this study is to assess the preference of LA technique in laser gingivectomy procedures.

#### **MATERIALS AND METHODS:**

It's a single centered retrospective study in a private dental institution, Chennai. The samples were taken from the patients who checked in From June 2019 to February 2021. Ethical clearance for this study was obtained from the institutional review board. The disadvantage of this study was trends and geographic location.

Two reviewers were involved in this study. Case records of patients who checked in from June 2019 to February 2021 were collected. A total of 250 patients have undergone laser gingivectomy procedure. Internal validity includes patients who have undergone laser gingivectomy. External validity is replication of results in different time periods.

The data was collected, verified, tabulated and analyzed. The data was imposed on SPSS and the technique used to quantify the data was Chi square. The statistical significance value is set at 0.05.

#### **RESULTS AND DISCUSSION:**

A total of 250 patients have undergone laser gingivectomy in which 49.6% were males and 50.4% were females(Fig-1). 76% were from the 18-40 years age group, 17.6% were from 41-60 years age group and 6.4% were 61 and above years respectively(Fig-2). 96.4% have used LA with adrenaline and 3.6% used LA without adrenaline(fig-3). 53.6% have only used injection (without topical) and 46.4% have used topical anesthesia along with injection(fig-4). 80% have given infiltration and 20% have given nerve block.(fig-5). Chi-square analysis was

done between gender and type of LA technique in which  $P < 0.05$  ( $p$  value = 0.023) which is statistically significant (fig-6).

Periodontal disease has many risk factors with age and gender being the most associated factor. Studies have shown that with increase in age there is also an increase in chances of a periodontal disease, age is directly not a risk factor but as the age increases, people are susceptible to many diseases including periodontal diseases (33,34) there was only a 6.4% prevalence of older patients.

Studies have shown that males have a higher chance of periodontal diseases than females of comparable age. Males tend to be less careful about their hygiene when compared to females who care about their esthetics and their hygiene status and seek dental care more often than males (35–37). This study has shown that females had higher prevalence than males.

Vasoconstrictors used along with LA can help in controlling the bleeding, prolongs the duration of anesthesia and reduces systemic toxicity (38,39). In this study almost 96% have used local anesthesia along with adrenaline. vasoconstrictors can be contraindicated in cases such as patients with cardiac problems.

53.6% have used injection and 46.4% have used topical along with injection, studies have shown that laser gingivectomy procedures need only minimal amount of anesthesia when compared to the conventional method (10,40).

80% have undergone infiltration and 20% have undergone nerve block this can be due to the problem being at a specific region and the need for nerve block was not required.

Limitations of the study included, single centred study, various ethnic group of people can be included.

### **CONCLUSION:**

This study showed that Infiltration was the most commonly used type of LA technique in laser gingivectomy procedure. The procedure is less invasive and has less complications when compared to the conventional method. LA is usually not required for laser gingivectomy but still can be given to reduce the discomfort of the patient.

### **CONFLICT OF INTEREST: NIL**

### **ACKNOWLEDGEMENT**

We would like to thank all the participants who took part in the study. We also thank Saveetha dental college and hospitals for their constant help and support.

### **AUTHOR CONTRIBUTION**

The first author (Bondada Venkata Mani Anirudh) performed literature search, data collection, analysis, manuscript writing. The second author (Dr.Karthickraj S M) contributed study design, data verification and revised the manuscript.

### **SOURCE OF FUNDING :-**

The present project is funded by

- Saveetha Institute of Medical and Technical Sciences.
- Saveetha Dental college and Hospitals.
- Saveetha University.

