



A STUDY FOR LINGUAL NERVE PROTECTION DURING EXTRACTION OF THIRD MOLAR USING LINGUAL REACTOR

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ABSTRACT

Lingual nerve damage during surgical removal of third molar is most common nerve damage reported. Its incidence rate has been reported from 0.6 to as high as 22% in various studies conducted. Our aim was to study the effect of broad retractor for protection of lingual nerve during surgical removal of third molar. In a study of eighty patients who went for surgical extraction buccal and lingual flap was raised keeping lingual bone intact, buccal ostectomy was done in all cases and broad lingual retractor was used to for lingual flap retraction then the incidence of lingual nerve damage noted. During this study we observed that incidence rate of lingual nerve damage was 5%. Sometimes it necessary to reflect lingual flap as in cases of distoangular and horizontal impactions for better visualization lingual nerve damage can be minimized with proper adaptation of broad shaped lingual retractor.

INTRODUCTION

Surgical procedures like tooth removal in the area of the lingual are the most common cause of nerve damage, resulting in temporary or permanent loss of sensation or pain in the distribution of the nerve. Inferior alveolar nerve damage can occur sometime, and sometimes the lingual nerve damage. Both can be bothersome injuries, but in general the inferior alveolar nerve injuries are tolerated well than the lingual nerve injuries like tongue and inner gingival mucosa

During removal of lower third molars sensorial disturbances can occur percentage of nerve damage to the lingual nerves varies from 0.6% to 22%. Nerve lesions can be temporary or permanent, and classified as neurapraxia, axonotmesis, and neurotmesis. Clinically, sensory disturbance presents as hypoesthesia, hyperesthesia, paresthesia, dysesthesia and anesthesia

Lingual nerve damage is associated with lingual flap retraction. The exact mechanism of lingual nerve damage during third molar surgery is controversial and among the most cited causes-are: lingual plate perforation and lingual flap trauma during ostectomy

or tooth sectioning; usage of lingual flap retractor; usage of chisel by a lingual approach.

MATERIAL AND METHOD

Eighty impacted mandible third molar, who attended the outpatients Department of Dentistry govt medical college haldwani April, 2011 to march 2012, was selected for study.

Only asymptomatic patients were included in this study. Patients with local symptoms related to impacted third molars (e.g. Pericoronitis, caries) and any debilitating or systemic diseases were not included.

Inclusion criteria

- Patients with unilateral and bilateral mandibular impacted third molars, classified by winter system into mesioangular, distoangular, vertical or horizontal.

- Complete fracture of the lingual cortex could not have happened during tooth removal.

All procedure had to be performed by the same operator. A thorough history of all cases was recorded and clinical examination was carried out.

Routine blood investigations were done in all patients and specific investigation was also done whenever

required. Intraoral periapical radiograph of third molar region was taken for all patients

All patients were operated under local anaesthesia,

The entire sample was divided into two groups Grouping of the patients was done randomly (i.e first patient in Group A, second in Group B, third in group A , fourth in Group B and so on) **Group A** has patients operated upon third molar without lingual flap retraction. **Group B** has patient with lingual flap retraction A buccal flap was be raised in all cases (**group A&B**) and an Austin buccal retractor was used to retract the buccal flap. In the experimental group, the lingual flap was raised by means of lingual elevator, once an adequate lingual flap was raised, a **Browne lingual flap retractor** was placed to fit the lingual contour of the mandible of the third molar region.

Ostectomy to remove buccal bone was performed in all cases. This procedure was carried out without removing lingual bone. Tooth removed and socket closed. For pre and post-operative recording a format was designed for this study.

Preoperative assessment of impacted mandibular third molar was done clinically by interpretation of standardized intra-oral periapical radiographs in terms of ease of access, position and depth of impacted molar, root pattern, shape of the crown, texture of investing bone, position and root pattern of the second molar and its relation to inferior canal. Sensory disturbance evaluated after day 1 and on 7th post-operative day . Any complaint concerning sensory disturbance ,pin prick test was be used to confirm nerve injury and to classify into Anesthesia, Hypoesthesia Paresthesia or Dyesthesia. and follow up of patients was done. Sunderland in 1951¹ gave a system for classification nerve injuries.

