



REASONS MANAGEMENT OF INFERIOR ALVEOLAR NERVE INJURIES DURING SURGICAL REMOVAL OF IMPACTED LOWER THIRD MOLAR

^{1,*}Nazhat Mahmood Abdl Kareem Al-Zubaidi, ²Atheer Talib Jiboon, ³Falah Hasan Jumaah, ⁴Ahmed Kadhim Jawad, ⁵Maab Qassim Hadi and ⁶Ali Hamed Hussein

¹Oral and Maxillofacial Surgery, Department of Oral Surgery and Periodontics at College of Dentistry, Mustansiriyah University, Baghdad, Iraq

²Oral and Maxillofacial Surgery, Department of Oral Surgery and Periodontics at College of Dentistry,

³Community Health at Technical Institute-Suwaira, Technical Nursing Department, Middle Technical University, 10074 Al Za'faraniya, Baghdad, Iraq

⁴Technology in prosthetic Dental Technique, Department of prosthetic Dental technology, Ministry of Iraqi Health, Baghdad

⁵Dental Technology, Department of Oral and Maxillofacial Surgery, Health and Medical Technology, Dental Technology College, Ashur University, Baghdad, Iraq

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Abstract

One of the most common dentoalveolar surgical operations is extracting an erupted or impacted mandibular third molar. The most frequent advantages of surgically extracting a wisdom tooth are the reduction of pericoronitis symptoms and indicators as well as any possible repercussions. Yet, swelling, trismus, and postoperative pain are commonly linked to surgery. Infection, such as trigeminal nerve injury, dry socket fracture, and infrequently dry socket fracture are less frequent consequences. The inferior alveolar nerve may be harmed throughout the surgical extraction of mandibular 3rd molar. Numerous research employs different techniques to assess inferior alveolar nerve injury, and the frequency regarding nerve damage injuries differs throughout investigations. For helping these troops who have complex facial injuries heal and regain their function. In reality, injuries that have been unsurvivable in previous conflicts are currently quite common thanks to early surgical intervention, surgical evacuation, and body armor. It also leads to discrepancies between objective and subjective assessments. Unrepeatability and inaccuracy of the results are also caused by discrepancies in objective and subjective evaluations. This might have an impact on the prognosis and treatment choices.

Keywords: Inferior alveolar nerve damage, Surgical removal of mandibular teeth complication, Inferior alveolar nerve injuries treatment.

INTRODUCTION

Although it is a frequent procedure, the removal regarding wisdom teeth could result in both long- and short-term negative effects. Wisdom teeth might be extracted if they are causing gum infection or pain, causing damage to adjacent teeth, or failing to properly erupt through the gum. There is a chance of problems after surgery. Nerve injuries are among the most typical. A recent retrospective study regarding extracted third molars revealed that 49% of these have been removed because of pericoronitis, an infection which recurs around the tooth as it tries to erupt, yet is impacted against bone or soft tissues ^(1,2). Unrestorable caries, caries in the neighboring tooth, pulpal and periapical pathology, tooth fracture, and cyst formation are further symptoms. The relief of pericoronitis symptoms and indicators, as well as any potential repercussions, are the most typical advantages of surgical wisdom tooth removal. Pericoronitis is characterized by pain, a bad taste, swelling of the soft tissues surrounding the tooth and the face, and trismus, or restricted mouth opening. Pyrexia, malaise, and lymphadenopathy are all signs of a local infection that can spread. Rarely, swelling can endanger life and airway patency. Postoperative pain, restricted mouth opening, and swelling are common after effects of surgery. Infection, such as alveolar osteitis (dry socket), and infrequently, mandible fracture are less frequent side effects.

