ECRONICON OPEN ACCESS

EC DENTAL SCIENCE

Case Report

Inferior Alveolar and Incisive Nerves Lateralization for Implant Placement with Technique Variations: A Case Report

Raquel Zita Gomes[1,2,4], Maria Lotishvili[2]*, Lolis Andreas[2], Nada Abdelhafed M Eshibane[2], Thodoris Rekalidis[2] and Ioannis P Georgakopoulos[1,2,3]

[1]*WAGRO University, USA*

[2]*PgO-UCAM, Greece*

[3]*WAGRO Dental, Greece*

[4]*CESPU University, Portugal*

***Corresponding Author:** Maria Lotishvili, PgO-UCAM, Greece.

Received: June 18, 2026; **Published:** June 25, 2026

Abstract

Introduction: The atrophic posterior mandible poses a significant clinical challenge for oral rehabilitation through implant placement in the area. This mainly occurs due to anatomical limitations and poor bone vascularization, thus frequently preventing regenerative surgical techniques in height. A solution is often provided through an inferior alveolar nerve (IAN) lateralization or transposition, a surgical operation in which the inferior alveolar nerve is displaced vestibularly in order to accommodate the insertion of implants in the area. While the technique is far from experimental, we believe that the case report presented in this article will provide clinicians with useful variations of the procedure.

Case Report: In this case, an inferior alveolar and incisive nerves lateralization was performed on a 38-year-old female with a knife-edge hourglass form of posterior mandible with 3-4 mm height above the inferior alveolar nerve. She was administered intraoperatively with a combination of local Platelet Rich Fibrin plugs and membranes, one session of Low-Level Laser Therapy (also used post operatively) and systemic Vitamin B complex (for 2 months). We also used corticotherapy starting on the day of the surgery and extended by 6 days. The resulting neurological symptoms resolved in 45 days, a faster recovery rate than that previously reported in the literature.

Keywords: *IAN; Lateralization; Posterior Mandible; Severe Atrophy; Dental Implants*

Abbreviations

IAN: Inferior Alveolar Nerve; LLLT: Low Level Laser Therapy; CCT: Conventional Corticosteroid Therapy; PRF: Platelet-Rich Fibrin; VBA: Vertical Bone Augmentation; IANL: Inferior Alveolar Nerve Lateralization; IINL: Inferior Incisive Nerve Lateralization; TMJ: Temporomandibular Joint; a-PRF: Advanced Platelet-Rich Fibrin; PDGF: Platelet-Derived Growth Factor; VEGF: Vascular Endothelial Growth Factor; PBM: Photobiomodulation; ATP: Adenosine Triphosphate; CBCT: Cone Beam Computed Tomography; RFA: Resonance Frequency Analysis; CMP Nucleus: Cytidine Monophosphate Nucleus

Introduction

Objectives of procedure

The purpose of this article is to demonstrate why an IANL procedure with variation of also lateralizing the incisive nerve (IINL) and not repositioning the vestibular cortical windows, accompanied by a synergistic multimodal strategy integrating platelet-rich fibrin, photobiomodulation therapy, CCT and neuro-supportive supplementation with vitamin B Complex (1, 6 and 12) may represent an effective treatment option for a patient with a severely atrophic mandible seeking fixed prosthetic restoration. Additionally, the aim is to present the indications for an IANL procedure, clarify the advantages and disadvantages arising from this kind of oral surgery, thoroughly describe the surgical technique and explain the possible complications and their appropriate management.

Description of procedure

In order to gain a clear understanding of the procedure it is necessary to mention briefly the anatomy and physiology of the posterior mandible. The posterior mandible has important anatomical structures: the mandibular canal (containing the inferior alveolar neurovascular bundle), the IAN and its anterior loop, the mental foramen and mental nerve [18] (Rarely, an anatomical variation involving two mental nerves may exist simultaneously. In some cases, there are 2 mental foramina) [20].

The Inferior Alveolar Nerve (IAN) is a branch of the mandibular division (V3) of the trigeminal nerve (CN V) alongside the lingual nerve [14]. The IAN is a sensitive nerve with a diameter of approximately 3 - 4 mm [15]. Concerning bone physiology, the mandible consists of an outer layer of cortical bone (that generally is quite thick) and an inner layer of trabecular bone (that normally is reduced). The cortical bone has much less blood supply compared to the trabecular spongy bone that has better blood supply [23].

The IANL procedure is indicated when the following two factors coexist: the total posterior mandibular height is at least 8 mm and the vertical bone height above the IAN canal is less than 9 mm due to severe atrophy of the mandible [2].

The principal advantages associated with the IANL include the fact that the procedure allows the use of long implants while employing bicortical anchorage (the implant engages both the superior and inferior cortical plates of the mandibular bone thus providing good primary stability). Moreover, the procedure is completed in one visit (a single surgical procedure) avoiding the need of having separate surgeries for bone augmentation and subsequent implant placement. In this way the patient discomfort is significantly decreased. Additionally, the procedure allows clear visualisation of the inferior alveolar nerve during implant placement and offers a good biomechanical relation between crown and implant length [6].

