ISSN: 2996-2544

Research Article

Journal of Research and Education

# Minor Palatine Nerve Block in Peritonsillar Abscess Drainage from April To December In the Otorhinolaryngology Emergency Department of The Hospital De Clinics - San Lorenzo 2022

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**Submitted**: 2024, Apr 01; **Accepted**: 2024, May 07: **Published**: 2024, Sep 25

**Citation:** Samudio, S. N., Canata, C. M., Tornaco, R. (2024). Minor Palatine Nerve Block in Peritonsillar Abscess Drainage from April to December in the otorhinolaryngology emergency department of the hospital de clinics - san Lorenzo 2022. *J Res Edu, 2*(2), 01-05.

## Abstract

***Background:*** *A peritonsillar abscess is a purulent collection localized between the palatine tonsil and the muscular wall of the oropharynx and appears to be a complication of acute tonsillitis or infection of Weber's glands. The typical clinical presentation of peritonsillar abscess includes severe sore throat, fever, and a "hot potato" voice. Historical features are important for guiding management.*

***Methods:*** *A prospective, controlled, non-randomized study was conducted on patients who presented at the ENT emergency department of Hospital de Clinicals - San Lorenzo with uncomplicated peritonsillar abscesses. They were divided into two groups, one receiving the lesser palatine nerve block, and the other receiving only topical anesthesia with 10% lidocaine. Pain levels were assessed using a 10-point numerical scale before and 30 minutes after surgical drainage.*

***Results:*** *The group that received the lesser palatine nerve block experienced significantly lower pain levels during the procedure compared to the control group. However, the difference in pain level after the procedure was not statistically significant between the two groups.*

***Conclusions:*** *Despite the variability in the results, it is concluded that the lesser palatine nerve block is a safe technique that can provide better pain control during peritonsillar abscess drainage. Further studies with a larger sample size and consideration of other factors are needed to fully validate this technique and its potential benefits in clinical practice.*

**Keywords:** Peritonsillar abscess, Minor Palatine Nerve Block, Pain Management, Local Anesthesia, Abscess Recurrence

## Key Points

- A peritonsillar abscess is a purulent collection located between the palatine tonsil and the muscular wall of the oropharynx and appears to be a complication of acute tonsillitis.
- The typical clinical presentation of a peritonsillar abscess includes severe sore throat (usually unilateral), fever, and muffled voice.
- The study was divided into two groups to investigate the efficacy of the lesser palatine nerve block.
- The group that received the lesser palatine nerve block experienced less pain during the procedure compared to the control group.
- This technique could be cost-effective as it allows for surgical drainage of a PTA in the emergency room and may reduce the need for sedation or general anesthesia.

**Clinical Relevance:** The lesser palatine nerve block in peritonsillar abscess drainage is a technique that can significantly enhance pain control during the procedure. This directly impacts patient comfort and their post-recovery experience. Furthermore, by alleviating pain and anxiety associated with the procedure, this technique has the potential to improve patient cooperation in future medical treatments and procedures. Therefore, this study not only contributes to the understanding of the technique but also provides a clear perspective for its clinical application, enhancing the quality of care and the patient's overall experience.

## 1. Introduction

A peritonsillar abscess is a purulent collection localized between

the palatine tonsil and the muscular wall of the oropharynx, and it appears to be a complication of acute tonsillitis or infection of Weber's glands [1]. It can occur in all age groups but is most common in individuals aged 20 to 40 years, with a global incidence of 37 per 100,000 population [2]. It is a rapidly diagnosable condition, and treatment can prevent serious complications3. Regarding the anatomy and pathogenesis of the disease, it is worth noting that the peritonsillar space consists of loose areolar tissue that covers the tonsil and is surrounded by the superior pharyngeal constrictor muscle and the anterior and posterior tonsillar pillars [3]. The palatine tonsils are located between the palatoglossal and palatopharyngeal arches and are surrounded by a capsule that provides a pathway for blood vessels and nerves. The peritonsillar abscess generally occurs at the upper pole of the tonsil and manifests as a defined collection of pus between the tonsillar capsule, the superior constrictor, and the palatopharyngeal muscle. It can also occur at the midpoint or lower pole of the tonsil or may be scattered with multiple loculations in the peritonsillar space [4].

