International Journal of Dentistry and Oral Science (IJDOS)
ISSN: 2377-8075

Incidence of Lingual Nerve Paresthesia after Surgical Removal of Mandibular Third Molar Surgery

Research Article

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Abstract

Aim: To determine the incidence of lingual nerve injury during surgical removal of mandibular third molar. Study Design: Retrospective study study Place and Duration:Saveetha dental college and hospital for 10months.
Materials and Methods: A retrospective audit was carried out and incidence of paresthesia was documented.
Results: A total of 720 patients underwent surgical removal lower third molar,only 420 patients came for review. Out of these three patients reported Lingual nerve paraesthesia that was temporary. There was no patient reporting with temporary and permanent inferior alveolar nerve paraesthesia.
Conclusion: It was concluded that the factors leading to temporary or permanent paraesthesia is actually a difficulty of extraction. Other parameters like operator's seniority, age and medical condition of the patient, gender, level of impaction, type of flap and the tooth side in relation to the handedness of the operator had minimal effect on the outcome.

Keywords: Lingual Nerve Injury; Sensory Impairment; Third Molar Extraction; Inferior Alveolar Nerve Injury.

Introduction

Dentistry comprises practices related to oral cavity. Oral diseases are a major problem among general population and there are various procedures carried out to prevent and treat them. Oral health have a direct impact on general health patterns as it helps to talk ,eat and feel confident [1]. Third molar surgery is one of the most common procedures performed by oral surgeons/oral and maxillofacial surgeons. Surgical alterations in the position of the bony facial skeleton will inevitably affect the soft tissues [2]. There is a documented complication of inferior alveolar nerve and lingual nerve damage which leads to paraesthesia of the lower lip, chin and tongue. Extraction of the mandibular third molars is one of the most frequently performed procedures in oral and maxillofacial surgery. Despite improvement in the preoperative assessment of impacted lower wisdom teeth and techniques of removal; Inferior alveolar and lingual nerve damage remains a significant factor during 3rd molar surgery which has serious medical and legal implications. In previous studies,the prevalence of damage to the lingual nerve (LN) varied from almost 0% to 23% [3, 4]. This lesion may involve temporary or permanent lingual sensory disturbances. The incidence of temporary deficit is between 0-23% and permanent 0-8%, compared with temporary (0.4 to 8.4%) and permanent (<1%) lesion of the inferior alveolar nerve [5, 6]. Literature quotes various reasons for post-operative paraesthesia of the lip, chin and tongue following mandibular third molar extractions varying from inadequate protection and inadequate assessment to seniority of the operator [6, 7].

The present study was conducted to determine the incidence of lingual nerve injury and to correlate the various factors associated with lingual nerve paresthesia during surgery.

Materials and Methods

A retrospective study on incidence of lingual nerve paresthesia

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Received: October 07, 2020
Accepted: November 22, 2020
Published: November 25, 2020

Citation: P Aditya Reddy, Abdul Wahab PU, Jagadish V. Incidence of Lingual Nerve Paresthesia after Surgical Removal of Mandibular Third Molar Surgery. *Int J Dentistry Oral Sci.* 2020;7(11):1072-1075. **doi:** http://dx.doi.org/10.19070/2377-8075-20000212

who came to saveetha dental college referred to the department of oral and maxillofacial surgery. The data were collected for patients who underwent surgical removal of lower third molar from june-2019 to march-2020. The data collected were reviewed and analysed the data of 86000 patients. Patient review notes were taken and complaints were noted. All the data was collected and recorded in EXCEL and transferred to spss(2.0).

Inclusive Criteria: Patient who underwent surgical removal of lower third molar surgery.

Excluding Criteria: All other surgical removal of teeth except lower third molar was excluded from the study. All incomplete data was excluded from the study.

Results and Discussion

Total of 720 surgical removal of impacted surgeries reported out of which 420 cases came for review, 368 cases underwent surgical removal of mandibular third molar. 221 male (60.16%) and 147(39.85%)) were females (figure: 1). The mean age was 29.3 years minimum of 24 years and maximum of age 69 years Out of 368, 201 are left mandibular third molars (38 ISO 3950 tooth numbering system)and 165 were lower right third molars (48 ISO 3950 tooth numbering system)(figure:2). Out of 368 patients the lingual nerve paresthesia was present in 3 (0.84%) patients and the rest 365 (99.16%) patients were not having any signs of lingual nerve paresthesia (figure:3). Comparison between association of teeth involved and presence of lingual nerve paresthesia, it was found that 0.82% of lingual nerve paresthesia was present after

Figure 1. The following bar chart represents gender of the patients. Color purple represents males (60.16%) and color yellow represents females (39.84%). From the above pie chart it is evident that surgical removal of mandibular third molars are carried out more in males when compared to females.