However, it is important to mention the disadvantages accompanying the IANL. First of all, the technique of the procedure is regarded as sensitive (needs to be executed by a skillful and experienced surgeon). Furthermore, the procedure carries a minor risk of mandibular fracture, and it doesn't compensate for the upper resorption of the crest. Most importantly, the procedure is associated with a risk of neurosensory disturbances (paraesthesia, hypoesthesia, dysesthesia) [6].

Complications can arise during or after this sensitive technique and it is necessary to know how to manage those. If poorly executed there can be irreversible injury of the IAN (by severing the nerve). Even in the case of a well-conducted surgical procedure, the IAN is susceptible to temporary neurosensory disturbances [3]. In case of temporary paraesthesia there are certain therapeutic procedures that can be applied. CCT (Conventional Corticosteroid Therapy) can be used in combination with antibiotics to decrease the inflammation of the area and accommodate the healing of the nerve (e.g. prednisone, deflazacort). PRF (Platelet-Rich Fibrin) can be employed during the surgical procedure to promote healing of the surgical site. The most important line of therapy to reverse the paraesthesia is the prescription of the vitamin B complex (B1, B6, and B12) - Neurobion® (the posology is 2 pills at breakfast, 2 pills at lunch and 2 pills at dinner). The Neurobion® dosage per pill is 100g of thiamine (B1), 200 mg of pyridoxine (B6) and 0,2 mg of cyanocobalamin (B12).

Additionally, LLLT (Low Level Laser Therapy) can be employed as a biostimulatory therapy (usually 6 sessions of LLLT with 660 nm red and 780 nm infrared lights).

Surgical technique

A typical IAN lateralization procedure is as follows [13]:

- Infiltrative anaesthesia with articaine (epinephrine 1: 100,000) is applied without nerve block.
- A horizontal crestal incision is made in addition to carefully designed vertical releasing incisions to avoid severance of the mental nerve. A full thickness mucoperiosteal flap is elevated in order to reveal the underlying bone and mental nerve foramen. The soft tissue is carefully retracted to have a clear view of the surgical site with the help of Langenbeck retractors or/and Minnesota retractors or any other similar instrument (it is important to have sufficient surgical assistance during the procedure). Isolation and removal of the sheath of the mental nerve is the next step (nerve fibers are released to allow some movement). The mental nerve is cautiously retracted by means of a piece of sterile glove material that has dual function: it retracts and stabilizes the mental nerve while simultaneously gently securing it from injury of friction/traction. A lateral window is created distally to the mental foramen in the buccal aspect of the mandible in order to reveal the Inferior Alveolar Nerve. This is facilitated by a piezoelectric surgical device (ultrasound bone surgery device) which creates a micrometric minimally bleeding osteotomy site of the lateral window. The surrounding cancellous bone of the osteotomy site is carefully cleaned, and the IAN is then removed from the canal, with a metallic nonaggressive curved instrument or similar instrument. Elastic strips taken from sterile gloves can be used to apply traction to the nerve after the nerve is outside the IAN bone canal (elastic bands from vascular surgery can also be used). Subsequently, the IAN is lateralized. In some cases, an extra small window (square) of bone is maintained surrounding the mental nerve.
- While the nerve is kept lateralized, the bone is being drilled for the immediate implant placement. As soon as the implant insertion is completed, plasma plugs (a-PRF plugs) are placed between the nerve and implants, while plasma membranes (a-PRF membranes) are placed on the vestibular side of the window. The surgical site is stitched with non-resorbable sutures, preferably polyamide 4-0 (simple stitches are sufficient). The sutures are removed 15 days after surgery.

Case Description

Patient info

The patient is a 38-year-old female. She is a non-smoker and in good overall health aside from the topical and food allergies (ASA I). The patient had 6 implants in total (1 in the upper jaw and 5 in the lower jaw), located at positions: 11, 35, 37, 44, 45, 47. The area of focus is the 3rd quadrant where the patient had an implant-supported bridge on two implants for 13 years. However, the distal implant failed (37) and had to be removed. The bridge was sectioned and the mesial implant was maintained (35) leaving the patient only with teeth up to 35. The patient requested a fixed prosthetic rehabilitation in the 3rd quadrant.

Diagnosis and treatment plan

A complete clinical and radiographical examination (orthopantomography, CBCT) was performed and revealed that the edentulous area of the 3rd quadrant, had thin bone with knife-blade-like shape and bone height was 3 to 4 mm up to the inferior alveolar nerve. Preoperative assessment also included study models and photographic documentation. It was also found that the patient is a bruxer with muscle and TMJ pain.