Peritonsillar infection typically follows tonsillitis or pharyngitis and progresses from pharyngitis to cellulitis (phlegmon) and then to an abscess [4]. However, peritonsillar abscesses can also occur without prior infection, and such cases are believed to be caused by the obstruction of Weber's glands (a group of salivary glands in the soft palate just above the tonsil, connected to the tonsil surface by a duct) [5]. The typical clinical presentation of peritonsillar abscess (PTA) includes severe throat pain (usually unilateral), fever, and a "hot potato" voice. Accumulation of saliva or drooling may occur. Trismus, related to irritation and reflex spasm of the internal pterygoid muscle, occurs in nearly two-thirds of patients and helps distinguish PTA from severe pharyngitis or tonsillitis [6]. Patients often experience neck swelling and pain, and may also have ear pain on the same side3. Fatigue, irritability, and decreased oral intake may result from discomfort. Historical features are important for guiding management. Key aspects of the history include the frequency and severity of recurrent episodes of infectious pharyngitis, previous episodes of PTA, and snoring or other symptoms of obstructive sleep apnea. Smoking appears to be a risk factor [7]. Hence, the following research question arises: "Is the lesser palatine nerve block effective in managing pain during peritonsillar abscess drainage?"

## 2. Study Methodology

**2.1 Type:** Prospective, Controlled, Non-Randomized Study

**2.2 Design:** Longitudinal

**2.3 Sampling:** Consecutive Cases

**2.4 Population:**

• **Target Population:** Patients presenting to the emergency department of the Otorhinolaryngology service at *Hospital de Clinicas - San Lorenzo.*

• **Accessible Population**: Patients presenting to the Otorhinolaryngology emergency service at *Hospital de Clinicas* with uncomplicated Peritonsillar Abscess.

**2.5 Sample Size:**

The sample size was calculated for comparing means of the visual analog scale (VAS) score of independent groups using the EPIDAT program. Assuming a mean difference to be detected of 6.5 and a common standard deviation of 3.9, based on the study "Lesser Palatine Nerve Block in Peritonsillar Abscess Drainage: A Prospective and Controlled Study" with a 1:1 sample size ratio and a 95% confidence interval, a minimum total sample size of 14 patients was obtained, divided into a study group and a control group, with seven patients in each. The study involved performing a minor palatine nerve block with 2% lidocaine (20 mg/mL) prior to surgical drainage of a peritonsillar abscess, followed by immediate pain assessment and another assessment 30 minutes after drainage in the study group. This was then compared with the control group (anesthetized with 10% lidocaine topically).

**2.6 Inclusion Criteria:**

• Patients aged 18 years and older with confirmed unilateral peritonsillar abscess through pus aspiration.

**2.7 Exclusion Criteria:**

• Patients with complicated peritonsillar abscesses involving the spread to other neck/mediastinal spaces or upper airway involvement.

• Patients requiring general anesthesia for surgical drainage.

• Patients with the extension of the inflammatory process to the hard palate.

• Patients who underwent peritonsillar abscess drainage in the last 30 days.

**2.8 Variables**

✓ Patient characteristics:

a. Gender

b. Age

✓ Clinical History Data

a. Diabetes

b. Cardiovascular disease

c. Previous history of peritonsillar abscess

d. Smoking

e. Current antibiotic therapy

✓ Clinical Manifestations

a. Pain

b. Dysphagia

c. Odynophagia

d. Fever

e. Trismus

**2.9 Data Analysis:** Data processing and analysis will be performed using Excel and SPSS 15.0 statistical software, including its graph assistant. Various types of graphs will be created based on the data from the spreadsheet. Analytical calculations will be carried out.

## 3. Ethical Considerations

The study will be conducted with the permission of the department

and otorhinolaryngology service, following authorization from the ethics committee and all individuals involved. The principles of beneficence and non-maleficence will be applied, as the data obtained will be used for the benefit of the patient to resolve their condition, and any other data obtained in the clinical examination will be addressed to resolve their condition. The principle of non-maleficence will be respected because no physical, psychosocial, or economic risks or harm will be incurred by the participants in this study. Justice will be applied by treating each study participant equitably, without discrimination of any kind. Discretion will be exercised for the individuals involved, respecting the principles of confidentiality and privacy, which are the doctor's duty and the patient's right. The information provided to the doctor during the professional doctor-patient relationship will be kept confidential, and the anonymity and confidentiality of the results and data of each individual involved will be respected.