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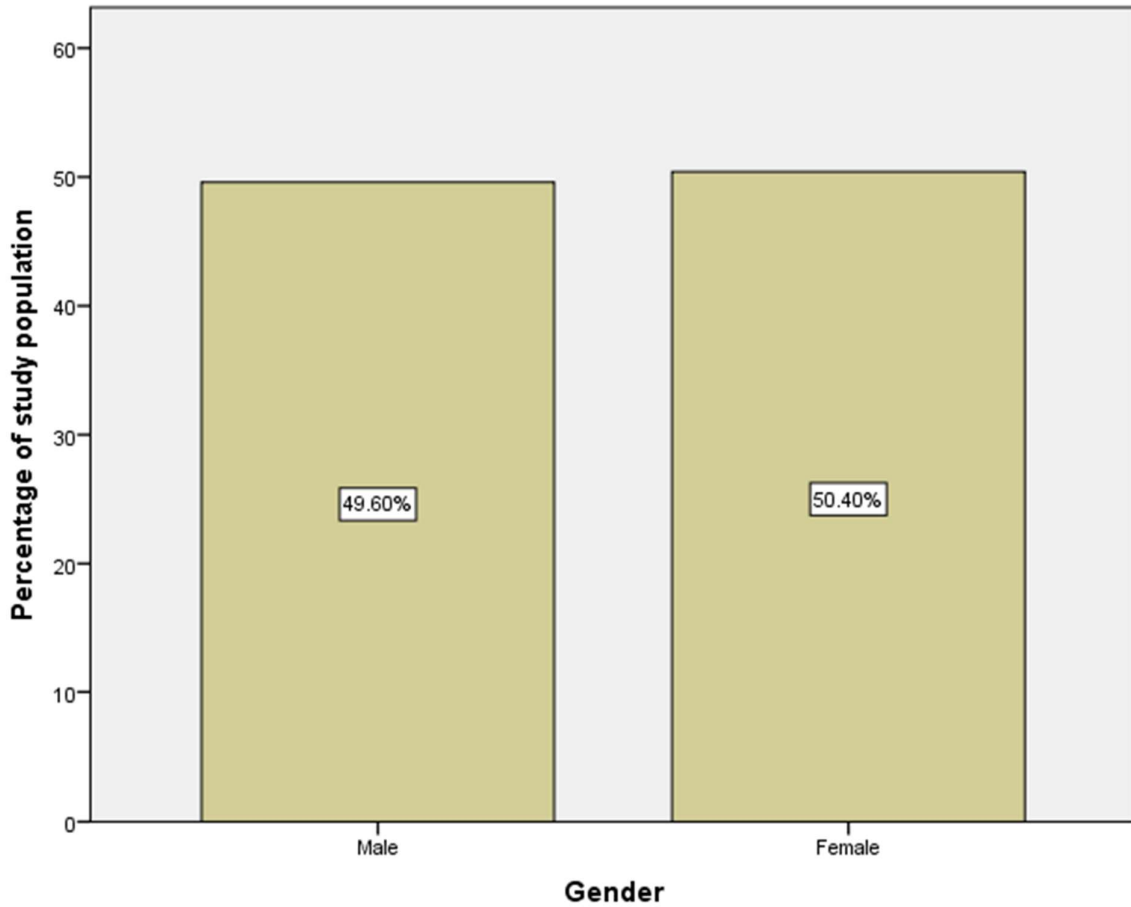


Figure-1: Bar chart depicting the gender distribution of patients who had undergone laser gingivectomy. X Axis represents gender and Y Axis represents percentage of study population