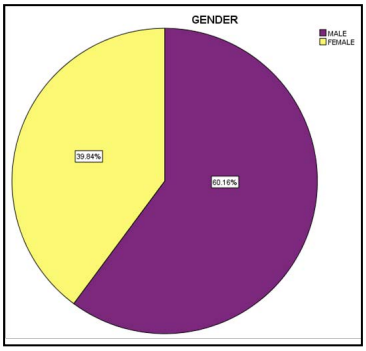


Figure 2. The following bar chart represents the tooth . Color orange represents surgical removal of 38(53.70%) and color red represents surgical removal of 48 (46.30%) . The above pie chart denotes that surgical removal of 38 teeth is more when compared to 48.

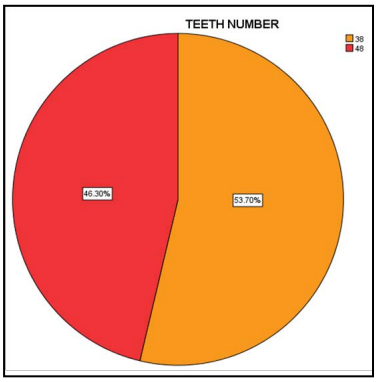
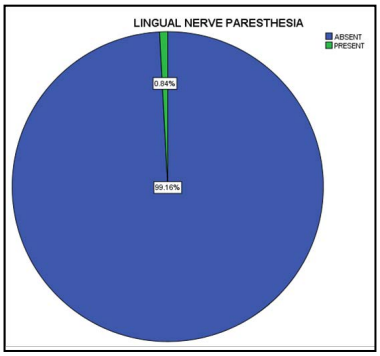


Figure 3. The following pie chart represents lingual nerve paresthesia. Color blue represents absence of lingual nerve paresthesia (99.16%) and color green represents presence of lingual nerve paresthesia. From the above pie chart it is evident that the presence of lingual nerve paresthesia is relatively low.



extraction of impacted 38. Pearson chi- square value - 5.674, df value is 1, p value -0.17 (<0.05) statistically not significant (figure:4). Therefore there is no correlation between teeth involved and the lingual nerve paresthesia. Association between gender and lingual nerve paresthesia was carried out, it was found that lingual nerve damage is more in male (0.54%) compared to females (0.27%). Pearson chi- square value - 0.57 ,df value is 1, p value - 0.811 (>0.05) statistically not significant (figure 5). Association between age of the patient and lingual nerve paresthesia was done, it was found that lingual nerve paresthesia is seen more in the age group of 41-50(0.54%) years and 31-40 (0.27%) years (figure 6). Pearson chi-square test was carried out, its value -18.707 ,df value is 1, p value - 0.001 (<0.05), therefore it was statistically significant.

This figure was close to the study conducted by Lata (2011) in which he reported 6.6% of lingual nerve paresthesia [8]. Incidence of inferior alveolar nerve paresthesia was reported as 0.0% in the present study. Rood (1983) reported an initial incidence of 6.6% lingual nerve injury, Blackburn and Bramley 11% and VonArx and Simpson (1997) reported 22% [9]. Another study reported 5% cases of lingual nerve injury that was not permanent and all the patients with lingual nerve damage had recovered within three months [10]. F.A. Carmichale in 1992 recorded 1339 impacted third molar removal and their change in sensation by direct questioning at 6 to 24 hours and 7 to 10 days and by the incidence of lingual nerve damage was found to be 15% of operated site at 16 to 24 hours, 10.7% at 7 to 10 days and 0.6%

Figure 4. The above bar graph represents the association between the teeth involved and the presence of lingual nerve paresthesia. X axis represents the presence of lingual nerve paresthesia and the Y axis represents the number of patients. Pearson chi- square value 2.697 ,df value is 1, p value -0.101 (>0.05) statistically not significant. Lingual nerve paresthesia is more common in 38 than in 48, but there is no significant association.

