

Incidence of lingual nerve injury during lingual flap retraction

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ABSTRACT

Surgical removal of impacted third molar is sometimes associated complications lingual nerve damage. The objective of this study was to record incidence of lingual nerve damage and risk factor associated with it. In a study conducted on forty patients who went for surgical removal of third molar where buccal flap along with lingual flap was raised and incidence of lingual nerve damage was observed. Incidence of lingual nerve damage was 5% with no permanent damage to lingual nerve. Only 5% cases parathesia was found which recovered completely within 3 months of period .The lingual nerve damage observed more in more in those groups which are termed as "difficult impacted extractions" usually and present deep in the mandible.

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INTRODUCTION

Impacted tooth can defined as those teeth whose normal eruption is prevented by adjacent teeth or bone, malpositioning lack of space in the arch or other impediments (Archer, 1967)ⁱ.Surgical Removal of impacted tooth is associated many complication among them sensory disturbance are very important because sometimes they can lasts up to months bothering not only patient but surgeon also. The incidences of lingual nerve disturbance ranges from 0.6 %to 22% lingual nerve damage are associated with lingual flap retraction. The lingual nerve is usually found about 0.6 mm (range 0-3 mm) medial to the mandible and about 2.3 mm below alveolar crest in the frontal plane, with variations ranging from 7 mm below to 2 mm above the crestal bone level.^{ii,iii} In particular, a medially placed incision, elevation of mucoperiosteum, or a burs or chisel penetrating the lingual bone plate may easily traumatize the nerve.^{iv v}

The objective of this study was to clinically evaluate the frequency and risk factors for lingual nerve damage after third molar Surgery when lingual flap was reflected.

METERIAL AND METHOD

Fouty impacted mandible third molar, who attended the outpatients Department of Dentistry, Govt medical college Haldwani where included for study.

SELECTION OF PATIENT

Only asymptomatic patients were included in this study. Mandibular impacted third molars, where 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.

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

Under local Anesthesia Buccal flap was raised by giving Terrance ward incision, and lingual Flap was raised 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 with the help of Electric motor driven rotary cutting surgical bur with normal saline irrigation.

Odontectomy or odontotomy according to need of surgery After removing the third molar, the socket was checked for tooth follicle loose tags of mucosa or any granulation tissue was removed which if present. The socket was irrigated and closed with silk suture, in all

cases. Patient where observed for sensory disturbance a day after surgery and 7th postoperative day any complaints regarding sensory disturbance where recorded then pin prick test was used to determine lingual nerve damage.

RESULT AND DISCUSSION:

RESULT:

Table 1: Comparison of incidence Of Lingual nerve damage in two groups

Lingual nerve disturbance		
	Number	Percentage
Absent	38	95
Present	2	5
Total	40	100

Table 2: Shows angulations of the impacted teeth

Angulations of Impacted teeth			Pt with nerve damage	
	Number	Percentage	number	percentage
Mesio angular	12	30	0	
Disto angular	12	30	1	3.333
Horizontal	14	35	1	7.142
Vertical	2	5	0	
Total	40	100	2	

Table 3 According to depth teeth

POSITION DEPTH	WITHOUT LN DAMAGE		WITH LINGULA NERVE DAMAGE	
	NUMBERS	PERCENTAGE	NUMBERS	PERCENTAGE
Position A	24	60	0	0
Position B	10	25	1	10
Position C	6	15	1	16.66
	40	100	2	

Table 4: Incidence of neurological disturbance at tongue and lingual gingival

	Mucosa of tongue		Lingual gingiva		Mucosa of the floor of the mouth	
	No.	%	No.	%	No.	%
Lingual nerve disturbance	2	5	2	5	0	0

Table 5: Nerve damage in various Age of Groups

Age	Presence of Lingual Nerve damage	
	Number	Percentage
<25	0	0
25-40	2	5
>40	0	0
Total	2	5

Table 6: Presence of lingual nerve damage in various category of neurological disorders.

Type of lingual nerve damage	Absent		Present		Total	
	No.	%	No.	%	No.	%
Hypothesia	40	100	-	-	40	100
Dyesthesia	40	100	-	-	40	100
Paresthesia	38	95	2	5	40	100
Anaesthesia	40	100	-	-	40	100

Table 7: Improvement of Neurological Disturbance with time

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

DISCUSSION

The Lingual nerve damage in distoangular was 3.3%(1/12)and 7.14%(1/14)in horizontal group respectively while lingual nerve damage was absent in mesioangular and vertical group (table 2.)

The incidence of lingual nerve was damage was 5% according (table 1). Our findings were near to the findings of Hochward *et al.*^{vi} (1983) were the incidence of lingual nerve damage was 4.3%. Pogrel *et al.*^{vii}andGreen wood *et al* (2004) support the lingual flap reflection and use broader retractors to protect the lingual nerve^{viii}. Lingual nerve damage was present in position B 10 % and position C 16.66% according depth placement of impacted molar in table 3. D.A.Mason 2005^{ix} also reported that the depth of impaction is significantly related with lingual nerve injury.

Site of lingual nerve damage was observed at lingual gingival and mucosa of the tongue in 5% cases (table 4)

Lingual nerve damage was found to be more in age group 24-40 years, according table 5. No permanent lingual nerve damage was observed. Paresthesia was present in 5%. Verbal questioning and pin prick test was done to determine lingual nerve damage(table 6). Egdousi & Macgregor have described a method of testing the lingual nerve function post operatively which includes a verbal questionnaire and an evaluation of the sensory deficit by light touch (using a nylon suture thread or a wisp of cotton wool), tactile discrimination (using sharp and blunt ends of a bi-angled probe), two-point discrimination (using blunt dividers) and pain awareness (using light pressure from a sharp probe).^x P.P. Robinson, K.G. Smith *et al* (1992) gave four simple test which can be used for routine sensory testing following trigeminal injuries

and described methods for constructing equipments needed for these test.^{xi} 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 postal questionnaire at 12 to 18 months 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% after 1 year.^{xii} AnaCláudia Amorim Gomes *et al.* (2005) did a clinical study to evaluate the frequency, type and risk factors after mandibular third molar surgery with reference to lingual flap retraction and lingual flap incidence was 9.1%^{xiii} Paresthesia observed had recovered completely after 3 months .

CONCLUSION

In the above study of 40 patients lingual damage was assessed and in 5% cases lingual nerve was observed Lingual nerve injury in the observed patient was not permanent and all the patients with lingual nerve damage had recovered within three months. Chances of lingual nerve damage increases with increase in depth of the impaction as 10% and 16% for position "B" and position "C" so it always advisable to explain the patient about possibility of lingual nerve damage during removal impacted third molar while pre accessing radiographs and clinical examination.

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