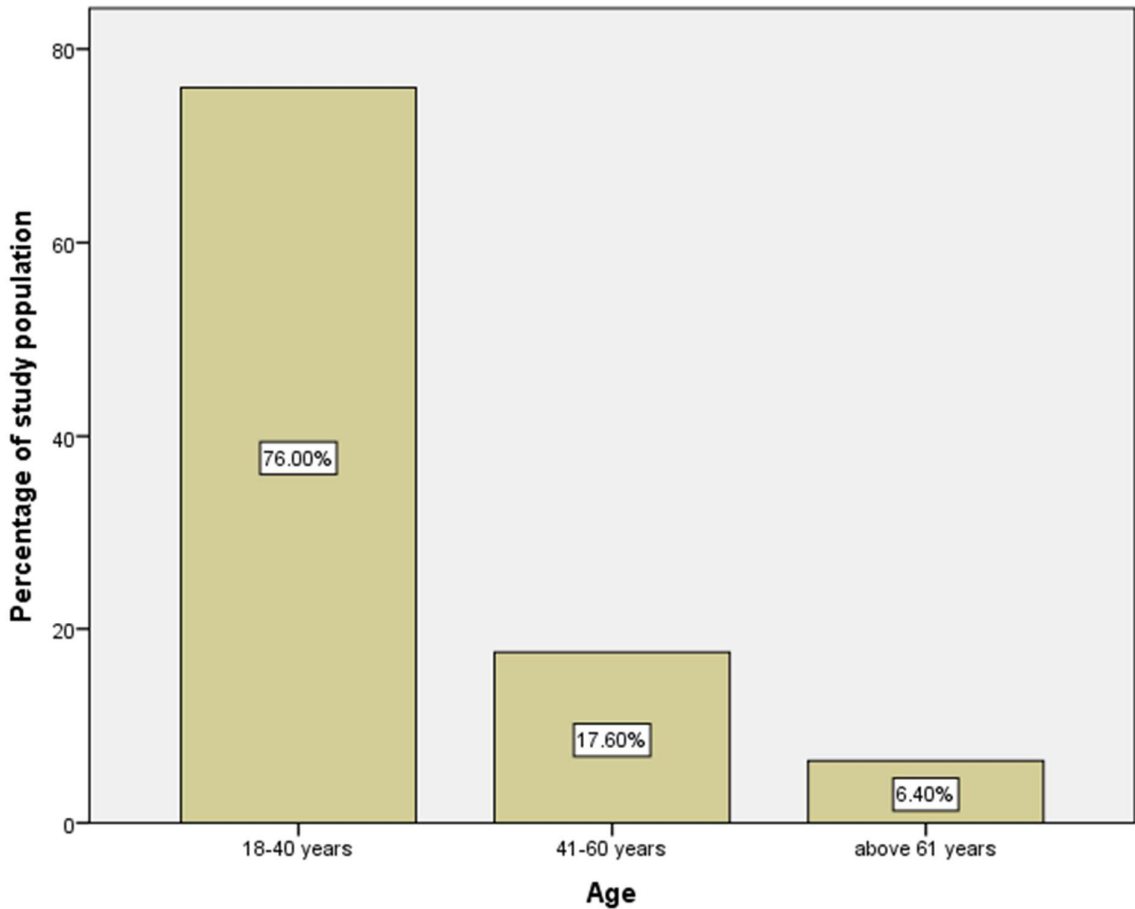


Figure-2: Bar chart depicting the age distribution of patients who had undergone laser gingivectomy. X Axis represents age groups and Y Axis represents percentage of study population

