International Journal of Research in Medical Sciences
Hidalgo AFA et al. Int J Res Med Sci. 2025 Feb;13(2):837-840
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20250263

Case Report

Aesthetic site development for a restorative- driven implant placement in a young patient with nasopalatal lateralization: a case report

Adriana Fernanda de Anda Hidalgo*, Guillermo Manuel Hernandez Diez de Sollano

Department of Prosthetic and Implantology Dentistry, Universidad la Salle Bajio, Leon, Mexico

Received: 08 January 2025
Revised: 20 January 2025
Accepted: 21 January 2025

***Correspondence:**
Dr. Adriana Fernanda de Anda Hidalgo,
E-mail: adri.dah@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

This case report details the management and importance of site development in the anterior zone in a 22-year-old patient, looking for a good long-term prognosis and aesthetic result. The absence of a central incisor from a young age created an altered nasopalatine conduct that would have impede the placement of an implant. In order to achieve an adequate aesthetics and long-term prognosis, a step-by-step treatment plan was established. The treatment approach included a diagnostic mock-up, periodontal therapy, crown lengthening, nasopalatal lateralization, implant placement and a screw retained crown. The post-operative course showed satisfactory recovery with no complications. This case highlights the effectiveness of a multidisciplinary approach in managing complex anterior zone cases.

Keywords: Case report, Nasopalatal lateralization, Implant

INTRODUCTION

An increase in the demand for aesthetics in dental treatments has risen in modern dentistry. Achieving treatments that restore function, provide the desired aesthetics and have a good future prognosis is only possible by performing interdisciplinary treatments. Dentists must have knowledge of the multiple specialties that must intervene to obtain the desired result.

Dental treatments in the aesthetic zone are a challenge for the dentist, which requires a pre-operative plan.[1] The aesthetic parameters sought in the treatment are: harmonious gingival margin, maintenance of the interdental papilla, preservation of the alveolar ridge, gum color, shape and color of the tooth. These parameters can be evaluated with the pink esthetic score (PES) and white esthetic score (WES).[2]

Single implant rehabilitation in the aesthetic zone is the go-to solution due to the fact that it's a fixed treatment that preserves the dental tissue in adjacent teeth. The placement of unitary implants in the anterior zone is one of the most complex treatments to be performed where it will only be possible if from the beginning there is a systematic treatment plan.[3]

The upper incisor bone anatomy is of high complexity due to its concave anatomy and the location of the incisal foramen, which is the exit of the nasopalatine nerve. A CT scan is required for the diagnosis and planning of bone dimensions to avoid iatrogenesis. Dental implants require at least 1-1.5 mm of marginal bone to achieve a long-term prognosis.[4]

The nasopalatine canal is located behind the central upper incisors with an opening towards the oral cavity called the incisal foramen. The canal can have several anatomical variations, both morphological and dimensional.[5] The nasopalatine foramen contains the nasopalatine nerve, the terminal descendent nasopalatine artery, small salivary glands and connective tissue. These arteries and nerves are responsible of the enervation and vasculation of the anterior plate form canine to canine. The nasopalatine duct

can have many variations from one to four exits and have a diameter ranging from 3.3 mm to 5.5 mm. Within these variations, it has also been observed that 4% of the nasopalatine canals are in an aberrant position, making it difficult to place dental im-plants in this area.[6,7]

Procedures such as enucleation and lateralization of the nerve along with bone regeneration and subsequent implant placement have been treatments that have given favourable results in the short and medium term.[8] These treatments allow the correct three-dimensional placement of the implants. Results have been observed without permanent sequelae such as loss of sensation or pain.[9-11]

This case report is presented to teach the technique performed and the follow-up. of lateralization of the nasopalatine nerve in a young patient.

CASE REPORT

A 22-year-old female patient was admitted to the department of prosthodontics at the Universidad De La Salle Bajio looking for an aesthetic treatment, being her chief complaint, the absence of a central incisor making her uncomfortable with her smile and aesthetics. According to her anamnesis, following a car accident at the age of 14 she lost her central incisor. During the next 8 years she was given an acrylic provisional fixed with orthodontic treatment.

A diagnostic kit was executed, in the extraoral examination no pathologic signs where observed. In the smile analysis and intraoral examination, she presented a gummy smile emphasized with a passive eruption of the maxillary teeth and a gingivitis associated to the orthodontic treatment.

