



Clinical Benefits of Nasopalatine Implant for Full Maxillary Arch – Case Series

Angela Vida Kalaw, Amelotti Marco Vinattieri, Yung Cheng Paul Yu, Stuart Froum, Sang-Choon Cho, Leena Palomo
Ashman Department of Periodontology and Implant Dentistry, New York University, College of Dentistry



INTRODUCTION

Dental implants have been documented to be highly successful and a predictable option to restore partial or complete edentulism. For full arch cases, a transition from dentulous to edentulous is challenging not only functionally and esthetically, but also emotionally especially in the maxillary arch. There are three options to treat patients that require the transition to full arch implant-supported restorations: immediate loading, serial extractions, and immediate dentures.

Immediate loading cases can be restricted because it requires good quality and amount of bone to achieve ideal primary stability and even occlusal load distribution. Serial extractions, which extract part of the arch, use some remaining teeth as abutments during the healing period of the implants placed at the other edentulous site. Then the implants are connected to the provisional after extraction of the remaining teeth. However, it takes a long time to complete the treatment and requires the remaining teeth to be stable and healthy to support the fixed provisional during the healing phase of implants. For immediate dentures, patients complain of discomfort due to their removable nature and retention problems. Oftentimes, patients refuse to remove several remaining anterior teeth to fabricate an immediate denture because patients are emotionally too attached to their teeth.

Placement of an implant in the nasopalatine canal allows patients to keep their anterior teeth during the

osseointegration phase of the posterior implants with or without sinus augmentation. Then on the day of the extraction of the remaining anterior teeth, a fixed full-arch maxillary implant provisional restoration can be given to the patient utilizing the nasopalatine canal implant.

Several authors have described using the nasopalatine canal implant when rehabilitating patients with an atrophic maxilla using implant-supported prostheses. Peñarrocha et al. (2012) showed 100% success rate in a case series for fixed full-arch prosthesis utilizing nasopalatine canal implant. Urban et al. (2015) also showed 100% success rate in a longitudinal study of 4 years follow-up for the nasopalatine canal implant with horizontal and/or vertical graft. The bone remaining around the nasopalatine canal usually provides enough support to enhance the biomechanics of the implant-supported prosthesis.

In this case series, a strategic sequential treatment is proposed using four implants in the posterior maxilla with bilateral sinus lifts and a transitional implant in the nasopalatine canal to provide enough anterior support to enhance the biomechanics of a fixed full-arch provisional restoration. The advantages and limitations of this treatment will be discussed from the result of eight nasopalatine implants placed utilizing a flapless surgical procedure from a total of eight patients with follow-up period of 2 to 10 years.

CASE REPORT

Case 1

A 66 year old man presented to the Ashman Arthur Department of Periodontology and Implantology, College of Dentistry, New York University, New York. The patient requested to have a fixed prosthesis for the maxillary. The patient had good general health without any systemic or local contraindications to oral surgery. The patient had fair oral hygiene and quit smoking a year ago. In the intraoral examination, the patient had missing maxillary posteriors, showed evidence of active carious lesions, and the remaining teeth presented severe attachment loss and mobility indicated for extractions. The treatment plan was to place seven implants in the maxilla including the nasopalatine implant, and restore with a fixed prosthesis. Implants were placed (4.0 x 13mm Branemark System Mk III TiUnite) at the edentulous posterior sites (#3, 4, 13, and #14) with bilateral sinus augmentation. However, the patient was reluctant to extract his other anterior teeth due to esthetics. Hopeless maxillary right canine (#6) was extracted and an immediate implant (4.0 x 13mm Branemark System Mk III TiUnite) was placed with mineralized cortical small particulate xenograft (BioOss, Geistlich). On the same day, an implant was placed (4.0 x 11.5mm Nobel Speedy Replace) at the nasopalatine canal keeping the remaining anterior teeth.

After 5 months of healing period, the remaining anterior teeth were extracted and a lab made full arch screw retained provisional was connected to the implants. The patient was satisfied with the fact that he didn't have to experience edentulous in the maxillary anterior site and also didn't have to use a removable prosthesis as a provisional.

After healing of the maxillary anterior extraction sites, the last implant (4.0 x 13mm Branemark System Mk III TiUnite) was placed at maxillary left canine (#11). After 3 months of healing period, the final screw retained restoration was fabricated and delivered. The patient was satisfied with function and esthetics.

Case 2.