The removal of a wisdom tooth through surgery carries a risk of problems. Lingual nerve injury (LNI) as well as inferior alveolar nerve injury (IANI) are two of the most prevalent. In terms of anatomy, mandibular nerve is the 3rd largest division of trigeminal nerve, and inferior alveolar nerve (IAN) is its largest branch. It makes its way to mandibular foramen along with inferior alveolar artery ⁽³⁾. It after that advances through mandibular canal, behind the teeth, where each nerve supplies the tooth pulp by entering the orifice at root site. Above the alveolar nerve, they form an inferior dental plexus. Additionally, they supply certain inferior gingival branches. After passing beneath the teeth through mandibular canal, it reaches mental foramen, where it divides to incisive as well as mental nerves, its two terminal branches. Beginning in the mental foramen, the mental nerve (n. mentalis) splits beneath Triangularis muscle to 3 branches, two of which descends to the skin and mucous membrane of lower lip and one of which falls to chin skin. Those branches freely communicate with the facial nerve. The canine and incisor teeth are supplied by the incisive branch, which continues into the bone ^(4,5). The LN, IAN, and neighboring second molar are among the significant structures that are close to the third molar. The lower it is, the more challenging it becomes to remove, and the more operating or postoperative complications that can arise. Surgeons are especially concerned about IAN injury among these. In certain cases, it cannot be avoided and will possibly result in legal disputes between patients and physicians ^(6,7). Prior to surgery, the position of impacted tooth with respect to mandibular canal (MC) mostly determines the probability of an

*Corresponding Author: Nazhat Mahmood AbdlKareem Al-Zubaidi, Oral and Maxillofacial Surgery, Department of Oral Surgery and Periodontics at College of Dentistry, Mustansiriyah University, Baghdad, Iraq.

IANI problem. The alveolus as well as the neurovascular bundle assist the IAN as it passes through the MC in the mandible. The highest feature in the canal is the inferior alveolar vein. The bleeding will notify the surgeon that the vein is wounded and superior portion of the bone canal was breached when the rotary instruments enter the canal^(8,9). Unless it is displaced by the bony fragments from the roof of mandibular canal or displaced into socket, injured IAN will remain within canal and regenerate. If IAN is injured, the symptoms vary greatly from mild paresthesia to complete anesthesia, without or with pain⁽⁵⁾. With a reported incidence of 0–2% permanent and 1–20% temporary, IAN neuropathy is linked to lower molar surgery⁽¹⁰⁾. Indirect or direct trauma throughout lower molar surgery removal might result in IANI and a subsequent sensory disturbance⁽¹¹⁾. Throughout various treatments, the probability of mandibular nerve injury varies from 0.54 to 39%⁽¹²⁾. The most dangerous side effect of surgery for impacted lower third molars is IANI injury⁽¹³⁾. Intimate contact between inferior alveolar canal (IAC) and the root apex increases the frequency of nerve injury from 0.4 to 6%, as documented by^(14,15,16).

Radiographical role

Prior to surgical removal of lower third molars, panoramic radiography (OPG) is the preferred radiologic examination. Since panoramic radiographs cover a wider area, including the structure regarding the jawbone and teeth, people prefer them⁽¹⁷⁾. The most notable kind of superimposition was the root's narrowing, which was followed by root's dark and bifid apices. Yet, the potential of IANI is not often determined by the absence or presence of such radiographic indications, suggesting that the panoramic radiograph has limited diagnostic accuracy when assessing risk for surgical extractions of lower third molars^(18,19). Although this radiograph shows the requirements for injury, OPG, like other traditional radiographs, cannot provide comprehensive information in three dimensions^(20, 20). In the case when the panoramic radiograph's radiological marker shows that the 3rd molar and MC have a close relationship, further research with computed tomography (CT) could be advised to confirm the link in 3 dimensions^(21,22). The higher radiation dosage and higher expense of CT compared to panoramic imaging are its disadvantages. Cone beam computed tomography (CBCT), which delivers great spatial resolution, lowers radiation doses, and saves money, was introduced to enhance standard CT⁽²³⁾. On coronal CT slices (Fig. 1), invagination was evaluated and classified as either not visible or visible. While the first slice from the left shows the two structures' close proximity (yet not invagination), it does not show any signs of invagination because it does not show any distortion of the IAC. In contrast, the second and last slices show invagination because they show the formation of the IAC due to the third molar's roots impinging on it⁽²⁴⁾.