In the cone beam of the left central incisor area, a small vestibular reabsorption could be observed and an altered nasopalatine conduct could be perceived in an aberrant size and position, altering the ridge dimension (4.1 mm). (Figure 1).

In order to achieve an adequate aesthetics and long-term prognosis, a step-by-step treatment plan was established. A screw retained crown was indicated to avoid the preparation of adjacent teeth and long-term predictability. First, the gingivitis was treat-ed with a periodontal therapy and a new removable provisional was fabricated.

Once the gingivitis was treated an aesthetically proportional wax-up was elaborated. A crown lengthening was performed according to the length and form of the mock-up. Repositioning the gingival margins before the implant placement was a key factor to guide the correct position of the implant. (Figure 2).

After a healing period of 8 weeks a second surgery was performed to lateralize the nasopalatine nerve and vessel bundle. The GBR was achieved with a combination of xenograft and allograft that was placed after moving the bundle palatally. Finally, a absorbable (pericardium membrane) was placed and fixed in place with screws and suture. The surgery successfully created the sufficient space for the placement of a nobel.

Following the surgery, a digital impression was taken of the maxillary arch to perform a provisional Maryland of PMMA that would not affect the healing area and would im-prove the aesthetics for the next 6 months. The patient didn´t recall any alteration in the sensation during and after the healing period (Figure 4).

After 6 months, a final surgery was made to place a 3.5 mm Nobel replace implant in de edentulous zone. The surgery was made prosthetically driven to enhance the future placement of the definite screw retained crown. The adjacent teeth gingiva margins determine the depth of the implant.

A one-stage surgery was performed placing a slim healing abutment with a connective tissue graft with the objective to augmentate the soft tissue volume. (Figure 5).

Finally, after 5 months, a screw-retained zirconia crown stratified with porcelain was de-livered. The area was observed with a good amount of keratinized tissue and an im-plant surrounded by bone, resulting in acceptable aesthetics and function during the 2 years of follow-up. (Figure 6).

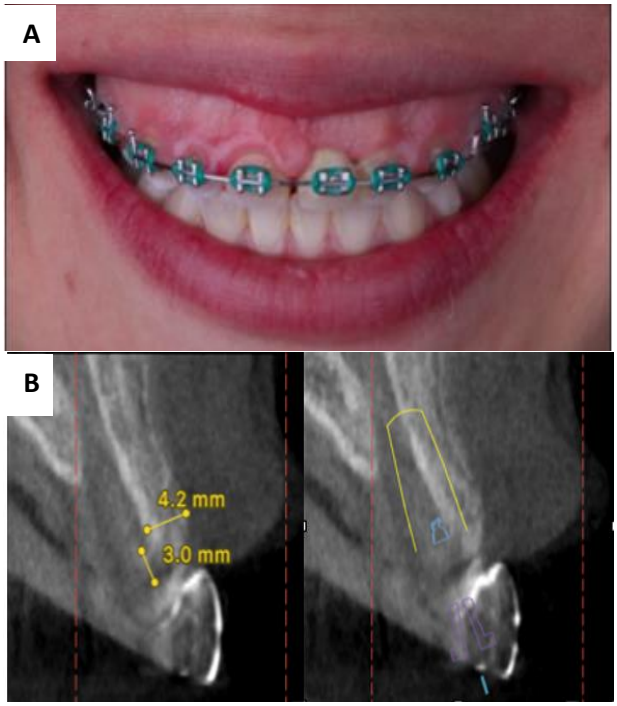

Figure 1: (A) A preoperative photograph. A gummy smile is emphasized with a passive eruption of the maxillary teeth and a gingivitis associated to the orthodontic treatment. (B) A CT scan shows the aberrant position of the nasopalatine nerve.