Figure 1: *Pre-Op panoramic X- ray.*

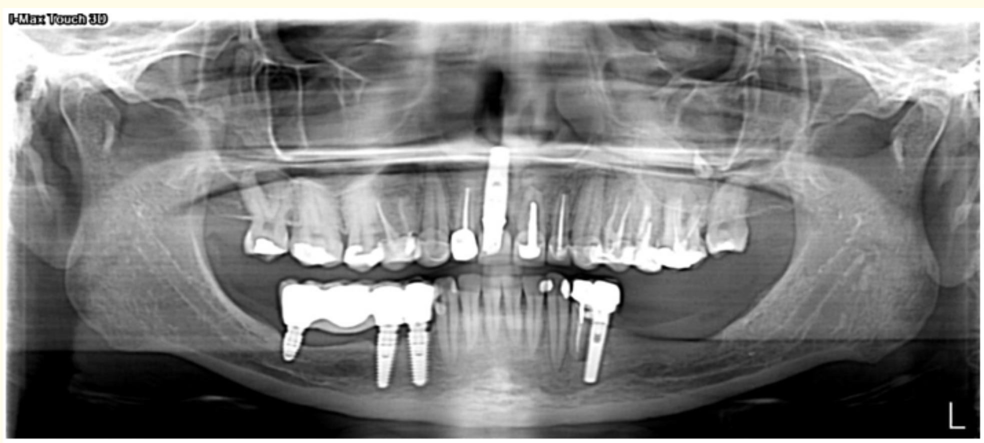

Figure 2: *Pre-Op panoramic X-ray (regarding lateralization), after removal of implant in the area of #37.*

These findings contraindicated conventional implant placement and supported the indication for inferior alveolar nerve lateralization (IANL). Therefore, the lateralization of the IAN with simultaneous placement of two implants in the position of teeth number 36 and 37, using piezosurgery, plasma-rich fibrin (A-PRF, Choukron method) and intra and postoperative LLLT laser therapy, was proposed. After osseointegration a splinted metal-ceramic bridge (tooth 36 and 37) was also planned.

Ethical considerations

Written informed consent was obtained prior to the procedure. Written recommendations regarding pre, peri and post operative recommendations were also given to the patient.

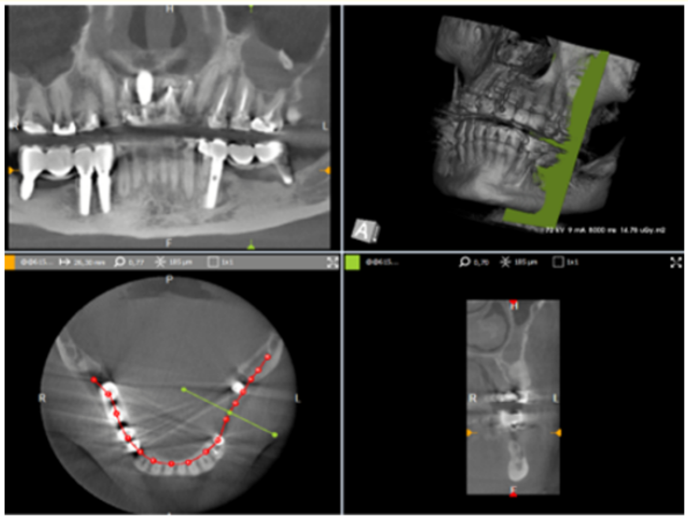

Figure 3: *CBCT showing the edentulous area, before implant removal and before nerves (IAN and IIN) lateralization.*

Figure 4: *Preoperative clinical pictures, vestibular intraoral view.*

Figure 5: *Preoperative clinical pictures, intraoral occlusal view.*

Pharmacological protocol implemented

Antibiotic prophylaxis was initiated 2 days prior to surgery (Amoxicillin 875mg with 125mg of clavulanic acid). Simultaneously, corticosteroid regimen was applied: Deflazacort for 6 days, starting on the day of surgery with a higher dose and gradually reducing it (90-90-60-30-15-15 mg, in the morning). Analgesics (Paracetamol 1g with 60 mg of codeine) were administered 1 hour preoperatively and NSAIDs were prescribed postoperatively as needed. For reversing paraesthesia B-complex supplementation (Neurobion : vitamins B1, B6 and B12) was employed for 2 months, given its role in neuronal metabolism and myelin repair.

Detailed description of the surgical technique of the specific case (IAN and IIN lateralization)

For the surgical procedure, local anesthesia was induced using a 4% articaine solution with adrenaline 1: 100.000, only infiltrative without block anesthesia. Intraoral linear crestal incision was performed in the edentulous region (tooth 36 and 37) followed by an intrasulcular incision on the adjacent implant (tooth 35). Then, a vertical incision was made in the distal part of tooth 33. A full thickness mucoperiosteal flap was elevated in the buccal aspect, allowing identification of the mental nerve and a small accessory nerve (variation of normality), that was manipulated simultaneously with the main one). After releasing some nerve fibers, the mental nerve is allowed to have some movement and is isolated with the use of elastic bands from sterile gloves. A rectangular bone window was made (lateral corticotomy window) with the aid of a piezosurgery (that cuts bone but not soft tissue) device, centralized on the IAN canal and Incisive Nerve canal positions. Piezosurgery device provided access to the inferior alveolar and incisive nerve canals while minimizing iatrogenic risk. Both cortical bone plates were then removed with the help of small chisels. The IAN and IIN bundles were carefully exposed and removed from the canal by detaching it from the residual trabecular (cancellous) bone, with a small non sharp metallic instrument.

