Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies ***NLM ID:*** *101716117*

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr Indian Citation Index (ICI) Index Copernicus value = 100

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Assessment of neurosensory defects after mandibular third molar surgery

[1]Aniket Prachand, [2]Dhananjay Ramesh Kavar, [3]Parag Suhas Deshmukh, [4]S.Nithyalakshmi, [5]Kumar Ankit, [6]Nisha Mishra

[1]MDS (Oral and Maxillofacial Surgery), Consultant Maxillofacial Surgeon, Vidisha, Madhya Pradesh, India
MDS 3rd yr (Department of Public Health Dentistry), Divya Jyoti College of Dental Science and Research, Modinagar, Uttar Pradesh, India
[3]MDS (Orthodontics and Dentofacial Orthopaedics), Private Practioner and Consulting Orthodontist
[4]B.D.S, Private practitioner, Chengalpattu
[5]MDS(Oral Medicine & Radiology), Private Practitioner & Consulting Implantologist
Giridih, Jharkhand, India
[6]MDS Oral and Maxillofacial Surgeon, Private Practitioner and Maxillofacial Consultant, Indore, Madhya Pradesh, India

ABSTRACT

Background: Third molar tooth extraction is the most common surgical procedure in the oral cavity. The present study was conducted to assess neurosensory defects after mandibular third molar surgery. **Materials & Methods:**80 patients who had neurosensory defects aftermandibular third molar surgery of both genders. All gave their written consent to participate in the study. Data such as name, age, gender etc. was recorded. Parameters such as type of impaction, depth of impaction (by measuring the winter's lines) and state of eruption of the lower third molarswas recorded. The intraoperative data recorded were: raising of the lingual flap, use of a periosteal elevator to protect the LN, removal of distolingual cortex, tooth sectioning and any intraoperative complications. **Results:** Out of 80 patients, males were 45 and females were 35.IAN deficit was seen in 0.9% males and 1.4% females and LN deficit was seen in 1% males and 1.1% females. The difference was significant (P< 0.05). Nerve deficit was seen in 0.3% vertical, 0.6% horizontal, 0.7% mesio-angular and 0.9% disto-angular. In 1.7% raising of lingual flap was done. In 1.4% cases, removal of distolingual cortex was done. Tooth sectioning was done in 1.3%. **Conclusion:** Risk factors of neurosensory deficits was disto- angular impaction, raising of lingual flap, removal of distolingual cortex and tooth sectioning.

Key words: neurosensory deficits, distolingual cortex, Third molar

Received: 25 January, 2023 Accepted: 28 February, 2023

Corresponding author: Aniket Prachand, MDS (Oral and Maxillofacial Surgery), Consultant Maxillofacial Surgeon, Vidisha, Madhya Pradesh, India

This article may be cited as: Prachand A, Kavar DR, Deshmukh PS, S.Nithyalakshmi, Ankit K, Mishra N. Assessment of neurosensory defects after mandibular third molar surgery. J Adv Med Dent Scie Res 2023;11(3):81-84.

INTRODUCTION

Third molar tooth extraction is the most common surgical procedure in the oral cavity, and its major complications include postoperative neurosensory deficits. Studies from different countries have reported the incidence of various neurosensory deficits after lower third molar tooth surgery.[1]

For example, inferior alveolar nerve (IAN) injury, which manifests itself as paresthesia or complete loss of sensation of the lower lip and buccal mucosa on the damaged side, has a reported incidence of 0.26-8.4%.[2] Lingual nerve (LN) deficiency, which commonly presents as insensibility of the ipsilateral anterior two-thirds of the tongue and taste disruption, has a reported incidence of 0.1-22%, these disruptions have severe damaging effects on the lifestyle of the affected individual. Researchers have been making continuous efforts to investigate the risk factors associated with nerve injuries in lower third molar surgery. Factors associated with an increased risk of IAN injury include age of the patient, depth of tooth impaction, proximity of the roots to the IAN and surgical technique.[3]

Some injuries may be permanent, lasting longer than 1 year, with varying outcomes, ranging from mild hypesthesia to complete anesthesia and neuropathic

responses resulting in chronic pain. This depends on the type of injury (i.e., stretch, crush, section) and the presence of severe inflammation. Following injury, the nerve will remain in position and regenerate in a relatively short time unless displaced into the socket.[4] Thus, after injury to the IAN, good recovery is generally expected but the more proximal lesions have worse prognoses. The most common cause of IAN and LN injury is traumatic third molar surgery, shown to account for 52% of injuries, and risk factors included the patient's age (more than 30 years), horizontally impacted teeth, close radiographic proximity to the inferior alveolar canal (IAC) and treatment by inexperienced graduate or postgraduate students.[5]The present study was conducted to assess neurosensory defects after mandibular third molar surgery.

MATERIALS & METHODS

The present consisted of 80 patients who had neurosensory defects after mandibular third molar surgeryof both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Parameters such as type of impaction, depth of impaction (by measuring the winter's lines) and state of eruption of the lower third molarswas recorded. The intraoperative data recorded were: raising of the lingual flap, use of a periosteal elevator to protect the LN, removal of distolingual cortex, tooth sectioning and any intraoperative complications. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I: Distribution of patients

Total- 80		
Gender	**Male**	**Female**
Number	45	35

Table I shows that out of 80 patients, males were 45 and females were 35.

