Mandibular fracture as a complication of inferior alveolar nerve transposition and placement of endosseous implants: a case report.

Karlis V, Bae RD, Glickman RS.


Abstract

Placement of endosseous implants and inferior alveolar nerve transposition is a treatment option for patients with an edentulous posterior mandible with inadequate bone height superior to the inferior alveolar canal. Complications associated with these procedures include infection, prolonged neurosensory disturbances, and/or pathologic fracture. This report presents the surgical management of a patient with a mandible fracture after inferior alveolar nerve transposition with concurrent placement of two endosseous implants.

Neurosensory function and implant survival rate following implant placement with nerve transpositioning: a case study.

Hori M, Sato T, Kaneko K, Okaue M, Matsumoto M, Sato H, Tanaka H.


Abstract

In patients with extensive bone resorption, implant placement posterior to the mental foramen is a problematic surgical procedure. This paper reports the results in 6 patients (aged 20-61) with edentulous areas in the posterior part of the mandible, in whom 26 Nobelpharma implants were placed, including 17 with transposition of the inferior alveolar nerve allowing the use of implant fixtures of at least 10 mm in length. Subsequent neurosensory function, based on British Medical Research Council definitions, and implant survival rate were examined. In all cases, postoperative numbness occurred in the lower lip and mental area. Three years after surgery, while one patient had completely recovered neurosensory function, five patients still experienced partial numbness, although this was not perceived as a problem by those patients. The implant survival rate was 100% approximately three years after surgery. The results suggest that a higher implant survival rate is likely when longer fixtures are used, but this is also more likely to lead to slight long-term neurosensory dysfunction.
**Clinical and electrophysiological assessment of inferior alveolar nerve function after lateral nerve transposition.**

Nocini PF, De Santis D, Fracasso E, Zanette G.


**Abstract**

Inferior alveolar nerve (IAN) transposition surgery may cause some degree of sensory impairment. Accurate and reproducible tests are mandatory to assess IAN conduction capacity following nerve transposition. In this study subjective (heat, pain and tactile-discriminative tests) and objective (electrophysiological) assessments were performed in 10 patients receiving IAN transposition (bilaterally in 8 cases) in order to evaluate any impairment of the involved nerves one year post-operatively. All patients reported a tingling, well-tolerated sensation in the areas supplied by the mental nerve with no anaesthesia or burning paresthesia. Tactile discrimination was affected the most (all but 1 patient). No action potential was recorded in 4 patients' sides (23.5%); 12 sides showed a decreased nerve conduction velocity (NCV) (70.5%) and 1 side normal NCV values (6%). There was no significant difference in NCV decrease between partial and total transposition sides, if examined separately. Nerve conduction findings were related 2-point discrimination scores, but not to changes in pain and heat sensitivity. These findings show that lateral nerve transposition, though resulting in a high percentage of minor IAN injuries, as determined by electrophysiological testing, provides a viable surgical procedure to allow implant placement in the posterior mandible without causing severe sensory complaints. Considering ethical and forensic implications, patients should be fully informed that a certain degree of nerve injury might be expected to occur from the procedure. Electrophysiological evaluation is a reliable way to assess the degree of IAN dysfunction, especially if combined with a clinical examination. Intraoperative monitoring of IAN conduction might help identify the pathogenetic mechanisms of nerve injury and the surgical steps that are most likely to harm nerve integrity.

**Mandibular fracture after endosseous implant placement in conjunction with inferior alveolar nerve transposition: a patient treatment report.**

Kan JY, Lozada JL, Boyne PJ, Goodacre CJ, Rungcharassaeng K.


**Abstract**

A patient with a severely atrophic right posterior mandible had three endosseous implants placed in conjunction with transposition of the inferior alveolar nerve. Three weeks following implant placement surgery, the patient experienced a spontaneous fracture of the mandible involving the two anterior implants. The two implants were removed, and the fracture was treated with open reduction and fixation with titanium mesh. The fracture healed, and the posterior implant integrated. This report suggests that the buccolingual and superior-inferior position of the mandibular canal can increase the possibility of mandibular fracture by
increasing the size of the buccal cortical plate that is removed to expose the nerve during surgery.

**Endosseous implant placement in conjunction with inferior alveolar nerve transposition: an evaluation of neurosensory disturbance.**


Kan JY, Lozada JL, Goodacre CJ, Davis WH, Hanisch O.

