

Multidisciplinary Approach in Oral Rehabilitation of a Patient with Hypodontia: Case Report

Hipodontili Bir Hastanın Oral Rehabilitasyonunda Multidisipliner Yaklaşım

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ABSTRACT Patients with hypodontia often need complex prosthetic treatments. The options for a definitive treatment plan may include fixed, removable, or implant-supported prosthesis, singly or in combination. This clinical report describes the orthodontic, surgery and prosthodontic rehabilitation of a 26-year-old male patient diagnosed with hypodontia. A combined dental therapy approach was used and included orthodontic therapy of the maxillary central incisors, dental implants insertion on the maxillary first premolars and mandibular left premolar space, and fixed partial dentures. Functional and esthetic results were achieved.

Key Words: Dental implants; anodontia; dental prosthesis, implant-supported

ÖZET Hipodontili hastalar sıklıkla karmaşık protetik tedavilere ihtiyaç duyarlar. Tedavi planı için seçenekler tek başına veya kombine olarak sabit, hareketli veya implant destekli protezleri içerebilir. Bu olgu sonumu, 26 yaşındaki hipodontili erkek hastanın ortodontik, cerrahi ve protetik rehabilitasyonunu tanımlamaktadır. Üst çene santral kesici dişlerin ortodontik tedavisi, üst çene her iki birinci premolar ve alt çene sol premolar bölgeye dental implantların yerleştirilmesi ve sabit bölümlü protezlerin uygulanmasını içine alan genişletilmiş dental tedavi yaklaşımı uygulandı. Hasta tarafından kabul gören fonksiyonel ve estetik sonuçlar elde edildi.

Anahtar Kelimeler: Diş implantları; anodonti; diş protezi, implant destekli

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Hypodontia is the developmental absence of 1 or more teeth.¹ Oligodontia is the term conventionally used in cases where 6 or more teeth are missing and anodontia, a much more rare finding, describes the developmental absence of all teeth.² The prevalence of hypodontia in the primary dentition ranges from 0.08% to 1.55%.¹ The etiology of hypodontia is unknown; however, a definite familial trend has been reported.³⁻⁵ Brook suggests that most cases of hypodontia have a polygenetic inheritance pattern and that the risk of relatives having hypodontia will depend on a combination of numerous genetic and environmental factors, each with a small effects.⁵

Hypodontia is a condition for which patients require extensive and complex treatments, ranging from single restorations to surgery and multiple restorations, coupled with lifelong maintenance.^{6,7} While some aut-

horses believe that the etiology of hypodontia is largely unknown, others advocate either genetic factors such as hemoglobin SC or environmental factors such as exposure to dioxins during tooth development as the basis of the condition.^{5,8,9}

It has been reported that along with tooth agenesis, there may be either deviant nerve canal courses and conditions, such as reduced width and height of bone, inclination of adjacent teeth, and supra-eruption of antagonist teeth.^{10,11}

The physiologic and psychosocial value of prosthetic dental treatment in patients with hypodontia has been emphasized. Unfortunately because of the reduced number of teeth, patients also present with problems related to occlusal vertical dimension and esthetics.^{12,13} Furthermore, as a result of the limited tooth structure remaining, these patients may require extensive restorative and prosthetic treatment to regain appropriate function, esthetics and comfort. Such needs can create a challenging treatment situation. Financial constraints and/or other priorities may restrict patients from choosing the most desirable treatment.¹²

Patients with this disease often need a multidisciplinary approach to treatment planning and dental treatment to regain appropriate function, aesthetics and comfort. Prosthodontic rehabilitation can be accomplished with fixed, overdenture, complete, or implant-retained prostheses and/or a combination of these options. Depending on the remaining available alveolar bone and the pattern of missing teeth, the ideal treatment option for an adult patient with hypodontia often includes the use of implants.¹⁴⁻¹⁸

This clinical report describes the rationale and treatment of a patient with hypodontia using orthodontics, implants and metal-fused ceramic fixed partial dentures.

CASE REPORT

The patient was a 26-year-old man. His dental history included hypodontia with a mixed dentition of primary and secondary teeth. Small conical teeth, retained deciduous teeth (maxillary second molars, mandibular canines and first molars), loss of vertical dimension of occlusion, and underdeveloped alveolar ridges were detected on oral examination (Figure 1a, 1b, 1c) In the mandible, all of the anterior permanent teeth were missing. A review of the medical and dental history revealed no significant medical findings, and parents denied knowledge of any condition linked to the hypodontia. Informed consent was obtained from patients. So that maxillary central incisors were corrected, the patient had completed a full course of orthodontic treatment 6 months prior to prosthodontic treatment (Figure 2).