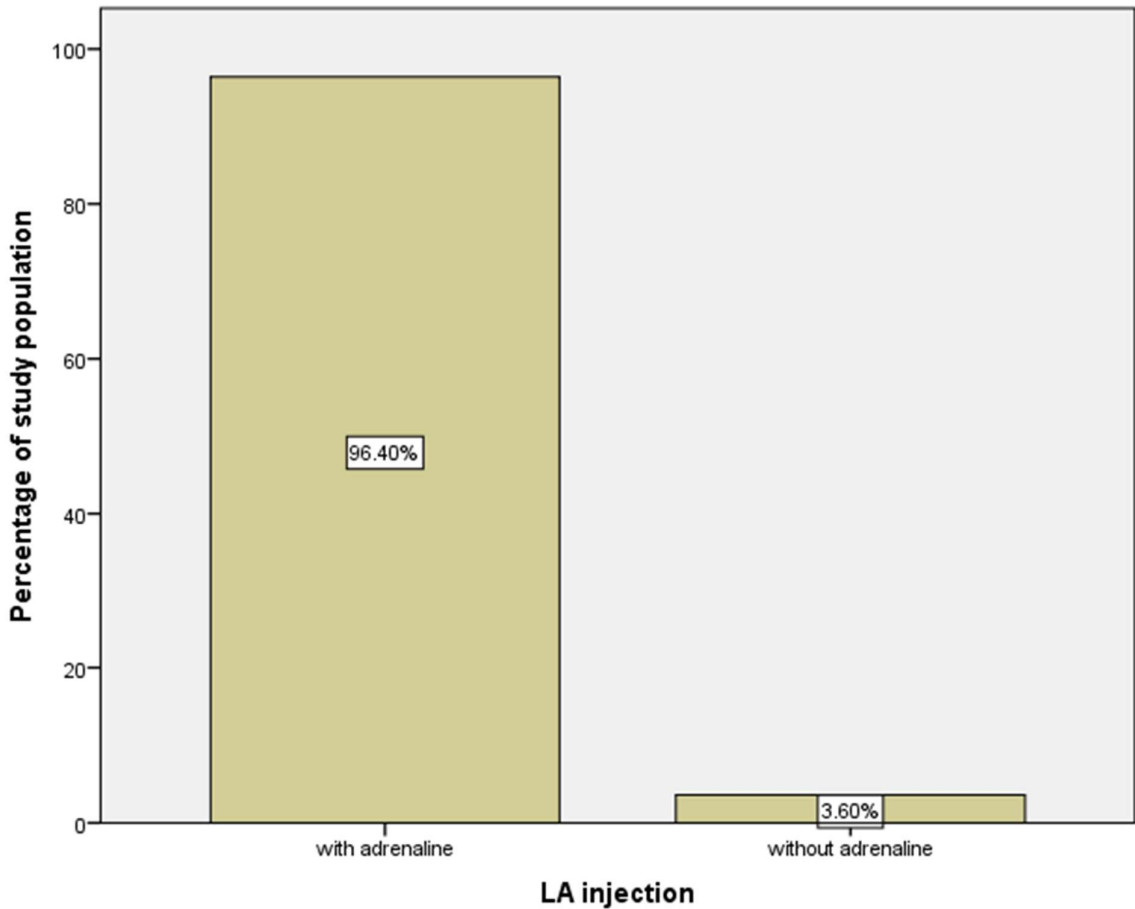


Figure-3: Bar chart depicting the type of LA injection used on patients who had undergone laser gingivectomy. X Axis represents type of LA injection and Y Axis represents percentage of study population