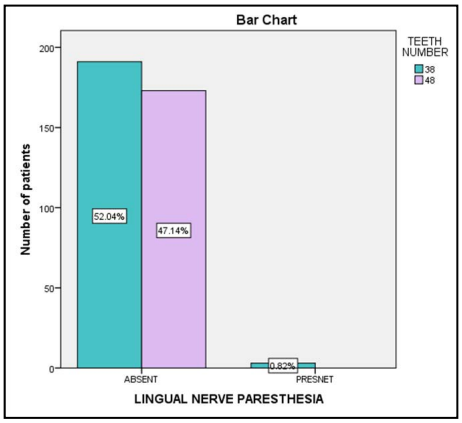


Figure 5. The above bar graph represents the association between lingual nerve paresthesia and gender. X axis represents presence of lingual nerve paresthesia and Y axis represents number of patients. Lingual nerve damage is relatively more in males than females. Pearson chi- square value-0.57, df-1 value-0.811(>0.05)statistically non significant.

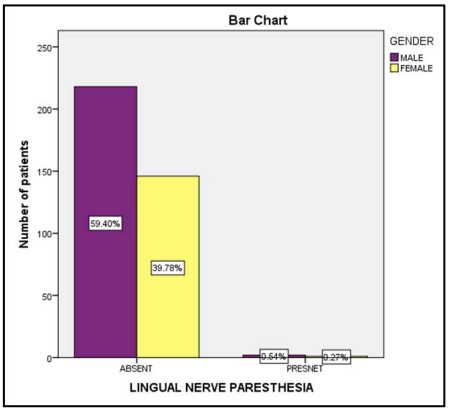
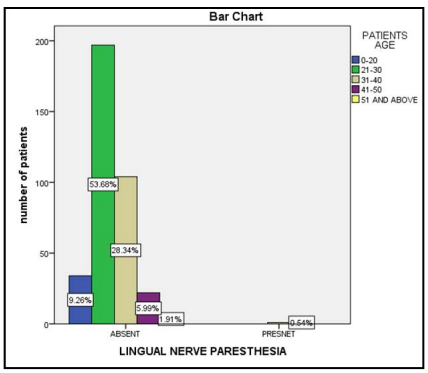


Figure 6. The above bar graph represents the association between lingual nerve paresthesia and age of the patient. X axis represents presence of lingual nerve paresthesia and Y axis represents number of patients. Pearson chi- square value -18.707 ,df value is 1, p value - 0.001 (<0.05) statistically significant. From the above bar graph it is evident that lingual nerve damage is more seen in the age group of 41-50 years of age with 0.54% and 0.27% in the age group of 31-40 years.



after 1 year [6]. Saurabh suggested that Lingual nerve damage was found to be more in the age group 24-40 years while Bruce 1980 suggested that incidence of lingual nerve damage increases with age [11]. The less the experience of the operator, the higher the chances of lingual nerve damage because of difficult surgical procedure. The lingual nerve damage may occur due to fully bony impacted lower third molar, extensive flap retraction for a longer time. Similarly extensive bone cutting may lead to the nerve damage and excessive bleeding. Tranexamic acid has been shown to be an effective method of reducing blood loss during surgical procedures [12, 13]. Also Most patients are not aware of the complications of surgery [14]. In some studies no statistical difference was found among the different operators and the frequency of impaired lingual sensation. The frequency of lingual nerve damage was found to be less when operated by Professors and Associate Professors (3.6%) [15]. The present study also showed that lingual nerve damage was more when operated by postgraduate trainees as compared to consultants. It is important for dental students to improve their knowledge to enable diagnosis and management of patients to have a more positive attitude toward these patients [16-18]. A case of permanent paresthesia of lingual nerve was also operated by postgraduate trainees. Elevation of lingual flap and protection of the nerve with an appropriate retractor is an important part of the surgery. However, we have to keep in notice that lingual flaps are raised in more complex cases thus, there is an increased risk of temporary or permanent paresthesia [19, 20]. Also most of the human pathogens have been isolated from oral secretions [21]. Several factors may influence the perception of sensation as it is a complex process. dental factors needs to be considered more often as a possible diagnosis also [22-25]. Lingual flaps when can be avoided shall be and when raised then appropriate protection shall be given to the nerve. As far as lingual flap elevation is concerned, a detailed study is required to find out a better technique for its elevation.

Conclusion

From our present study it is clear that, male patients are affected more by lingual nerve damage than female patients during surgical extraction of impacted molars which is more particularly seen after extraction of lower left impacted third molar and most commonly in third and fourth decade of life. Lingual nerve paresthesia after surgical removal of third molar is relatively low which is dependent on various factors. Proper diagnostic aids, treatment planning and surgical procedure will aid in better outcomes. Furthermore study with large sample size and single operator is needed in assessing the exact outcome.

Acknowledgements

The authors would like to acknowledge the help and support rendered by the department of oral and maxillofacial surgery, Medical records department and information technology of Saveetha Dental College and Hospitals for their constant assistance with the research.

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