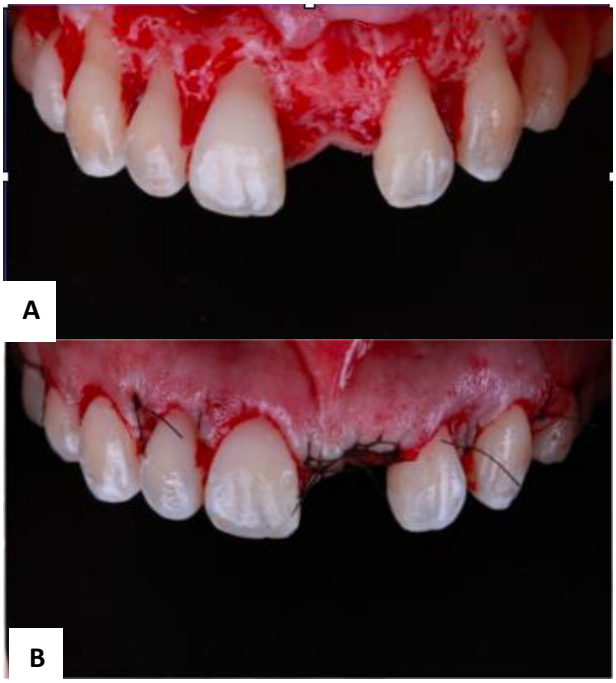

Figure 2: (A, B) Repositioning the gingival margins and suture.

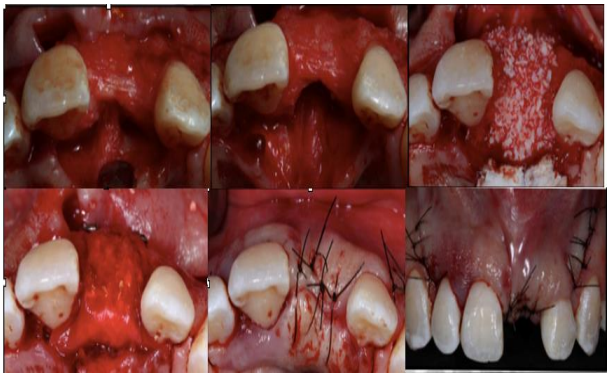

Figure 3: Palatal reposition of the nasopalatine nerve and vessel bundle followed by GBR with xenograft and allograft covered with a pericardium membrane.

Figure 4: Maryland provisional during healing period.

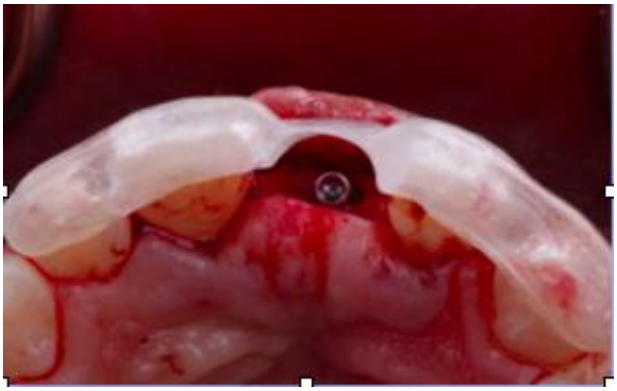

Figure 5: Nobel implant placement with semi restrictive guide and placement of slim healing abutment.

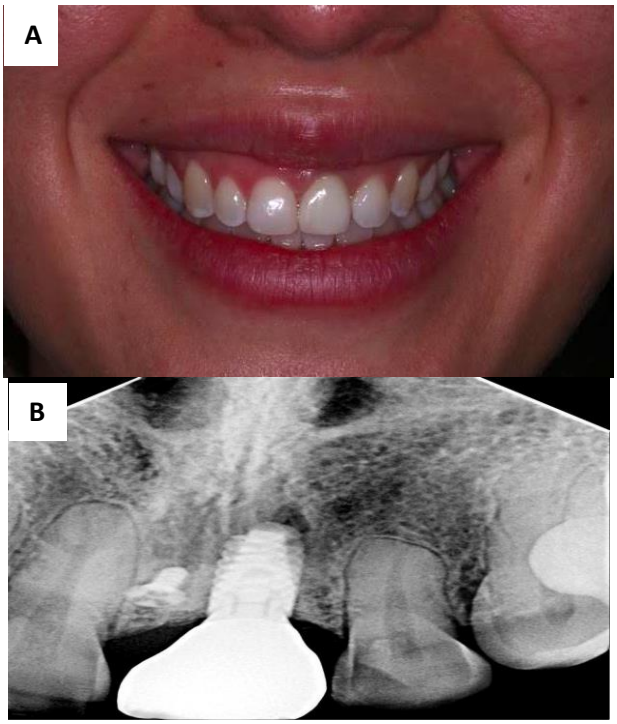

Figure 6: Final foto of screw retain zirconia crown with 2-year radiographic follow-up.