In comparison with traditional CT, CBCT offers higher-quality images of teeth and the structures around them^(25,32). CBCT imaging also offers panoramic, sagittal, axial, coronal, cross-sectional (buccolingual), and 3D views. As a result, it is more accurate than OPG^(27, 28) and a more dependable imaging method for determining the proximity of IAN, the actual positional relation between the root apex and (IAC)^(29,30,31), and risk assessment before surgery⁽³²⁾. The factors that might have influenced IANI were assessed using CBCT and panoramic radiography⁽³³⁾.

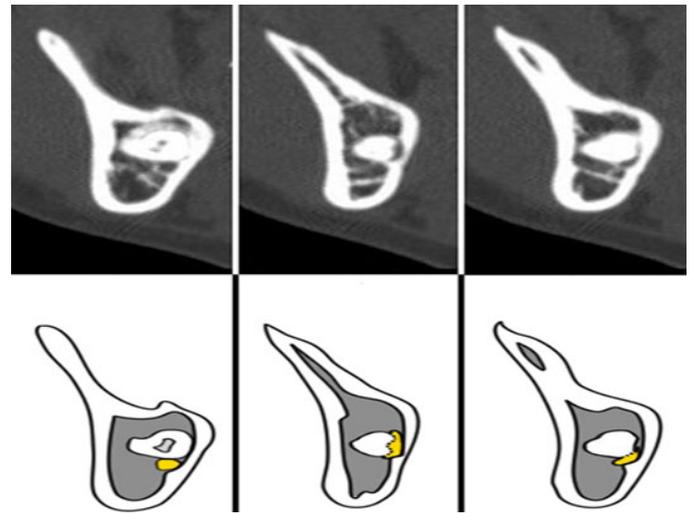


Figure 1. The absence or presence of deformation regarding inferior alveolar canal (IAC) resulting from third molar roots on coronal computed tomographic (CT) slices. (Ueda M, Nakamori K, Shiratori *et al.* 2012)

An essential diagnostic and surgical tool is radiological imaging. A thorough preoperative radiographic assessment is necessary. Ideally, this assessment will help the surgeon identify the challenges of the procedure and choose the best surgical techniques⁽³⁴⁾.

Clinical evaluation method

One consequence of third molar surgery is neurological injury of the IAN and LN, which is specified as any subjectively perceived neurosensory abnormalities in the distributions of IAN or LN (paresthesia, hypoesthesia, and dysesthesia as experienced and reported by the patient)⁽³⁵⁾.

Table 1. Qualitative descriptors utilized by patients for describing paresthesia, hypoesthesia, and dysesthesia (Phillips C, *et al.*, 2006)

Hypoesthesia	Numb Rubbery Swollen
Paresthesia	Tingling Tickling Itching
Dysesthesia	Tender Pricking Burning

A. Sking a patient to subjectively report neuropathic changes is not enough to assess nerve dysfunction; objective testing is necessary. To assess sensory disturbance degree, sensory recovery amount, and necessity of surgical intervention, neurosensory disorders could be quantified using several test levels⁽³⁶⁾. Fifty three M3s were extracted from 40 patients who had an elevated IANI risk as part of a study that had been conducted by⁽³⁷⁾ Ghaeminia H. The function of IAN with mild touch sensation was measured in order to evaluate neurosensory abnormalities of the chin and lip. As a control site, the opposing sides of chin and lip were used. On the skin, the area with decreased sensation was sketched and photographed. Three and six months postoperatively, patients with altered sensation returned, and their recovery trajectory was recorded. IAN function with mild touch sensation was measured in order to

