Case study 59

Rehabilitation of a patient with congenital edentulism of the lateral maxillary incisors using Alpha-Bio Tec's NICE dental implants

Dr. Yuri Vladimirovich Chepurnoy
Dr. Dmitriy Aleksandrovich Filonenko

AlphaBio TEC
Simplantology

Rehabilitation of a patient with congenital edentulism of the lateral maxillary incisors using NICE dental implants manufactured by the Alpha-Bio Tec

Authors

Dr. Yuri Vladimirovich Chepurnoy
Physician, dental surgeon, assistant professor in the Department of Dentistry at A.A. Bogomolets National Medical University, Candidate of Medical Sciences

Dr. Dmitriy Aleksandrovich Filonenko
Physician, dental orthopedist, “Formula Zdorovya” Dental Center

Abstract

The treatment of patients with congenital edentulism of the lateral maxillary incisors is a big challenge for an oral and maxillofacial surgeon. This is directly caused by several factors; the deficit of bone thickness and width around missing teeth, prior restorative treatment, adjacent root divergence, and coronal space asymmetry in teeth to be restored.
In our report, we will analyze a case of a 23-year-old patient with congenital edentulism at 12 and 22 teeth which has been treated with two Alpha-Bio Tec's NICE implants after a course of orthodontic treatment.

Case Description

A 23-year old male patient, with congenital edentulism of teeth 12 and 22, wished to improve his esthetics in the anterior zone. The patient doesn't smoke and is in good general health, without any revealed somatic pathology and without any known allergies.

Patient wishes - creation of teeth 12, 22 supported by dental implants. The patient was presented with the possibility of removable prosthesis, as well as the possibility of creating adhesive dental prostheses, however he has insisted on a fixed restoration supported by dental implants. The possibility of performing bone augmentation was limited by the bone condition, previously performed orthodontic treatment, and by limited interdental space.

At the time of the initial clinical examination, the patient had metal braces. Permission from the orthodontist was obtained before initiating treatment using implants.

Occlusion: Class-I skeletal malocclusion, dentoalveolar - Class I for molars and canines on both sides, palate is within normal range.

Soft tissues: tongue, oral mucosa and oral cavity are without visible pathological changes, salivation is normal, vestibule of the mouth is normal, no ulemorrhagia or periodontal pockets observed. (Pic. 1-4)

1 Initial clinical condition. Dental occlusion.

2 Initial condition of defect in tooth 12

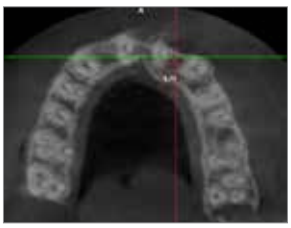
3 Initial condition of defect in tooth 22

4 Occlusal view of the maxilla

X-ray findings

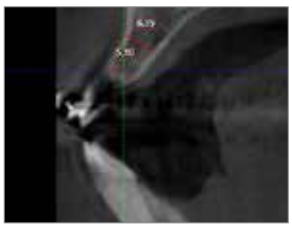
The distance from the alveolar crest to the nasal cavity at 22 is more than 19 mm, and at 12 the distance is around 20 mm.

The (minimum) width of the alveolar ridge for tooth 21 is 5.1 mm, and for tooth 12 the distance is 5.1 mm. Midradicular distance (minimum distance in the apical third) at 12 is 4.2 mm, and at 21 the distance is 4.3 mm.

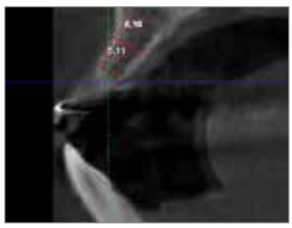


5 Initial space excess between teeth 21-23 (in the mid third of the root)

6 Initial space excess between teeth 11-13 (in the upper third of the root)



7 The width of the alveolar bone in the position of tooth 22



8 The width of the alveolar bone in the position of tooth 12

9 Panoramic radiograph

Treatment Plan

Based on the clinical evaluation of the patient and the results of conical computed tomography, the treatment plan includes a restoration of teeth 12 and 22 with the use of Alpha Bio Tec NICE implants (L11.5mm) in a conventional 2-phase treatment protocol.