A 47-year-old man presented to the Ashman Arthur Department of Periodontology and Implantology, College of Dentistry, New York University, New York. His chief complaint was "my teeth are hopeless, I need implants," he requested to have a fixed prosthesis. The patient reported being a former smoker; he

stopped after he started receiving treatment with a periodontist five years ago. The patient presented with an unremarkable health history, had no known allergies, and rarely consumed alcohol. In the intraoral examination, the patient had several missing teeth, showed evidence of arrested carious lesions, and the remaining teeth presented severe attachment loss and mobility and were deemed hopeless. The treatment plan was to place six implants in the maxilla and six implants in the mandible for fixed full mouth restoration.

The patient went through with the treatment in the mandible but was reluctant to extract the maxillary anterior teeth and be edentulous. The six hopeless anterior teeth (#6 to #11) were temporarily retained to hold the partial maxillary denture, used during the healing of the bilateral sinus lifts and implant placements in the posterior maxilla. The patient understood that the nasopalatine implant would be transitional and will help to give him a fixed restoration during the healing period after the extractions of the remaining hopeless teeth.

Case 3

A 50 year old man presented to the Ashman Arthur Department of Periodontology and Implantology, College of Dentistry, New York University, New York. The patient requested to have a fixed prosthesis for the maxillary and mandibular edentulous area. The patient had good general health without any systemic or local contraindications to oral surgery. The patient had fair oral hygiene and previous history of smoking. In the intraoral examination, the patient had several missing teeth with a six-unit bridge on the maxillary anterior canine to canine. The patient also had a screw-retained implant crown on the maxillary right first molar #3. The remaining teeth showed evidence of carious lesions with severe attachment loss and mobility and thus were deemed hopeless. The treatment plan was to place eight implants in the maxilla for fixed full arch restoration.

SEQUENCE OF PROCEDURE

Pt No	Age	Gender	Final PRTH type	Screw/Cement	Temporary/Permanent	Loading time (Yr)
1	64	F	FFPFM	S	T/P	10
2	74	M	FFPFM	S	T	8
3	55	M	FFPFM	S	T/P	5
4	56	M	FFMZR	S	T/P	5
5	58	M	FFPFM	S	T/P	5
6	62	F	FFPFM	S	T/P	4
7	64	F	FFPFM	S	T/P	4
8	51	M	FFPFM	S	T/P	2

CONCLUSION

Placement of an implant in the nasopalatine canal allows patients to have a fixed full-arch provisional restoration on the day of the anterior teeth extraction with a stable anteroposterior spread of occlusal load. The case series of eight nasopalatine implants placed utilizing a flapless surgical procedure showed a 100% success rate without complications for a follow-up period of 2 to 10 years. Therefore, a flapless surgical procedure to place an implant in the nasopalatine canal should be considered a viable treatment option for staged fixed full-arch maxillary implant restorations. Further follow-up and additional studies are required to determine the predictability of the approach used in this case series.

REFERENCES

- Jimbo R, Albrektsson T. Long-term Clinical Success of Minimally and Moderately Rough Oral Implants: A Review of 71 Studies With 5 Years or More of Follow-up IMPLANT DENTISTRY / VOLUME 24, NUMBER 1 2015.
- Albrektsson T, Dahl E, Enbom L, et al. Osseointegrated oral implants. A Swedish multicenter study of 8139 consecutively inserted Nobelpharmaimplants. J Periodontol. 1988; 59:287-396.
- Degidi M, Piattelli A. A 7-year follow-up of 93 immediately loaded titanium dental implants. Journal of Oral Implantology. 2005 Feb;31(1):25-31.
- Peñarrocha D, Candel E, Guirado JL, Canullo L, Peñarrocha M. Implants placed in the nasopalatine canal to rehabilitate severely atrophic maxillae: a retrospective study with long follow-up. Journal of Oral Implantology. 2014
- Waasdorp J. Enucleation of the incisive canal for implant placement: a comprehensive literature review and case report. Journal of Oral Implantology. 2016 Apr;42(2):180-3.
- Villa R, Villa G, Del Fabbro M. Immediate Postextraction Screw-Retained Partial and Full-Arch Rehabilitation: A 3-Year Follow-up Retrospective Clinical Study. International Journal of Periodontics & Restorative Dentistry. 2018 Sep 1;38(5).
- Bakshi M, Tarnow D, Bittner N. Changes in Ridge Dimension with Pontics Immediately Placed at Extraction Sites: A Pilot Study. International Journal of Periodontics & Restorative Dentistry. 2018 Jul 1;38(4).