Two lateral windows are created in the buccal aspect of the mandible in order to reveal the Inferior Alveolar Nerve distally and the incisive nerve mesially. This is facilitated by a piezoelectric surgical device (ultrasound bone surgery device) which creates a micrometric minimally bleeding osteotomy site of the lateral windows. In this case, the lateral windows were gently removed with small chisels. The surrounding cancellous bone of the osteotomy site was carefully cleaned, and the IAN and IIN were then removed from the canal with a metallic nonaggressive curved instrument. Elastic strips taken from sterile gloves can be used to apply traction to the nerve after the nerve is outside the IAN and IIN bone canals (elastic bands from vascular surgery can also be used). Subsequently, the IAN and IIN are lateralized.

The IAN and IIN bundles were subsequently buccally displaced (lateralized) with the use of two elastic bands from sterile gloves, one distal and one mesial to the mental nerve. The elastic bands allowed the continuous visualization and protection of the nerve, during the procedure of placing the implants. In this case not only the IAN was lateralized, but also the incisive nerve (IIN). While the IAN and IIN were retracted under direct visualization, the drilling for implant installation was performed (implant osteotomies). Two implants were inserted just under the crest, one 3.5 × 13 mm implant in position of 36 with 60 Ncm insertion torque and one implant 3,5x11,5 mm in position of 37 with 45 N/cm torque. The type of implants used were AnyRidge implants (from MegaGen® brand). Measurements of ISQ (with Osstell®Beacon apparatus) were V57/D81 for implant in position of 36 and V49/D70 for implant in position of 37. Finally cover screws were placed. Primary stability was confirmed using resonance frequency analysis (RFA), helping to decide the correct loading protocol for this case, that was using a delayed protocol putting cover screws after the surgery). Plasma plugs and membranes (A-PRF by Choukroun®) were placed on the implants, prior to IAN repositioning. The vestibular bone window was also covered with plasma plugs. PRF has been associated with growth factor release (e.g. PDGF, TGF-β, VEGF) which may support angiogenesis and soft tissue healing [2]. In this case, we didn't reposition the bone blocks (mesial and distal from mental nerve) at the end of the surgery because of the risk of compressing the nerve against implants (even adapting the plates) with knife type threads and because it would be very difficult to stabilize both plates without extra fixation techniques. Also, we didn't do a square window around the mental nerve because it would make it very difficult for the Incisive nerve lateralization part. The flap was repositioned with simple interrupted suture using supramid 4-0.

Intraoperative LLLT laser photobiomodulation therapy was performed (with the same parameters as in postoperative therapy mentioned in detail below). The name of the laser device used was Sistema Multifuncional Twin Flex II® (supply voltage 127-220V ~ 50/60 Hz). After 15 days the sutures were removed. Post-surgical check-ups were performed on days 2, 4, 6, 9, 12 and 15. The checkups included LLLT laser photobiomodulation therapy with red (660 nm, 10.0 J/cm^2, 40 mW, 10 seconds) per point and infrared (780 nm, 157.5 J/cm^2, 70 mW, 90 seconds) per point wavelengths, following a protocol for paraesthesia. Several points are used along the trajectory of the IAN, IIN and mental nerves (the last points are applied on the face of the patient, on the square area below the lip to the chin on that side).

These parameters fall within reported therapeutic ranges for peripheral nerve regeneration. PBM has been associated with enhanced mitochondrial activity and ATP production, potentially supporting axonal regeneration. The progression of paraesthesia regression was monitored with consecutive mappings (patient-reported outcomes and qualitative clinical testing for example slightly sharp instrument touch and comparison with the other side).

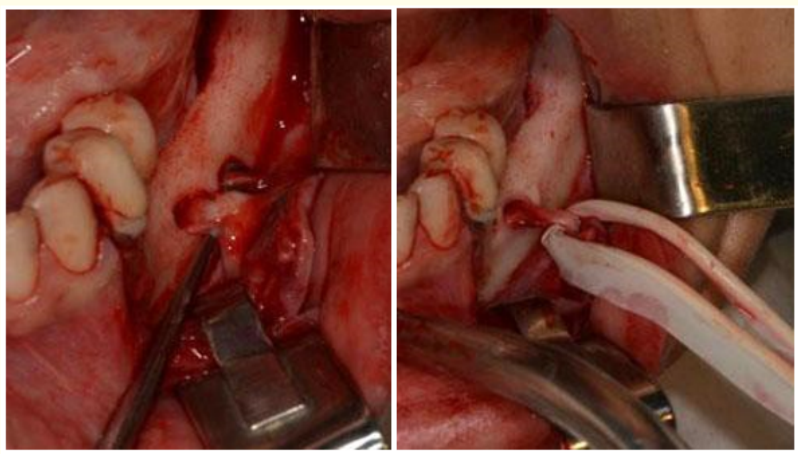

Figure 6 and 7: *Identification and isolation of the mental nerve (and extra accessory nerve) and then using the elastic band of a sterile glove to retract them.*