evaluate neurosensory abnormalities of the chin and lip. Five individuals (9%), according to the neurosensory testing, experienced temporary IANI. Three individuals [6%] were classified as having permanent IANI if their altered sensations persisted for more than six months. Since just one researcher performed the neurosensory testing on every subject, there is a bias in this study that could affect the validity of the findings. Furthermore, 400 third molars have been extracted in a study by Cariappa and Bhat⁽³⁸⁾ in total. Since just one patient (0.25%) had IANI, objective testing is more important for assessing nerve dysfunction instead of relying on patient's subjective report of neuropathy abnormalities. The brush-stroke direction, 2-point discrimination, and contact detection examinations at Levels A and B were modified. By six months, IAN showed no signs of healing in such tests. Even though this study has limitations since all cases have been examined by a single examiner both postoperatively and preoperatively, level C tests (pin-prick test and sharp blunt detection) revealed that the nerve fully recovered by two months, raising serious doubts about the validity of level B and A tests.

Neurosensory Tests

To create a baseline from which to track changes, the initial sensory evaluations must be conducted within two weeks following the injury^(39,40).

1. Light touch sensation

Applying a thin layer of cotton wool to skin or mucosa is the most common method of testing for light touch. Yet, applying this stimulus consistently is difficult, as is wiping moist mouth mucosa with cotton wool. Von Frey hairs could be used to increase reproducibility and uniformity. It is possible to map the location of anesthesia by gradually moving outward till the stimulus is noticed. Random stimuli are applied.

2. Pin prick test

The most popular way to test for light touch is to apply a small layer of cotton wool to the mucosa or skin. However, using cotton wool to wipe away moist mouth mucosa and administering this stimulus consistently are both challenging. The usage of von Frey hairs could improve consistency and reproducibility. Through slowly extending outward until the stimulus is detected, the location of anesthesia can be mapped. Stimuli are applied at random.

3. Two Point Discrimination

This test could be finished quickly. Depending on whatever part of the tongue was injured, the probes are placed at several set locations on the lips. After probes are drawn a few millimeters across surface at constant pressure, the patient is asked if they feel 1 or 2 points. The lowest separation consistently reported to be 2 points is known as the 2 point threshold discrimination. 2mm-4mm on the tongue and lip and 8mm-10mm on the skin above the chin's lower boundary are the two different thresholds that depend on where in the mouth it occurs^(38,39,40,41). In their research, Zaid Hamdoon and Nazhat Mahmood A. Al-Zubaidi underwent postoperative testing using a two-point discrimination test one month and three months following surgery⁽⁴²⁾.

4. Brush directional stroke

Fine camel hairbrushes were used to examine the area. The site of the test (the lower lip and chin on operated side) has been stroked for 1 cm from left to right or the other way around. Vibration, touch, and flutters are some of the sensory modalities for these rapidly evolving sensors.

5. Blunt discrimination

Wh. Which has been made possible through applying the blunt end of a probe or a culture swab to test area. Myelinated more extensively Alpha afferent axons with a diameter of 5–15 micrometers are represented by the blunt ends^(38,43). Fig (2)⁽³⁸⁾.

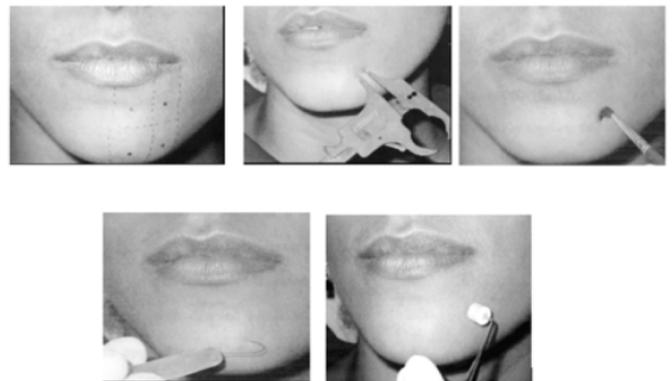


Figure 2. Neurosensory tests for routine assessment of surgical trigeminal nerve injuries. (Bhate *et al.* 2012)