Results

Table 1: Number of cases in each group

Patients with buccal flap (Group A)		Patients with lingual flap (Group B)	
Number	Percentage (%)	Number	Percentage (%)
40	50	40	50

Table 2: Comparison of Age Distribution in Group A and Group B

Age	Group A		Group B	
	Number	Percentage	Number	Percentage
<25	4	10	12	30
25-40	36	90	28	70
>40	-	-	-	-
Total	40	100	40	100

Table 3: Sex wise distribution of cases in each group

Sex	Group A		Group B	
	Number	Percentage	Number	Percentage
Males	24	60	28	70
FEMALES	16	40	12	30
Total	40	100	40	100

Table 4: Comparison of mean age in Group A and Group B

	Group A	Group B
Number	40	40
Mean Age in years	36.14	35.15
Standard deviation	3.46	4.46
Range	22-38	22-40

Table 5: Comparison of incidence Of Lingual nerve damage in two groups

Lingual nerve	Group A		Group B	
	Number	Percentage	Number	Percentage
Present	0	0	2	5
Absent	40	100	38	95
Total	40	100	40	100

Table 6: Improvement of Neurological Disturbance with time

	24 hours after sur		Day 7		3 months after		6 months after	
	No.	%	No.	%	No.	%	No.	%
Present	2	5	2	5	2	5	0	0
Absent	38	95	38	95	38	95	40	100
Total	40	100	40	100	40	100	40	100

Table 7: Incidence of neurological disturbance at tongue and lingual gingival

	Mucosa of tongue		Lingual gingival		Mucosa of the floor of the mouth	
	No.	%	No.	%	No.	%
Group A	0	0	0	0	0	0
Group B	2	5	2	5	0	0

Neurological disturbance was present in Group B the affect site were lingual gingiva and mucosa of the tongue.

Discussion

The present study was undertaken to clinically evaluate, risk factors for lingual nerve damage after third molar surgery with reference to lingual flap retraction with proper shaped lingual retractor. Patients with persistent problems follow up was done up to 3 months The sample was randomly divided into two groups of 40 patients each. (Table-1).

Age wise and sex wise distribution of total number of patients in each group.

Though most of patients in the study were of the age group 25-40 years (Table-2) about 80 % (64) of Group A and Group B, Group a had 10 % (4) patients of less than 25 years, Group B had 30 % (12) patients of age less than 25 years.

In age group 25-40 years Group A had 90 % (36) and Group B had 70 % (28) there was no significant difference in age distribution of Group A and Group B.

Males were more than females (Table-3), 60% (24) in Group-A and 70% in Group B (28). While 40 % (16) females in Group A and 30% (12) in Group B.

The mean age in Group A Patients was 36.14 years and in group B was 35.14 years and Standard deviation was ± 3.46 in Group A patients and ± 4.46 group B. Range age of patients in Group A was 22-38 years, while in it was from 22- 40 years so there was no significant difference in age of patients in Group A and Group B,

Comparison of lingual nerve damage in Group A and Group B (Table-5). It was found that Group B had higher incidence of lingual nerve damage 5 % (1) Group A had no lingual nerve damage case. While Blackburn and Bramley 11%ⁱⁱ and VonArx and Simpson (1997) reported 22% lingual nerve damage .Rudⁱⁱⁱ and yen asserted that lingual flap retraction allows higher protection to lingual nerve Progre^{iv} *et al.* and Greenwood^v *et al.* support the use of broad retractors to protect the lingual nerve over the lingual plate.

Walters^{vi} emphasized the relationship between lingual nerve injury and handling of elevators over lingual region or the use of broad retractors. Valmeseda-Castellon^{vii} reported that the incidence of

lingual nerve paraesthesia was more prone on surgical removal of unerupted mandibular third molar. Pichler JW, Beirne lingual nerve injury is 8.8 time more likely to occur in buccal approach with lingual retractor than buccal approach without lingual retractor^{viii}

Conclusion from the all the above studies led us to use Browne lingual flap retractor, which was broad without sharp margins and has well and easy adaptations. Elena Queral –Goody^{ix} (2006) in study of 4,995 lower third molars extraction found that lingual injury associated where associated with lingual ostectomy and more 80% with tooth sectioning P.P.Robinson^x investigations reveled that use of Howarth's periosteal elevator to protect lingual nerve during third molar extraction is not effective.

On comparing the neurological disturbance with time (Table no -6) it was found that lingual disturbance of Group B patients 24 hours after surgery, 7th post operative day, three months after surgery but recovered completely after 3 months.

Neurological disturbance in Group B patients was found at Mucosa of Tongue and Lingual Gingival in 5 % (2) patient, and absent in Group A patients. (Table no- 7).

CONCLUSION

The main aim of study was to clinically evaluate the damage to the lingual nerve damage while reflecting the lingual flap during lingual flap retraction, so clinical study was conducted and following observations where made

- Lingual flap retraction with adequate width of lingual retractor and with proper adaptation will not result in lingual nerve damage.
- Lingual nerve damage occurs only when lingual ostectomy, tooth sectioning is done.
- Lingual flap is sometimes necessary for better visibility in case of distoangular and horizontal impactions, so avoidance of excessive retraction of lingual flap can prevent lingual nerve damage.

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