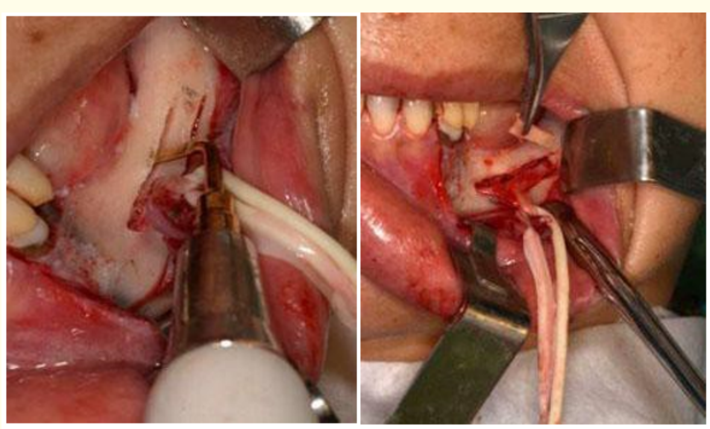

Figure 8 and 9: *Clinical images showing piezosurgical procedures for cutting the mesial and distal cortical bone windows, regarding the mental nerve. The bone blocks were removed with small chisels.*

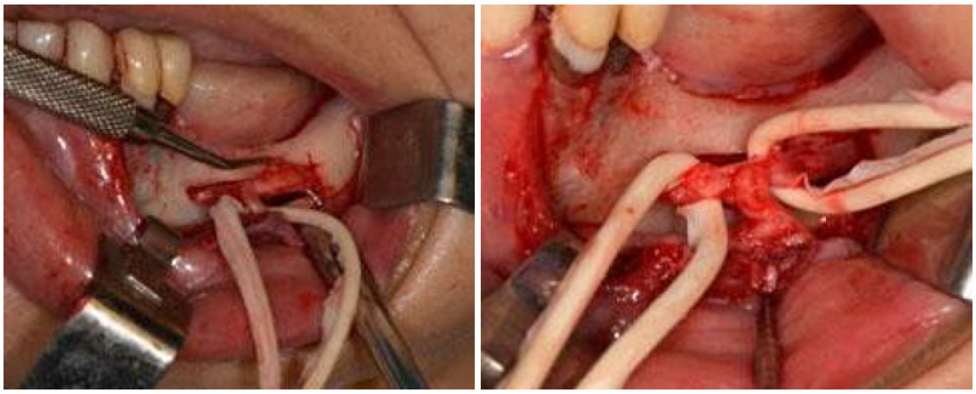

Figure 10 and 11: *Clinical images showing lateralization of the inferior alveolar nerve (IAN) and the incisive nerve (IIN), using a non sharp curved metal instrument. Afterwards we used 2 strips of a sterile glove band to retract them both.*

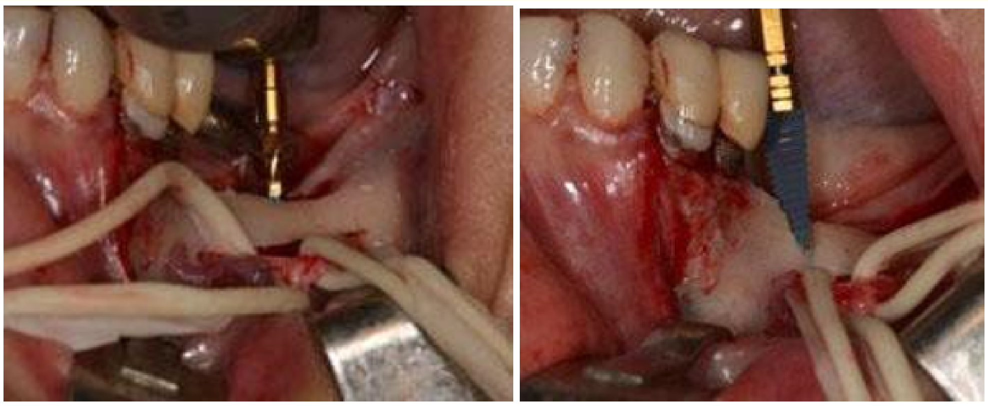

Figure 12 and 13: *Clinical images showing drilling and implant placement during implant surgery.*

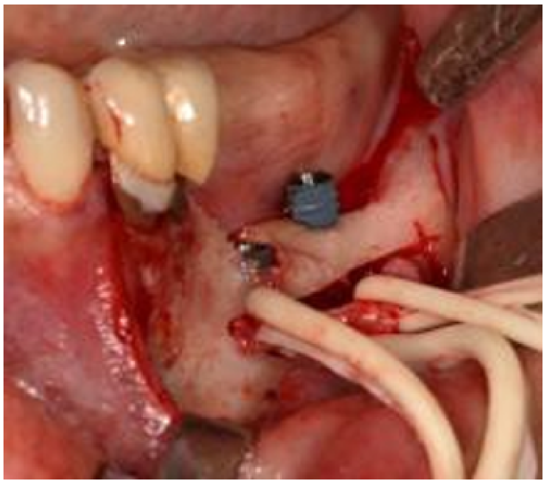

Figure 14: *Clinical image showing the implant placement procedure.*

Figure 15: *Clinical images showing sub-crestal implant placement.*

Figure 16: *A-PRF ready to be installed in the area.*

Figure 17: *Clinical image of the cover screws placed on the implants.*

Figure 18 and 19: *Clinical images showing suturing procedures using Supramid® 4-0.*

Figure 20: *Image of the laser device used for LLLT (Low-Level Laser Therapy).*

Figure 21: *Clinical image showing intraoperative LLLT procedure (First session).*

Results

A follow-up appointment was conducted at 1.5 months, also using LLLT, where the patient reported an almost complete reversal of the post-surgical partial temporary paraesthesia. After osseointegration of the implants (6 months) the patient was provided with screw-retained metal-ceramic implant-supported bridge to restore teeth number 36 and 37.