## 4. Results

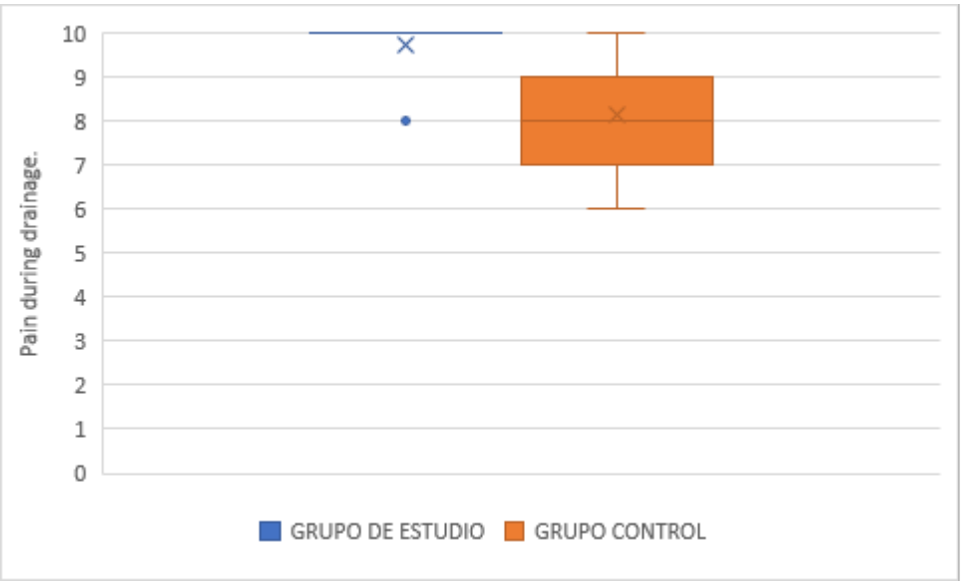
Fourteen patients were recruited for the study, with 7 assigned to the study group and 7 assigned to the control group, and the homogeneity of the patients' characteristics in both groups was confirmed (Fig. 1).

| | STUDY GROUP n =7 | CONTROL GROUP n =7 | P |
|---|---|---|---|
| Patient Characteristics | | | |
| Age | 27,14 ± 10 | 30,1 ± 16,4 | 0,19 |
| Gender | M(29%) F(71%) | M(86%) F(14%) | 1 |
| Clinical Manifestations | | | |
| Pain | 7 (100%) | 7 (100%) | 1 |
| Dysphagia | 7 (100%) | 6 (86%) | 1 |
| Odynophagia | 7 (100%) | 7 (100%) | 1 |
| Fever | 3 (43%) | 5 (71%) | 0.5921 |
| Trismus | 1 (14%) | 2 (29%) | 1 |
| Clinical History Data | | | |
| Diabetes | 0 (0%) | 0 (0%) | 1 |
| Cardiovascular disease | 0 (0%) | 0 (0%) | 1 |
| Previous history of peritonsillar abscess | 0 (0%) | 1 (14%) | 1 |
| Smoking | 1 (14%) | 1 (14%) | 1 |
| Antibiotic Therapy | 3 (43%) | 3 (43%) | 1 |

*(M, MALE F, FEMALE.)*
Student's t-test and Fisher's Test were used.
**Figure 1:** Patient Characteristics.

In the study group, the mean age was 27.14 ± 10 (range 18-45) years, with five female patients and two male patients. In the control group, the mean age was 30.1 ± 16.4 (range 18-56) years, with six male patients and one female patient. In the study group, three patients reported prior antibiotic and analgesic use before consulting with the otorhinolaryngology specialist, a finding also observed in the control group, where three patients also reported prior antibiotic and analgesic use before consulting at our center. In the study group, no patients had associated comorbidities such as diabetes mellitus, cardiovascular disease, or a history of previous peritonsillar abscess, but one patient reported a smoking habit. In the control group, no patients had diabetes mellitus or cardiovascular disease as underlying conditions, but one patient reported a previous history of peritonsillar abscess without a

precise date and one patient had a smoking habit. The mean pain score in the study group during the peritonsillar abscess drainage procedure was 9.71 (range 8-10). In the control group, the mean pain score during the procedure was 8.14 (range 6-10). The difference in mean pain scores between the two groups was statistically significant ($p<0.05$) (Fig. 2).




Control group and study group: $p < 0,05$, $r = -0,28$

**Figure 2.** Pain during surgical drainage.

The mean pain score after surgical drainage in the study group was 6.57, and in the control group, it was 5.28. This difference in the mean postoperative pain score was not statistically significant. None of the patients required re-intervention. All patients in both the study and control groups requested analgesia after 30 minutes of the procedure, and no complications related to the anesthetic or surgical procedure were observed in either group.