DISCUSSION

Implant placement planning in the central incisor area needs to be analysed rigorously. The potential complications due to the fact of the ridge concavity, roots position, thin gingival phenotype, alveolar process resorption and incisive foramen can put in peril the implant placement. In 4% of the studied edentulous sites an aberrant position of the nasopalatine nerve was interfering in the implant position.[8] Prosthetic driven im-plant position is crucial to obtain an optimal functional and aesthetic prothesis so the treatment plan should begin with a mock-up or provisional that will provide the new gingival margin. In this case the complication of positioning the implant incorrectly due to the morphology

and position of the nasopalatine canal was avoided by a partial lateralization of the nasopalatine nerve and vessel bundle. A palatal flap was retracted following authors recommendations exposing the nasopalatine canal and vessel bund-le for a better visualization.[9] In the present report bone chips where inserted and gently packed in the foramen with no complications.

Other approach by doctor Zvi Artzi recommend inserting a corticocacellous block with no complications but our patient didn't want a surgery for the donor site.[8,9] This foramen displacement facilitate the insertion of the implant and will benefit the long-term prognosis in such a young patient, giving the implant the necessary bone and soft tissue support.[10] The reposition of the nasopalatine canal proved to be a safe and satisfied approach with no sensory disorders, even some authors only found sensory alteration during the first week after surgery that transform in normal sensation afterward.[12]

CONCLUSION

This case demonstrates the effectiveness of a multidisciplinary approach in managing an aberrant nasopalatine nerve. The successful combination of a treatment plan and surgical treatment highlights the importance of a collaborative management strategy involving both soft and hard tissue. Regular follow-up is crucial to ensure favourable long-term outcomes.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Spear FM, Kokich VG. A multidisciplinary approach to esthetic dentistry. Dental clinics of North America. 2007;51(2):487.
2. Lai HC, Zhang ZY, Wang F, Zhuang LF, Liu X, Pu YP. Evalua-tion of soft-tissue alteration around implant-supported single-tooth restoration in the anterior maxilla: the pink esthetic score. Clin Oral Implants Res. 2008;19(6):560–4.
3. Buser D, Martin W, Belser UC. Optimizing aesthetics for implant restorations in the anterior maxilla: anatomic and surgical considerations. The Int J Oral & Maxillofac Impl. 2004;19:43–61.
4. Levine RA, Ganeles J, Gonzaga L, Kan JK, Randel H, Evans CD, et al. 10 Keys for successful aesthetic zone single immediate implants. Compendium of continuing education in dentistry. 2017;38(4):248-60.
5. Nevins M, Camelo M, De Paoli S, Friedland B, Schenk RK, Parmabenfenati S, et al. A study of the fate of the buccal wall of extraction sockets of teeth with prominent roots. Int J Periodon Rest Dent. 2006;26(1):19-29.
6. Mraiwa N, Jacobs R, Van Cleynenbreugel J, Sanderink G, Schutyser F, Sue-tens P, van Steenberghe D, et al. The nasopalatine canal revisited using 2D and 3D CT imaging. Dento Maxillo Facial Radiol. 2006;33(6):396–402.
7. Kraut RA, Boyden DK. Location of incisive canal in relation to central incisor implants. Implant Dent. 1998;7(3):221–5.
8. Artzi Z, Nemcovsky CE, Bitlitum I, Segal P. Displacement of the incisive foramen in conjunction with implant placement in the anterior maxilla without jeopardizing vitality of nasopalatine nerve and vessels: a novel surgical approach. Clinical oral implants research. 2001;11(5):505–10.
9. Rosenquist JB, Nyström E. Occlusion of the incisal canal with bone chips. A procedure to facilitate insertion of implants in the anterior maxilla. Int J Oral Maxillofac Surg. 1992;21(4):210–11.
10. Scher EL. Use of the incisive canal as a recipient site for root form im-plants: preliminary clinical reports. Implant Dent. 1992;3(1):38–41.
11. Filippi A, Pohl Y, Tekin U. Sensory disorders after separation of the nasopalatine nerve during removal of palatal displaced canines: prospective investiga-tion. The British J Oral Maxillofac surg. 1992;37(2):134–6.
12. Peñarrocha M, Carrillo C, Uribe R, García B. The nasopalatine canal as an anatomic buttress for implant placement in the severely atrophic maxilla: a pilot study. Int J Oral Maxillofac Impl. 2009;24(5):936–42.

Cite this article as: Hidalgo AFA, Sollano GMHD. Aesthetic site development for a restorative- driven implant placement in a young patient with nasopalatal lateralization: a case report. Int J Res Med Sci 2025;13:837-40.