Credits of Surgery and prostho rehabilitation: Prof. Doctor Raquel Zita Gomes. Clinical Photographs were taken by Oleksandr Taran. The Lab technician that performed the metalo-ceramic work was Vitor Matos.

Discussion

Rehabilitation of the atrophic posterior mandible remains a significant clinical challenge, particularly in cases with limited residual bone height above the inferior alveolar canal. In such situations, both vertical bone augmentation (VBA) and inferior alveolar nerve lateralization (IANL) represent established treatment modalities with distinct biological principles and risk profiles. Vertical bone augmentation aims to restore alveolar bone volume through regenerative techniques such as guided bone regeneration or autogenous grafting. Although this approach preserves the integrity of the inferior alveolar nerve (IAN), it is frequently associated with increased surgical morbidity, prolonged treatment duration, graft resorption, and donor-site morbidity. Furthermore, these procedures often require staged interventions, thereby increasing the overall treatment burden on the patient [6,11].

In contrast, IANL facilitates implant placement by temporarily displacing the nerve, allowing engagement of dense basal cortical bone and simultaneous implant placement. This approach significantly reduces treatment time and avoids extensive grafting procedures; however, it carries a higher risk of transient neurosensory disturbances related to direct nerve manipulation. In the same context, several treatment alternatives for the severely resorbed posterior mandible have been proposed, including short implants, guided bone regeneration, appositional bone grafting, distraction osteogenesis, inclined implants tangential to the mandibular canal, and inferior alveolar nerve lateralization [6], but in this particular case none of these techniques were logical to be executed.

Dursun., *et al*. noted no significant clinical or radiographical changes between shorter implants and implants placed through IANL at twelve months postoperatively [10]. However, in their study, the mean length of shorter implants used was 7.63 ± 0.79, which indicates that this solution is not applicable in the current scenario.

An alternative to IANL is also presented by Rodriguez., *et al*. in their prospective study. A piezotome was used to create a split osteotomy containing the IAN in its buccal bone plate, thus creating space for a threaded bone expander to gradually expand the bone for implant placement. While they report a lower neurosensory deficiency rate, wound dehiscence was observed in 2,6% of cases, and a buccal cortical bone fracture in one osteotomy [24]. This approach wasn't indicated in our case because we only had 3 mm and a very thin hourglass form of the bone.

In the present case, the selection of IANL and IINL reflects a carefully considered risk–benefit trade-off. This decision was not only driven by the patient's preference to avoid removable prostheses but was also a strategic clinical necessity. The patient presented with pre-existing temporomandibular joint dysfunction and associated muscular symptoms; therefore, achieving a stable fixed restoration extending to the second molar (tooth 37) was essential to minimize unilateral masticatory overload and prevent further functional deterioration.

Given the inherent risk of neurosensory complications, a structured multimodal postoperative protocol was implemented. Autologous platelet concentrates, specifically advanced platelet-rich fibrin (A-PRF), were positioned between the nerve and the implant surface, enveloping the nerve in a roll-like manner. In addition to releasing bioactive growth factors such as PDGF and VEGF, A-PRF may have functioned as a biological interface, potentially reducing mechanical irritation and providing a protective buffer between the nerve and implant. However, evidence supporting a direct effect of platelet-rich fibrin on peripheral nerve regeneration remains limited and should be interpreted with caution [9,16,27]. However, positive results have been shown in the literature, which seems to indicate faster recovery times for neurosensory dysfunctions. Specifically, Khojasteh., *et al*. noticed a significant decrease in neurosensory symptoms in patients that were subjected to a modified technique using PRF at six months, when compared to a control group where no buffers were used [19]. In addition to this, a study by Castellano-Navarro., *et al*. demonstrated that when a fibrin glue was utilized as a buffer material, no significant changes in neurological recovery were present [5]. The abovementioned results seem to indicate that the use of PRF materials may indeed have a positive effect in IAN recovery times.