## 5. Discussion

The aim of this study was to demonstrate that the implementation of minor palatine nerve block in peritonsillar abscess drainage is a safe technique that dramatically reduces pain levels during and after the incision and surgical drainage procedure, as proposed by N.G et al. in their study conducted at Centro Hospitalar de Lisboa Occidental [8]. We aimed to implement this technique in our population to verify if such findings could be replicated in our population as an alternative to the classic anesthetic technique, which involves topical application of 10% lidocaine spray on the soft palate mucosa. The pain level in the study group during the procedure was 9.71, which differs from the study by Nelson Gilberto et al [8]. where it was only 1.9, with half of the patients reporting no pain at all. This contrasted with our study where all patients reported some degree of pain. In the control group, the mean pain level during the procedure was 8.14, which is similar to the study by Nelson Gilberto et al [8]. where it was 8.4 without minor palatine nerve block and using only topical anesthesia.

After the procedure, the pain level decreased in both groups, but not to the extent found in other studies, yielding a result that was not statistically significant compared to the guidance study conducted by Nelson Gilberto et al., where this result was statistically significant [8]. This discrepancy appears to be due to the significant variability in pain scores reported on the visual analog scale (Fig. 3) by our patients who sought emergency otorhinolaryngology services at Hospital de Clinicas from April to December 2022.

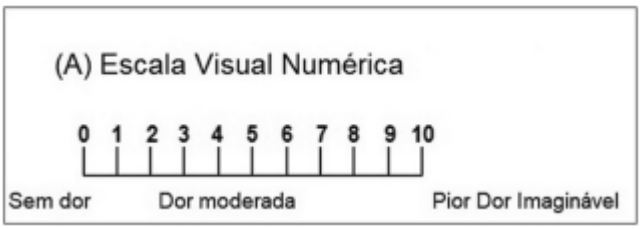



**Figure 3.** Numeric rating scale for pain severity assessment (in Portuguese).

Farooq compared the use of intravenous diclofenac combined with local infiltrative (local) anesthesia versus intravenous diclofenac (IV) alone for quinsy drainage [9]. Both groups received diclofenac (75 mg) 30 minutes before the procedure. In the local anesthesia group, the mean pain score during the surgical procedure was 3.46, and 1.80 at 30 minutes. In the control group, the mean pain level was 7.56 during the surgical treatment and 5.50 at 30 minutes. The comparison of the effect of minor palatine nerve block with local anesthesia using intravenous diclofenac suggests that blocking the minor palatine nerve alone is more effective in reducing pain than combined block with intravenous diclofenac. Chung and colleagues demonstrated a recurrence rate of peritonsillar abscess of 13.9% [10]. In the study by Nelson Gilberto and colleagues, there was a recurrence rate of 10% in the study group and 17% in the control group [8]. In our study, no patient had recurrence of peritonsillar abscess after surgical drainage, nor were there any associated complications.

The local extension of the peritonsillar abscess, which may be outside the territory innervated by the minor palatine nerve, may have influenced our data, as mentioned in the guidance study [8]. This phenomenon could explain part of the variability in the results in the study group. In this case, the suggestion to perform a more proximal maxillary nerve block or the glossopharyngeal nerve block associated with the minor palatine nerve appears quite valid and relevant for future studies to make comparisons. Our study had two main limitations. First, the study cohort was small. Second, there were differences in pain sensitivity among individuals, which could be due to gender or other factors. Comparing our study's data with other studies was challenging because few studies have evaluated pain using the visual analog pain scale (VAS) (Fig. 3). Nevertheless, we mainly compared our data with the guidance study conducted by Nelson Gilberto in Lisbon, and despite achieving favorable results during the surgical procedure (statistically significant), the variability in pain score values on the visual analog scale (VAS) (Fig. 3) reported by our patients who sought emergency otorhinolaryngology services at Hospital de Clinicals from April to December 2022 moved us away from favorable findings at 30 minutes after the procedure.

## 6. Conclusion

The technique of minor palatine nerve block is simple, safe, and provides good results for surgical drainage, effective pain control, and without major complications. Additionally, this technique could be cost-effective because it allows surgical drainage of a peritonsillar abscess in the emergency room and could reduce the need for sedation or general anesthesia. However, despite the favorable results, randomized studies are needed to validate this anesthetic technique. Such studies could involve comparing minor palatine nerve block with a more proximal maxillary nerve block or glossopharyngeal nerve block associated with the minor palatine nerve, or double-blind studies with a placebo or other local anesthetics.

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