Table II: Assessment of neurosensory deficits

Neurosensory deficits	Male	Female	Total	P value
IAN deficit	0.9%	1.4%	2.3%	0.05
LN deficit	1%	1.1%	2.1%	0.95

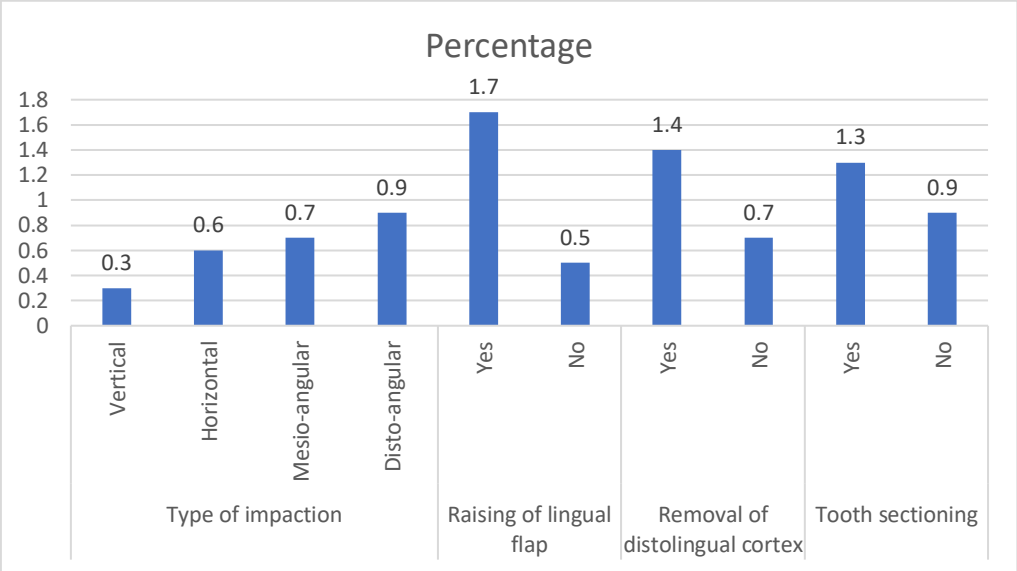
Table II shows that IAN deficit was seen in 0.9% males and 1.4% females and LN deficit was seen in 1% males and 1.1% females. The difference was significant (P< 0.05).

Table III: Risk factors of neurosensory deficits

Risk factors	Variables	Percentage	P value
Type of impaction	Vertical	0.3	0.05
	Horizontal	0.6	
	Mesio-angular	0.7	
	Disto-angular	0.9	
Raising of lingual flap	Yes	1.7	0.01
	No	0.5	
Removal of distolingual cortex	Yes	1.4	0.03
	No	0.7	
Tooth sectioning	Yes	1.3	0.05
	No	0.9	

Table II, graph I shows that nerve deficit was seen in 0.3% vertical, 0.6% horizontal, 0.7% mesio-angular and 0.9% disto-angular. In 1.7% raising of lingual flap was done. In 1.4% cases, removal of distolingual cortex was done. Tooth sectioning was done in 1.3%. The difference was significant (P< 0.05).

Graph I: Risk factors of neurosensory deficits



DISCUSSION

There are well-established indications for removal of impacted third molars, and controversies about prophylactic removal of asymptomatic mandibular third molars are based on evaluating costs and risks of removal against the consequences of non-removal.[6] Data on the frequency of severe complications in the management of asymptomatic, impacted mandibular wisdom teeth4 are lacking. Prophylactic removal of impacted third molars is widely practiced, especially in Europe and the United States, and it is estimated that 18%-51% of the population endure this procedure.[7] Reasons for prophylactic surgery include the need to minimize the risk of disease (cysts and tumors), reduction of the risk of mandibular angle fracture, increased difficulty of surgery with age, and that third molars may be of less importance for mastication.[8] The therapeutic indications for removal of mandibular third molars have been established as recurrent pericoronitis, cyst development and unrestorable caries or periodontal disease.[9]The present study was conducted to assess neurosensory defects after mandibular third molar surgery.

We found that out of 80 patients, males were 45 and females were 35. Cheung et al[10]determined the incidence of subsequent neurosensory deficit due to inferior alveolar nerve (IAN) and lingual nerve (LN) injury, to examine possible contributing risk factors and to describe the pattern of recovery. 3595 patients were included (61% female, 39% male; age range, 14–82 years). Of the 4338 lower third molar extractions performed by various grades of operators, 0.35% developed IAN deficit and 0.69% developed LN deficit. Distoangular impaction was found to increase the risk of LN deficit significantly ($p < 0.001$). Depth of impaction was related to the risk of IAN deficit ($p < 0.001$). Undergraduates caused more LN deficits ($p < 0.001$). Sex, age, raising of a lingual flap, protection of LN with a retractor, removal of distolingual cortex, tooth sectioning and difficulty in tooth elevation were not significantly related to IAN or LN injury. Postoperative recovery from IAN and LN deficits was noted most significantly at 3 and 6 months, respectively. By the end of the follow-up period, 67% of IAN deficits and 72% of LN deficits had recovered completely.