Risk factors of IAN injuries

An increased risk of IAN damage was proposed to be associated with a number of parameters, such as the mesio horizontal position of the tooth, the age of the patient, the proximity of roots to IAN, tooth impaction depth, surgical technique, and the surgical skill of operator⁽⁴⁴⁾. IANI is one of the possible side effects after third molar removal. According to several research, IAN injury incidence ranges from 0.26 to 8.40%^(45,46). The correlation between the 3rd molar anatomical position and IAN proximity is the most significant factor of risk for IAN injury^(47,15).

First factor injection related injury

The needle tip is often inserted toward and just above the mandibular sulcus or lingula when using the inferior alveolar nerve block technique (traditional technique). Several publications state that in order to guarantee an anesthetic effect, the needle tip needs to get close to the inferior alveolar nerve^(48,49). Yet, dangers and consequences such intravascular injection and brain or vascular injury are linked to the usual approach^(50,51). Refer to figure (3)⁽⁵²⁾.

After teeth are extracted, there may be severe and perhaps fatal complications. Complications following extraction might include⁽⁵³⁾: a) Immediate complications Nerve damage, Traumatic injuries are the most frequent cause of injuries to inferior alveolar and lingual nerves, which could result in anesthesia, paresthesia, and dysesthesia of these nerves. These side effects are unintended consequences of third molar surgery⁽⁵⁴⁾. However, there is ongoing discussion regarding the precise process of nerve damage. Three primary theories exist:^(55,56)

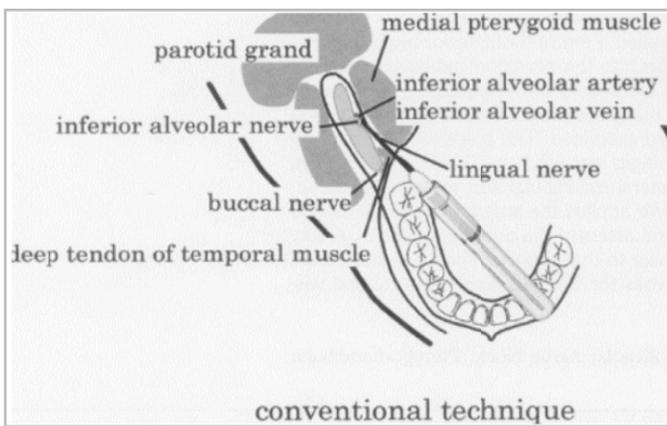


Figure 3. The link between the pterygomandibular space, insertion landmarks, and syringe angles in the anterior and conventional techniques are depicted in schematic diagrams. (Takasugi *et al.*, 2000)

b) Intra-neural Hematoma: An intraneural blood vessel could be punctured by the needle, causing a hemorrhage. Hemorrhage might compress the nerve fibers, causing reactive fibrosis and the formation of scar tissue, which would further strain the nerve fibers. The amount of the pressure would determine the extent of the damage⁽⁵⁷⁾.

c) Needle Trauma: As the inferior alveolar nerve block needle is implanted. Since the needle has touched the nerve, between 3 and 7% of our patients receive an unpleasant electric shock. Studies and real-world experience have shown that the great majority of these interactions do not result in nerve damage because the needle tends to move across the numerous nerve fascicles⁽⁵⁸⁾.

d) Anesthetic Toxicity: Neurotoxicity of the local anesthetic solution is the last and most contentious explanation for nerve damage brought on by inferior alveolar nerve block. The possibility of neurotoxicity in local anesthetic solutions was initially proposed by Lennon and Haas⁽⁵¹⁾. Prilocaine and articaine were shown to have a higher incidence due to their larger concentrations. Intrafascicular injection and the synthesis of aromatic alcohols close to the nerve are two potential methods⁽⁵⁷⁾. With the exception of lingual nerve injury brought on by the anesthetic needle, the risk factors for IAN injury were examined using the CBCT driving pathway, impaction pattern, and panoramic indicators. Age and gender had a strong correlation with IAN injury (Tables 2 and 3)⁽⁵³⁾.