**Abstract**

This retrospective study evaluated neurosensory dysfunction and the implant success rate associated with 64 implants placed in 15 patients following transposition of the inferior alveolar nerve. A total of 21 inferior alveolar nerve mobilization surgeries were performed. The mean postoperative follow-up time was 41.3 months, with a range of 10 to 67 months. The effects of surgical technique and implant surface geometry on neurosensory dysfunction were evaluated by using light touch, brush stroke direction, and two-point discrimination. The implant success rate was 93.8% (60/64). The surgical technique that involved detaching the mental foramen resulted in a significantly greater incidence of neurosensory disturbance (77.8%, 7/9) than did the technique that left the bony foramen intact (33.3%, 4/12). The overall incidence of neurosensory disturbance was 52.4% (11/21).

**Fixture stability and nerve function after transposition and lateralization of the inferior alveolar nerve and fixture installation.**

Hirsch JM, Brånemark PI.


**Abstract**

Twenty-four posterior mandibular segments in 18 patients were operated on placing implants after mobilisation of the neurovascular bundle. Two different surgical techniques, transposition and lateralization was used. The overall survival rate of fixtures was 92.1%. Performing lateralization resulted in 100% success, while transposition resulted in 80% stable fixtures in the involved segments. The mean time to full restoration of nerve function was 3.8 weeks after lateralization and 5.7 weeks after tranposing the nerve. Three patients exhibited persisting slight hyposthesia, but all, subjectively negligible disturbances in nerve function.
Nerve transposition and implant placement in the atrophic posterior mandibular alveolar ridge.

Jensen J, Reiche-Fischel O, Sindet-Pedersen S.


Abstract

The results obtained with a modified surgical technique for transposition of the inferior alveolar nerve followed by immediate placement of endosseous implants in mandibles with moderate to severe atrophy are presented. Ten transpositions of the inferior alveolar nerve together with the installation of 21 implants were performed in six patients. The mean postoperative follow-up time was 23 months, with a range of 12 to 46 months. All implants with functioning pontics remained stable, with no mobility nor signs or symptoms of pain and infection during the follow-up period. Postoperative radiographic evaluation disclosed no pathologic bone loss around the implants. Neurosensory evaluation was performed using the two-point discrimination test. One patient with unilateral transposition had objective neurosensory dysfunction at 12 months postoperative, although all the nerve function were reported as normal by the patients. Strict patient selection criteria are necessary, with full awareness by the patient of the possibility of long-term or even permanent nerve paresthesia, when this procedure is contemplated.

Mental nerve function after inferior alveolar nerve transposition for placement of dental implants.

Morrison A, Chiarot M, Kirby S.


Abstract

BACKGROUND:

One option for successful placement of dental implants in an atrophic posterior mandible without injury to the inferior alveolar nerve (IAN) is to transpose or lateralize the nerve. This procedure carries the risk of numbness along the distribution of the nerve, the complication that the procedure is undertaken to avoid in the first place. The purpose of the present study was to assess mental nerve function after transposition of the IAN.

METHOD:

We determined the outcomes of 20 IAN transposition procedures in 12 consecutive patients at the Queen Elizabeth II Health Sciences Centre in Halifax, Nova Scotia. The study included objective testing of sensory nerve function as well as subjective assessment by the participants.

RESULTS:

All subjects reported initial transient sensory disturbance. Objective testing after a minimum of 6 months revealed that, for each patient, affected sites had the same level of sensation as
unoperated areas. Eighty percent of the patients said that the lower lip and chin felt normal. The others said that these structures did not feel exactly normal but that the difference was of no consequence.

**CLINICAL SIGNIFICANCE:**

It is concluded that IAN transposition can be safely and predictably performed with low risk to the mental nerve sensibility.

⇒ Artikel frei einsehbar:


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**Inferior alveolar nerve transposition in conjunction with implant placement.**

Ferrigno N, Laureti M, Fanali S.


**Abstract**

**PURPOSE:**

The aim of this prospective study was to determine the incidence of neurosensory disturbance and the cumulative survival and success rates of ITI solid-screw implants placed in conjunction with an inferior alveolar nerve (IAN) transposition technique.

**MATERIALS AND METHODS:**

46 ITI implants were placed in 15 patients following transposition of the IAN. In 4 patients nerve transpositioning was performed bilaterally, so a total of 19 IAN mobilization surgeries were performed. Neurosensory dysfunction was objectively evaluated by using light touch (LT), pain (PT), and 2-point discrimination (2-DT) tests. In addition, patients were asked to answer a short questionnaire to investigate individual feelings of discomfort and advantages related to this surgical technique. The mean follow-up period was 49.1 months (range, 12 to 78 months).