We found that IAN deficit was seen in 0.9% males and 1.4% females and LN deficit was seen in 1% males and 1.1% females. Kjolle et al[11]estimated the prevalence of neurosensory dysfunction (NSD) and identify risk factors for NSD after mandibular third molar (M3) removal.864 patients had their M3 removed. Age, gender, surgeon's experience, and radiographic findings were recorded and the outcome variables were NSD and data analyses.In 884 patients, 1220 M3 were removed. Fourteen patients reported NSD postoperatively; 10 inferior alveolar nerve (IAN) injury, 3 lingual nerve (LN) and 1 had injury to both. After 5 years the number of patients with NSD of the IAN had decreased to 5, but no change in the LN.

We found that nerve deficit was seen in 0.3% vertical, 0.6% horizontal, 07% mesio-angularand 0.9% disto-angular. In 1.7% raising of lingual flap was done. In 1.4% cases, removal of distolingual cortex was done. Tooth sectioning was done in 1.3%. Bashir et al[12] found that 5 extractions (1%) resulted in IAN related neurosensory deficits and 10 (2%) resulted in LN-related neurosensory deficits. Type and Depth of Impaction: Although the incidence of IAN deficit for each type of impaction ranged from 0.2% for vertical to 0.8% for distoangular. The incidence of LN deficit by type of impaction ranged from 0.4% each for mesioangular and horizontal to 1.6% for distoangular Raising of Lingual Flap and Lingual Nerve Protection: Of the operations involving a raised lingual flap, 5% (7/140) led to postoperative LN deficits. Tooth Sectioning: Of the 500 dismpactions, 445 (89%) required tooth sectioning. The incidences of IAN deficit in groups with and without tooth sectioning were 1.12% (5/445) and 0% respectively.

The limitation the study is small sample size.

CONCLUSION

Authors found that risk factors of neurosensory deficitswasdisto- angular impaction, raising of lingual flap, removal of distolingual cortex and tooth sectioning.

REFERENCES

1. Carmichael FA, McGowan DA. Incidence of nerve damage following third molar removal: a West of Scotland Oral Surgery Research Group study. Br J Oral Maxillofac Surg. 1992;30:78-82.
2. Chiapasco M, De Cicco L, Marrone G. Side effects and complications associated with third molar surgery. Oral Surg Oral Med Oral Pathol. 1993;76:412-420.
3. Chossegros C, Guyot L, Cheynet F, Belloni D, Blanc JL. Is lingual nerve protection necessary for lower third molar germectomy? A prospective study of 300 procedures. Int J Oral Maxillofac Surg. 2002;31:620-624.
4. Fielding AF, Rachiele DP, Frazier G. Lingual nerve paresthesia following third molar surgery: a retrospective clinical study. Oral Surg Oral Med Oral Pathol Oral RadiolEndod. 1997;84:345-348.
5. Gargallo-Albiol J, Buenechea-Imaz R, Gay-Escoda C. Lingual nerve protection during surgical removal of lower third molars. a prospective randomised study. Int J Oral Maxillofac Surg. 2000;29:268-271.
6. Goldberg MH, Nemarich AN, Marco 2nd WP. Complications after mandibular third molar surgery: A statistical analysis of 500 consecutive procedures in private practice. J Am Dent Assoc. 1985;111:277-279.
7. Gomes AC, Vasconcelos BC, de Oliveira e Silva ED, da Silva LC. Lingual nerve damage after mandibular third molar surgery: a randomized clinical trial. J Oral Maxillofac Surg. 2005;63:1443-1446.
8. Greenwood M, Langton SG, Rood JP. A comparison of broad and narrow retractors for lingual nerve protection during lower third molar surgery. Br J Oral Maxillofac Surg. 1994;32:114-117.
9. Gulicher D, Gerlach KL. Sensory impairment of the lingual and inferior alveolar nerves following removal of impacted mandibular third molars. Int J Oral Maxillofac Surg. 2001;30:306-312.
10. Cheung LK, Leung YY, Chow LK, Wong MC, Chan EK, Fok YH. Incidence of neurosensory deficits and recovery after lower third molar surgery: a prospective clinical study of 4338 cases. International journal of oral and maxillofacial surgery. 2010 Apr 1;39(4):320-6.
11. Kjølle GK, Bjørnland T. Low risk of neurosensory dysfunction after mandibular third molar surgery in patients less than 30 years of age. A prospective study following removal of 1220 mandibular third molars. Oral surgery, oral medicine, oral pathology and oral radiology. 2013 Oct 1;116(4):411-7.
12. Samah Bashir D, Bhat MY, Shah AA. Neurosensory defects after mandibular third molar surgery: A prospective study.International Journal of Applied Dental Sciences 2022; 8(2): 621-624.