Table 2. Relation between numbness and gender (HeeJin Kim1, *et al.*, 2021)

Drug name	Dose	Time
1- Metronidazole	Film-coated tablets 500 mg	1 X 2 For 3.days
2- Dufflucan	Capsule 150 mg	One capsule each a week for 2 weeks

Table 3. Relation between numbness and age (HeeJin Kim1, *et al.*, 2021)

Gender	Numbness (%)	Without Numbness (%)	Total (%)	p Value
Male	10 (0.2)	5374 (99.8)	5384 (100.0)	p = 0.038 *
Female	20 (0.4)	4906 (99.6)	4926 (100.0)	
Total	30 (0.3)	10,280 (99.7)	10,310 (100.0)	

* Statistical significance $p < 0.05$, Pearson's chi-square test.

Second Factor related third molar removal

The primary cause and best indicator of IAN impairment following tooth extraction might be the anatomical proximity of lower third molar roots to IAN particularly⁽²⁶⁾. Although most third molar operations are successful during or following treatment⁽²⁷⁾, there are times when this common procedure might lead to several problems. In order to lower the risk of problems, pre-operative planning and integrating surgical method with the surgical principles are essential for all surgical operations^(59,27, 28). Dry socket, infection, trigeminal nerve injury, and mandibular fracture are less frequent consequences of surgical wisdom tooth removal⁽⁶⁰⁾. Even though surgical extraction regarding impacted lower third molars seldom result in inferior alveolar nerve injury, the patient experiences extreme discomfort as a result. It can happen directly (injuries from close contact between the nerve and the roots of lower 3rd molar) or indirectly (infection in the area around the extraction, pressure on the nerve from post-operative hematoma and/or oedema)⁽⁶¹⁾. Numerous studies have shown incidence of inferior alveolar nerve injury following removal of 3rd molars, and the majority show that inferior alveolar nerve function is compromised in 4–5% of cases (range 1.30–7.80%). No more than 1% (range 0.0–2.20%) have a permanent sensory abnormality, and the majority of patients will return to normal sensation in a few months or weeks⁽⁶²⁾.

Treatment Methods

- 1. Conservative treatment:** Recovery of IAN after injury the probability of persistent injury, where the sensory impairment persists for over six months, is less than 1%⁽⁶⁴⁾ and IAN paresthesia is typically temporary, recovering in six months⁽⁶³⁾ or less. According to other research, nerve damage brought on by an inferior alveolar nerve block usually goes away within eight weeks after the injury, though symptoms that remain after that time are linked to a worse prognosis⁽⁵⁷⁾. For the best care, it is critical to understand that early referral to a specialist is necessary⁽⁵⁸⁾. Patients who experience altered sensations should be closely monitored, and if symptoms do not resolve after two weeks, they must be sent to a specialist for additional evaluation and sensory testing⁽⁵⁷⁾.
- 2. Laser treatment:** Partial sensation loss was treated with low-level laser treatments⁽⁶⁵⁾.
- 3. Medical treatment:** Medication such as the antidepressants, antiepileptics, & pain relievers⁽⁶⁵⁾ 'Dysesthesias were successfully treated with benzodiazepines, anticonvulsants, antispasmodics, tricyclic antidepressants, and anesthetics⁽⁵⁷⁾. The bioactive medication ingredient of Loranthus Europaeus (L.E.) extract, discovered by Nazhat Al-Zubaidi and Ali Aljeboory in their study, both increased the antibiotic's effect and decreased the healing period on its own. This could be because quercetin and quercitrin act as the antibiotic's perfect nanocarrier in addition to their direct action⁽⁶⁰⁾. In her research, Nazhat M.A. Al-Zubaidi discovered that although 150 mg Dufflucan capsules were eaten, 500 mg of metranadazole was administered orally twice a day for three days using film-coated tablets. For oral infections and disorders affecting the oral-maxillofacial regions, taking one capsule each week for two weeks straight is the only effective treatment. Table (4)⁽⁶⁷⁾