A systematic review by Palacio., *et al*. shows high heterogeneity regarding full neurosensory recovery, attributed to the subjective nature of testing and difference in operational and testing protocols [22]. However, a study from Castellano-Navarro., *et al*. including 123 patients, demonstrated that 81% of patients reported full recovery at six months [5], while a similar study by de Vicente., *et al*. showed 85% of patients experienced full neurological recovery at three months [8]. In addition, Hwaiti., *et al*. mention that only 33,3% of patients experience full reversal of their neurological symptoms at 3 months [17], confirming the high variance in healing timeframes mentioned by Palaci., *et al*. In the current case report, full recovery was documented at 45 days, a significantly faster rate than the one reported by the literature. Similar recovery time was observed in a case report by Naves Freire., *et al*. where through the use of LLLT and Vitamin B complex administration, a recovery time of two months was achieved [21]. In a similar case by Suzuki., *et al*. a 30-day full recovery was achieved through the intramuscular administration of Vitamin B complex and CMP nucleus, although the authors do not specify if both drugs were administered intramuscularly [25].

Another aspect of the described patient case that is of importance, is the use of a piezotome to perform the osteotomy for the IANL. Piezosurgery is associated with increased neurological recovery rates, as mentioned by Fernandez Dıaz., *et al*. [12]. In our clinical case the piezotome was also used to perform the incisive window to expose the incisive part of the nerve.

Photobiomodulation (PBM) therapy was also incorporated as part of the neurosensory recovery protocol using a dual-wavelength approach (660 nm and 780 nm). An intensive application schedule was implemented during the early postoperative phase (days 2, 4, 6, 9, 12, 15 and 45 days), corresponding to the critical period of neural repair. The selected parameters were within the therapeutic ranges previously reported for peripheral nerve regeneration and were intended to enhance mitochondrial activity, increase adenosine triphosphate production, and promote axonal healing [4].

Additionally, neurotropic vitamin supplementation (vitamins B1, B6, and B12) was administered for approximately 1.5 months. These vitamins exert complementary biological functions within the nervous system: vitamin B1 supports neuronal energy metabolism, vitamin B6 participates in neurotransmitter synthesis and signal transduction, and vitamin B12 plays an essential role in myelin synthesis, remyelination, and restoration of nerve conduction velocity. Experimental evidence suggests that combined B-vitamin supplementation may enhance Schwann cell activity, neural connectivity, and neuroregenerative processes more effectively than individual vitamin therapy alone. Synergistic antioxidant and neuroprotective effects have also been reported with combined B1/B6/B12 administration [7].

Clinically, the patient demonstrated near-complete resolution of paresthesia within approximately 45 days. Although this favorable outcome may reflect the combined contribution of PBM, neurotropic supplementation, and local biologic support, spontaneous neural recovery following IAN manipulation must also be considered a significant contributing factor. To the best of our knowledge, few reports have described a structured multimodal protocol integrating platelet-rich fibrin, photobiomodulation, and neurotropic supplementation in the context of inferior alveolar nerve lateralization. Therefore, while this combined approach may represent a clinically relevant strategy for managing complex implant rehabilitation cases, its effectiveness and reproducibility cannot be definitively established based on a single case report alone. Further controlled clinical studies are required to evaluate the predictability and therapeutic value of such multimodal neurosensory recovery protocols following inferior alveolar nerve manipulation. This case has already 10 years follow up and continues to function very well.

Conclusion

The management of the severely atrophic posterior mandible remains to this day a challenging clinical undertaking, with plenty of anatomical and surgical parameters to consider. In these cases, the Inferior Alveolar and Incisive Nerves Lateralization techniques constitute a viable, albeit technique-sensitive procedure. In this particular case, we didn't reposition the bone windows to avoid compression of the nerve to the knife threads implants and we didn't do a square bone window around the mental nerve to allow a better access to the incisive nerve that was also lateralized (variation of the technique). Through the case presented, we hope to demonstrate that with technique variants and utilizing biological products such as PRF, and modern technological protocols, such as LLLT, it is possible to positively affect the clinical outcome of such cases, thus partially mitigating some of the risks associated with IANL. Of course, proper patient selection and surgical skill remain paramount in reducing the incidence of the procedure's adverse effects.

Conflicts of Interest

None.

Bibliography

1. Anders Juanita J., *et al*. "Low-level light/laser therapy versus photobiomodulation therapy". *Photomedicine and Laser Surgery* 33.4 (2015): 183-184.

2. Abayev B and G Juodzbalys. "Inferior alveolar nerve lateralization and transposition for dental implant placement. part i: a systematic review of surgical techniques". *Journal of Oral and Maxillofacial Research* 6.1 (2015): e2.

3. Abayev B and G Juodzbalys. "Inferior alveolar nerve lateralization and transposition for dental implant placement. Part II: A systematic review of neurosensory complications". *Journal of Oral and Maxillofacial Research* 6.1 (2015): e3.

4. Calderón-Ospina Carlos A and Mónica O Nava-Mesa. "B vitamins in the nervous system: current knowledge of the biochemical modes of action and synergies of thiamine, pyridoxine, and cobalamin". *CNS Neuroscience and Therapeutics* 26.1 (2020): 5-13.

5. Castellano-Navarro JM., *et al*. "Neurosensory issues after lateralisation of the inferior alveolar nerve and simultaneous placement of osseointegrated implants". *British Journal of Oral and Maxillofacial Surgery* 57.3 (2019): 213-218.

6. Castro Pimentel Angélica, *et al*. "Lateralization technique and inferior alveolar nerve transposition". *Case Reports in Dentistry* (2016): 4802637.