**RESULTS:**

The cumulative implant survival and success rates were 95.7% and 90.5%, respectively. Only 2 implants were lost. Neurosensory disturbance (ie, disturbance registered by the LT, PT, and 2-DT tests) was experienced in 4 of 19 cases. However, at the time of data analysis (12 to 78 months after surgery), all patients indicated that they would go through the surgery again.

**DISCUSSION:**

The IAN transposition technique, when used in the severely atrophied posterior mandible, allowed placement of implants with adequate length and good initial stabilization. All patients felt that they had received significant benefits from their new prostheses.

**CONCLUSION:**
Based on the results of the present study, it can be concluded that lateral nerve transposition can be used as a surgical procedure to enable ITI implant placement in the severely resorbed posterior mandible.

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**Inferior alveolar nerve transposition--an in vitro comparison between piezosurgery and conventional bur use.**

Metzger MC, Bormann KH, Schoen R, Gellrich NC, Schmelzeisen R.


**Abstract**

An in vitro comparison between a new ultrasound-based piezoelectric device and a conventional bur was performed for lateralization or transposition of the inferior alveolar nerve to evaluate the effects on soft and hard tissue. Transposition of the inferior alveolar nerve was performed in the cadaver mandibles of 10 sheep: the left nerve was uncovered with a saline-cooled diamond-coated spherical bur (2000 rpm), and the right nerve was uncovered with the piezoelectric device mounted with a spherical diamond tip. The surface, the zone of bone defect, and the nerve were examined by light microscopy and laser microscopy. Bone treated with the rotary bur showed significantly smoother surfaces and shallower defect zones (50 microm) in comparison with the piezoelectric device (150 microm). Lesions of the epineurium and an increased amount of bone particles were found in the lesions prepared with the piezoelectric device. In vitro preparation with the piezoelectric device was more invasive to the bone than was a conventional diamond bur. Touching the inferior alveolar nerve resulted in roughening of the epineurium without affecting deeper structures. The degree of injury was lower than when using the conventional rotary bur.

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**Inferior alveolar nerve transposition with involvement of the mental foramen for implant placement.**

Vasconcelos Jde A, Avila GB, Ribeiro JC, Dias SC, Pereira LJ.


**Abstract**

Inferior Alveolar Nerve (IAN) transposition is an option for prosthetic rehabilitation in cases of moderate or even severe bone reabsorption for patients that do not tolerate removable dentures. The aim of the present report is to describe an inferior alveolar nerve transposition with involvement of the mental foramen for implant placement. The surgical procedure was performed under local anesthesia, by the inferior alveolar, lingual and buccal nerve blocking technique. Centripetal osteotomy was performed, and bone tissue was removed, leaving the nerve tissue free in the foramen area. After that, transsection of the incisor nerve was performed, and lateral osteotomy was started from the buccal direction, toward the trajectory of the IAN. The procedure was concluded, by making use of a delicate resin spatula to
manipulate the vascular-nervous bundle. The drilling sequence for placing the dental implants was performed, and autogenous bone was harvested using a bone collector attached to the surgical suction appliance. After the implants were placed, the bone tissue previously collected during the osteotomies and drilling processes was placed in order to protect the IAN from contact with the implants. The surgical protocol for inferior alveolar nerve transposition, followed by implant placement presented excellent results, with complete recovery of the sensitivity, seven months after the surgical procedure.

 Artikel frei einsehbar:

Inferior alveolar nerve lateral transposition.

Chrcanovic BR, Custódio AL.


Abstract

PURPOSE:
We determined the outcomes of 18 inferior alveolar nerve lateral transposition procedures in 15 consecutive patients. The advantages and disadvantages of this technique are discussed.

RESULTS:
The surgical protocol for inferior alveolar nerve transposition, followed by implant placement, presented excellent results, with complete recovery of the sensitivity within 6 months after the surgical procedure.

DISCUSSION:
Inferior alveolar nerve transposition is an option for prosthetic rehabilitation in cases of moderate or even severe bone reabsorption for patients that do not tolerate removable dentures.

CONCLUSIONS:
It is concluded that inferior alveolar nerve transposition can be safely and predictably performed with low risk to the mental nerve sensibility. Each patient should be advised of the chance of permanent nerve deficit throughout the distribution of the mental nerve. Alternative restorative solutions should also be considered.