Table 4. Medications taken for oral infections with oral disorder in oral – maxillofacial regions (Nazhat M.A. Al-Zubaidi., 2019)

Age	Numbness (%)	Without Numbness (%)	Total (%)	p Value
10-19	0 (0.0)	1879 (100.0)	1879 (100.0)	<i>p</i> < 0.001 *
20-29	16 (0.3)	6046 (99.7)	6062 (100.0)	
30-39	6 (0.4)	1387 (99.6)	1393 (100.0)	
40-49	4 (0.6)	616 (99.4)	620 (100.0)	
50-59	4 (1.8)	221 (98.2)	225 (100.0)	
60-69	0 (0.0)	98 (100.0)	98 (100.0)	
70-79	0 (0.0)	30 (100.0)	30 (100.0)	
80	0 (0.0)	3 (100.0)	3 (100.0)	
Total	30 (0.3)	10,280 (99.7)	1031 (100.0)	

* Statistical significance *p* < 0.05, Pearson's chi-square test.

Table 6. Incidence of nerve damage in oral surgery (Silvana *et al.*, 2009)

Incidence of nerve injuries in dental surgery*	Neodent
Lower alveolar nerve damage after wisdom tooth surgery	0.2-7.1%
Lingual nerve damage after third molar surgery	0.0-24%
Lower alveolar nerve/mental nerve damage after implant surgery	1.7-43.5%
Permanent damage after one year	5-15%

4. Surgical treatment

With the objective of restoring functionality or reducing symptoms until they subside to a more tolerable level of hypoesthesia, surgery is aimed at restoring the continuity of the affected nerve trunk. The primary surgical procedures that should be carried out by a skilled surgeon are: frequently necessitate nerve microsurgery, ideally within three months⁽⁵⁶⁾. Nerve stump intubation, decompression, neurotaphy, and nervous tissue graft. Decompression is the surgical removal of nerve compression brought on by an internal (neuroma) or exterior (implant fixture or root fragment) compression agent. Table 5 lists the indications for neurotaphy, grafting, and intubation⁽⁶⁸⁾.

Table 5. Nerve injuries which could be treated with surgery. (Silvana R, *et al.*, 2009)

Indications to neurotaphy, nervous tissue graft and intubation
Suspect or certainty of neurotmesis
Anesthesia, disesthesia or paresthesia persistent at 3-6 months from the moment of trauma, with significant psychological repercussions for the patient; after wisdom tooth surgery
Hypoesthesia causing serious discomfort to the patient: bites of the tongue and taste alteration (for the lingual nerve) or difficulty in speaking, eating and drinking (for the inferior alveolar nerve);
Pain relieved by block anesthesia to nerve (sign of peripheral lesion);
Worsening of symptoms
Amputation neuromas or in continuity and clinically evident
Bridling of nervous trunk for scar tissue resulting from phlogosis

In cases of neurapraxia, which resolves on its own in 4-6 weeks and the injury does not disrupt anatomical continuity, as well as when the damage persists for more than two years and the pain shifts from peripheral to central and permanent, surgery is not recommended. For the presence of thickened parafascicular tissue as a result of spontaneous healing of the lesion, it is true that nerve handling improves with time, if it is true that the earlier the operation, the better the healing process. Yet, a late intervention necessitates a more thorough excision, followed by the cooptation of nerve stumps under stress, which may result in the creation of neuromas and necessitate the use of grafts to restore the neural structure's continuity⁽⁶⁹⁾. The optimal course of action might be to schedule the intervention between three and six months following the iatrogenic injury^(70, 71, 72). Depending on the authors and the surgical approach used, the rate of such injuries in literature ranges between 0.2 and 43.5%⁽⁷⁰⁾. (Table 6)⁽⁶⁸⁾.