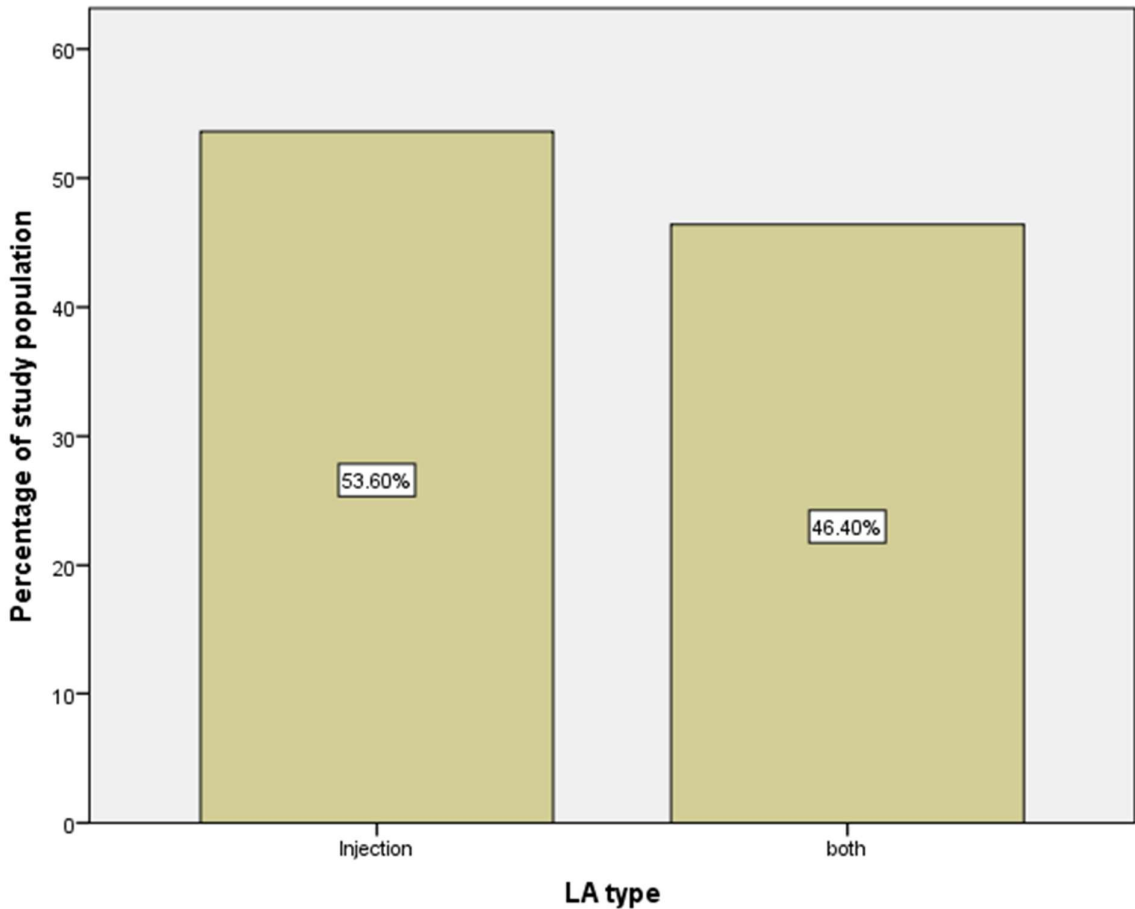


Figure-4: Bar chart depicting the type of LA used on patients who had undergone laser gingivectomy. X Axis represents type of LA and Y Axis represents percentage of study population