7. Cuyubamba O., *et al*. "The combination of neurotropic vitamins B1, B6, and B12 enhances neural cell maturation and connectivity superior to single B vitamins". *Cells* 14.7 (2025): 477.

8. de Vicente JC., *et al*. "The use of piezoelectric surgery to lateralize the inferior alveolar nerve with simultaneous implant placement and immediate buccal cortical bone repositioning: a prospective clinical study". *International Journal of Oral and Maxillofacial Surgery* 45.7 (2016): 851-857.

9. Dohan Ehrenfest David M., *et al*. "Platelet-rich fibrin (PRF): A second-generation platelet concentrate. Part II: platelet-related biologic features". *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology* 101.3 (2006): e45-e50.

10. Dursun Erhan., *et al*. "Management of limited vertical bone height in the posterior mandible: short dental implants versus nerve lateralization with standard length implants". *Journal of Craniofacial Surgery* 27.3 (2016): 578-585.

11. Esposito Marco., *et al*. "The efficacy of vertical and horizontal bone augmentation procedures for dental implants: a cochrane systematic review". *European Journal of Oral Implantology* 2.3 (2009): 167-184.

12. Fernández Díaz JÓ and L Naval Gías. "Rehabilitation of edentulous posterior atrophic mandible: inferior alveolar nerve lateralization by piezotome and immediate implant placement". *International Journal of Oral and Maxillofacial Surgery* 42.4 (2013): 521-526.

13. Garg AK and MJ Morales. "Lateralization of the inferior alveolar nerve with simultaneous implant placement: surgical techniques". *Practical Periodontics and Aesthetic Dentistry* 10.9 (1998): 1197-1204.

14. Ghatak RN., *et al*. "Anatomy, head and neck, mandibular nerve". StatPearls, StatPearls Publishing (2026).

15. Hirsch JM and PI Brånemark. "Fixture stability and nerve function after transposition and lateralization of the inferior alveolar nerve and fixture installation". *British Journal of Oral and Maxillofacial Surgery* 33.5 (1995): 276-281.

16. Huang ML., *et al*. "Platelet-rich fibrin membrane nerve guidance conduit: a potentially promising method for peripheral nerve injuries". *Journal of Neural Engineering* 17.3 (2020): 036005.

17. Hwaiti Hisham Suliman, *et al*. "Inferior alveolar nerve relocation and immediate dental implant placement in severely resorbed mandibles: a prospective clinical case series". *BMC Oral Health* 25 (2025): 92.

18. Jena S., *et al*. "Prevalence, patterns and variations of anterior loop of inferior alveolar nerve-a CBCT based retrospective study". *Indian Journal of Otolaryngology and Head and Neck Surgery* 74.3 (2022): 5424-5431.

19. Khojasteh A., *et al*. "The effect of a platelet-rich fibrin conduit on neurosensory recovery following inferior alveolar nerve lateralization: a preliminary clinical study". *International Journal of Oral and Maxillofacial Surgery* 45.11 (2016): 1469-1477.

20. Muinelo-Lorenzo J., *et al*. "Detection of the accessory mental foramina on human mandibles using cone-beam computed tomography: a systematic review and meta-analysis". *Journal of Endodontics* 47.8 (2021): 1215-1228.

21. Naves Freire Alice Engel., *et al*. “Piezoelectric surgery in the inferior alveolar nerve lateralization with simultaneous implant placement: a case report”. *Implant Dentistry* 28.1 (2019): 86-90.

22. Palacio García-Ochoa A., *et al*. “Complications associated with inferior alveolar nerve reposition technique for simultaneous implant-based rehabilitation of atrophic mandibles: a systematic literature review”. *Journal of Stomatology, Oral and Maxillofacial Surgery* 121.4 (2020): 390-396.

23. Priyadarshini SR., *et al*. “Qualitative and morphological evaluation of the mandibular bone using computed tomography”. *Indian Journal of Dental Research* 31.6 (2020): 899-903.

24. Rodriguez JG and RM Eldibany. “Vertical splitting of the mandibular body as an alternative to inferior alveolar nerve lateralization”. *International Journal of Oral and Maxillofacial Surgery* 42.10 (2013): 1295-1302.

25. Suzuki Dalton., *et al*. “Inferior alveolar nerve lateralization and implant placement in atrophic posterior mandible”. *Journal of Craniofacial Surgery* 23.4 (2012): e347-e349.

26. Turhani Dritan., *et al*. “Undesirable course of an oral implant rehabilitation in a patient with a long history of bulimia nervosa: case report and review of the literature”. *Quintessence International* 50.7 (2019): 548-553.

27. Wang S., *et al*. “Evaluation of platelet-rich plasma therapy for peripheral nerve regeneration: a critical review of literature”. *Frontiers in Bioengineering and Biotechnology* 10 (2022): 808248.

28. Yang Yang., *et al*. “Diabetic neuropathy: cutting edge research and future directions”. *Signal Transduction and Targeted Therapy* 10 (2025): 132.

Volume 25 Issue 7 July 2026