NeuraGen nerve guide represents an absorbable collagen tube which has been first intended to serve as a conduit for axonal development across nerve gap, so serving as interface between the nerve and surrounding tissues. A 4mm diameter NeuraGen nerve guide has been carried to the field, longitudinally split, and encased the site of the nerve damage with at 1.5cm margin following external neurolysis, primary neurotaphy, and removal of any neuromas that may have been present⁽⁷³⁾ Figure (4).

**Figure 4. NeuraGen nerve guide in place (Jamal & Farole, 2008)**

DISCUSSION

After removing the impacted third molar, an inferior alveolar nerve injury is a common consequence. The impacted tooth's roots moving closer to the IAN enhances the frequency of this problem, despite its very low incidence⁽⁷⁵⁾. In 2013, Nazhat⁽²⁷⁾ discussed in her Comparison of 2D radiograph and 3D CT and surgical findings research that, the 3D reconstructions allows subtracting the impacted tooth from bone structure which rounded it. Thus it can be determined the form of crown and roots and its orientation by 3DCT, table (7). The precise location of the impacted teeth in both jaws, enabling the surgeon to view pertinent anatomy, such as: IAN, mandible canal, foramens, nasal cavity, maxillary antrum, apex roots, roots shapes and all dimensions of mandible and maxilla, This results, comes in agreement with many studies^(73,74) who said that low level of sensitivity shows in panoramic findings creates a clinical dilemma for patients who represented a high risks of injury to IAN, mandibular canal which deviated, narrowing of dental roots. The risks of the injury to IAN is increased dramatically in the case where there is contact between dental roots and IAN. To ascertain whether there's a pre-existing altered feeling, the surgeons must do a preliminary neurosensory test of the function of IAN prior to wisdom tooth extraction⁽⁷⁸⁾. For assessing IANI, some authors^(79, 26, 80) just used X-ray examinations and did not conduct neurosensory testing.

Table 7. Comparison of 2D radiograph and 3D CT and surgical findings (Nazhat et al., 2013)

Degree of success	No.&% of (ITC) by 2D radiograph	No.&% of (ITC) by 3D CT	No.&% of (IT) by surgical procedures
Successful	7 (17.5)	40 (100)	40 (100)
Non successful	33 (82.5)	0 (0)	0 (0)
Total	40(100%)	40(100%)	40(100%)

Other authors^(54, 81, 82) asked patients about their sensory experiences but did not conduct any examination at all, which could raise questions about the validity of their findings. Even though it might take up to 24 months, full healing from IANI usually happens 6 to 8 weeks following the incident. The likelihood of a persistent deficiency rises sharply if paraesthesia is not fully cured in around two months⁽⁸³⁾. According to Kim et al.'s research findings⁽⁸⁴⁾, IANI following the extraction of M3 is typically not permanent but rather lasts for a few months and recovers on its own throughout the first six months.

Conclusion

According to all reviews, informed consent should be obtained prior to the procedure and all patients should be told of risks that are associated with surgery for the mandibular third molar, including the potential for damage to inferior alveolar nerve. Factors that are linked to a noticeably greater prevalence of the paresthesia are related to the inferior alveolar nerve. For treating nerve damage, both surgical and non-surgical methods must be used as quickly as feasible, depending on the extent of the injury. To lessen the symptoms and promote the regeneration of damaged fiber, it has been recommended to begin pharmacological treatment as soon as possible. In order to evaluate the healing process using clinical diagnostic procedures, the patient should go through monthly controls. It was determined that most inferior alveolar nerve injuries heal within six months and are typically not permanent.

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