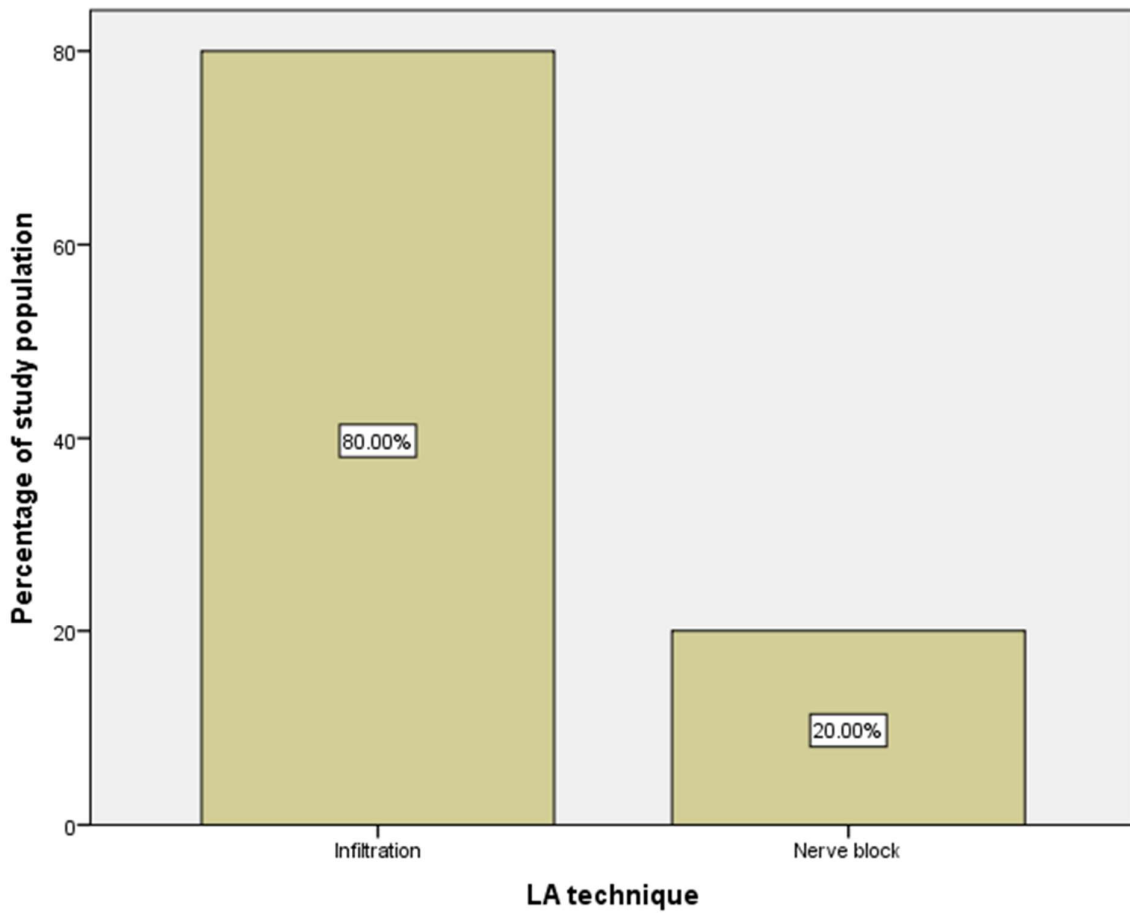


Figure-5: Bar chart depicting the type of LA technique used on patients who had undergone laser gingivectomy. X Axis represents type of LA technique and Y Axis represents percentage of study population

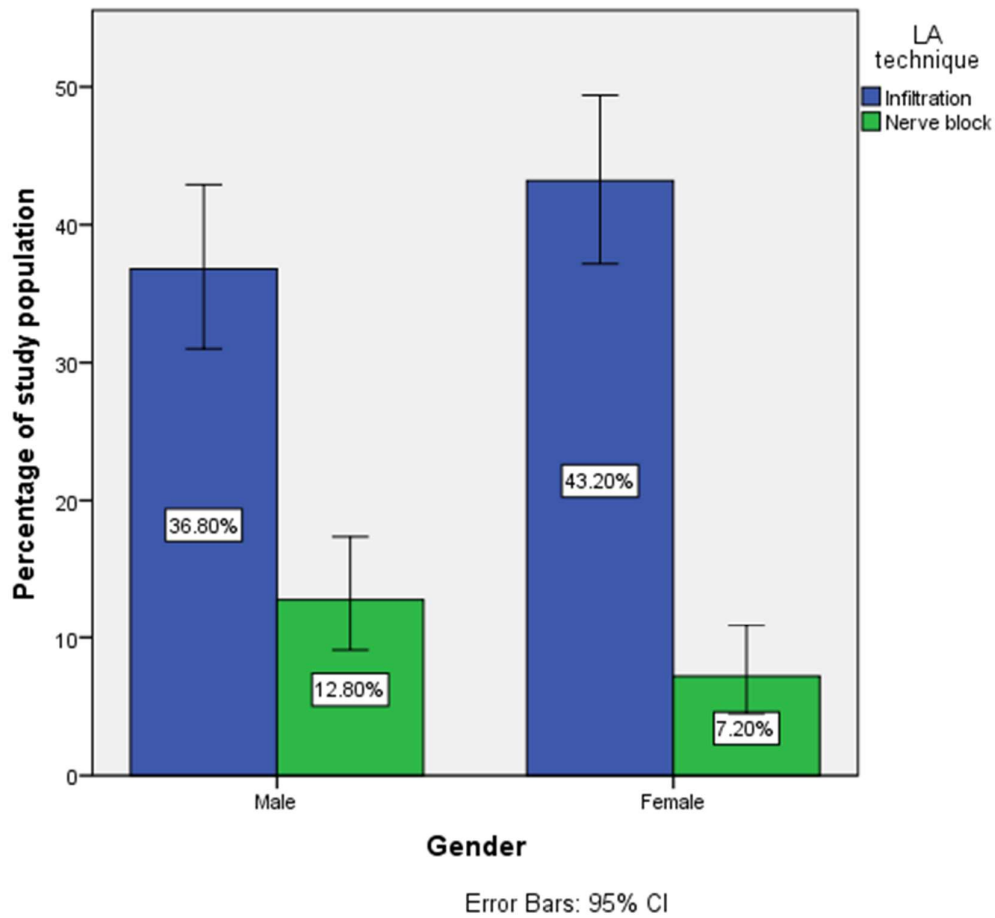


Figure-6: Error Bar chart depicting the association between gender and type of LA technique used in laser gingivectomy procedure. Blue represents infiltration and Green represents nerve block. Chi square analysis was done between these two parameters and  $P < 0.05$  (p-value-0.023) which is statistically significant.