After implant installation, the orthodontic correction of tooth 23 will be performed to reduce the size of the crown for 22 and attain symmetry (Pic. 10-11).

10 Planning removable prosthesis on the model in the original anatomical conditions

11 Excess of the interdental space in tooth 22

The patient underwent a restoration using standard NICE abutments with insignificant orthodontic loading on the adjacent tooth with an implant at 22. During implant integration, temporary restoration was performed using arch wire braces to control the shifting of the adjacent teeth (Pic. 12-15).

A removable prosthesis was installed using NICE platform standard abutments in conditions of insignificant orthodontic load on the adjacent tooth with implant in position 22. During the integration period of the implants, temporary restoration was used on the orthodontic arch for the purpose of controlling the displacement of adjacent teeth (Pic. 12-15).

The second phase was conducted six months after the surgery. A permanent prosthetic was manufactured ten days after the second stage.

12 Temporary restoration fixated to the adjacent teeth

13 Side view tooth 12. Temporary restoration

14 Side view tooth 22. Temporary restoration

15 Occlusal view of temporary restoration

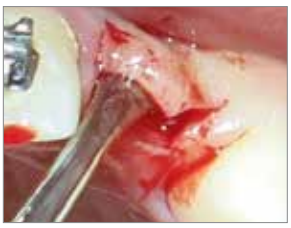
Materials in use

- NICE L 11.5mm
- Healing abutments HSD3.4-3-CHC, HSD3.4-5-CHC
- Esthetic Angled Titanium Abutments ETLAL15 - CHC

Surgical phase

Anesthesia: bilateral infraorbital and incisal.
Grafts: vestibular, trapezoidal. Subcrestal implant installation was conducted with torque up to 20 N/cm using a surgical template.
Bone drilling protocol (D2 bone): 2.0-2.8.
The incision was sutured using U-shaped sutures (surgical stages in Pic. 16-24).

16 Installed NICE implant in position 12



17 Flap elevation in tooth 22

18 Bone width in tooth 22

19 Marking an implant position with prosthesis template

20 Pilot drill in socket 22

21 Tooth 22 prepared socket

22 NICE installation

23 First part of NICE installation

24 Suturing

The second stage was conducted six months later (Pic. 25-29).

25 Healing abutment on tooth 12

26 Healing abutment on tooth 22

27 Occlusal view with healing abutments

28 Socket 12 prior impression taking

29 Sockets 12 and 22 prior impression taking

Impressions were obtained using the open tray impression technique seven within seven days from the second stage surgery (Pic. 30).

30 Open tray transfers fixated to the implants prior impression taking

At the lab stage, abutments were milled, 15° esthetic abutments were attached with torque up to 20 N/cm as required in the IFU. (Pic. 31-33).

31 Abutment loading tooth 22

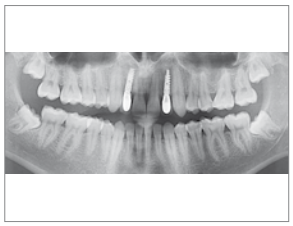
32 Abutment loading tooth 12

33 Final restoration 6 months after implantation. Tooth 12

Permanent restoration: Metalloceramic crowns were manufactured on direct esthetic abutments. Post-prosthesis results are given in pictures 34-36.

34 Final restoration 6 months after implantation. Tooth 22

35 Smile line. Frontal view of permanent restoration



36 Permanent restoration X-ray

Conclusions

In this case, the use of Alpha-Bio Tec's NICE implants allowed us to effectively restore a dental arch in an area of thin alveolar ridge without conducting an osteoplastic procedure. The use of Alpha-Bio's narrow NICE implants is an effective restoration technique for patients with partial edentulism, especially in bone deficit in combination with adjacent root divergence. In many similar clinical cases it may become a method of choice.

Alpha-Bio Tec Ltd.
7 Hatnufa St., P.O.B. 3936. Kiryat Arye,
Petach Tikva 4951025, Israel
T. +972.3.9291000
F. +972.3.9235055
sales@alpha-bio.net

MEDES LIMITED
5 Beaumont Gate, Shenley Hill
Radlett, Herts WD7 7AR. England
T./F. +44.192.3859810

International
T. +972.3.9291055
F. +972.3.9291010
export@alpha-bio.net

www.alpha-bio.net

995-8351 R1/05.16