First, maxillary deciduous first molars and mandibular left deciduous first molar were extracted by reason root resorption. Several treatment options were presented to the patient to develop a functional and esthetic dentition. The patient preferred fixed partial denture and implants. Due to the limited bone width associated with the mandibular anterior and maxillary lateral incisors edentulous region, an implant-supported restoration was not an option. With these findings, an FPD was the only restorative solution for the missing mandibular and maxillary teeth. It was determined that the



FIGURE 1 a, b, c: Intraoral view before pretreatment.
(See for colored form <http://dishekimligi.turkiyeklinikleri.com/>)



FIGURE 2: Corrected central incisors after orthodontic treatment.
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maxillary first premolars and mandibular left premolars could be replaced with 4.1 mm ITI Dental Implant system (Straumann AG, Waldenburg,

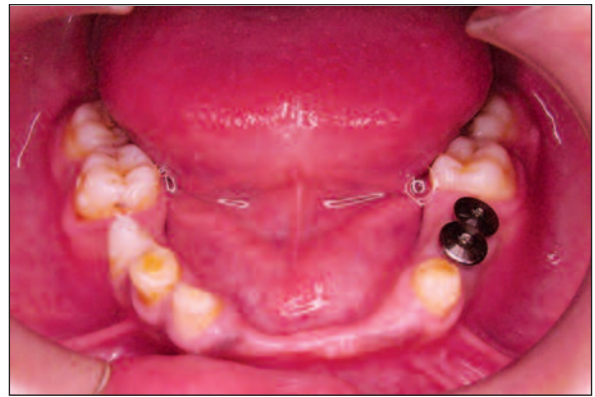
Switzerland), metal abutments and metal-ceramic restorations.

The ITI Dental Implants were placed using a surgical guide in the mandibular premolars spaces and maxillary first premolars spaces, and were allowed to integrate for 4 months prior to the reconstruction (Figure 3a, 3b, 4a, 4b).

Teeth preparations were completed with a moderate chamfer margin. An closed-tray impression of the abutment copings and prepared teeth was made with vinyl polysiloxane impression material (Elite H-D, Zhermack, Italy) (Figure 5a, 5b). After metal-ceramic restorations were completed, at insertion, the healing abutments were removed and custom abutments were placed and secured using 35-N cm torque.



a
FIGURE 3: **a-** Maxillary implants, **b-**mandibular implants.
(See for colored form <http://dishekimligi.turkiyeklinikleri.com/>)



b



a
FIGURE 4: **a-**Before treatment panoramic radiography, **b-** after set the ITI implants panoramic radiography.



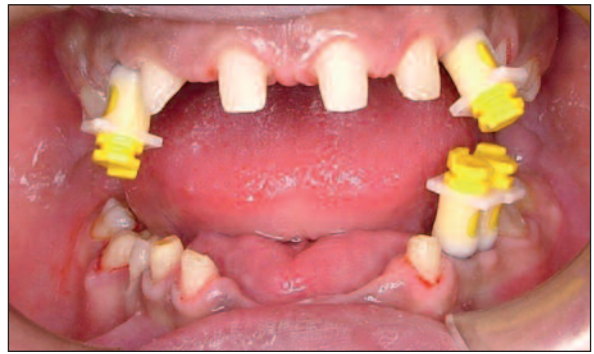
b



a

FIGURE 5 a- Prepared teeth and metallic abutments of implants, **b-** set the ITI impression cups before impression was made.

(See for colored form <http://dishekimligi.turkiyeklinikleri.com/>)



b

Metal-ceramic restorations were placed onto abutments to verify marginal integrity, occlusal relationships, and esthetic results. The metal-ceramic restorations were cemented onto the implant and teeth abutments. For the first year after treatment, the patient was followed for routine hygiene and assessment of long-term outcome. The patient acknowledged having improved function and esthetics, and was pleased with the results (Figure 6a, 6b).

DISCUSSION

Hypodontia, microdontia, supernumerary teeth and megadontia tend to be associated, and a number of researchers have proposed explanations for these associations.^{5,7,19}

Kjaer and co-workers suggest that the wide variation in the presentation of hypodontia imply that the etiology is different for each case.²⁰ They propose that, in cases of ectodermal dysplasia and Ellis van Crevald syndrome, the oral mucosa and

supporting structures have a role in the etiology of hypodontia. In our case, hypodontia was detected, but no family history of hypodontia could be found to support a genetic basis for this patient's presentation.

Patients afflicted with partial anodontia, the congenital absence of one or more teeth, are a significant treatment challenge for the restorative dentist.^{7,21} Depending on the severity of the condition, various prosthodontic treatments are available to improved appearance, mastication and speech.²²

Well-supported teeth with relatively normal anatomy can be restored with a fixed partial denture with excellent results.²¹ Also, the use of osseointegrated implants to aid in restoring missing teeth has become the treatment of choice for patients with all forms of hypodontia.^{6,23}

Extensive prosthodontic treatment in growing individuals should preferably be performed



a

FIGURE 6 a, b: Definitive restorations.

(See for colored form <http://dishekimligi.turkiyeklinikleri.com/>)



b

with a multidisciplinary team approach. In the treatment that is planned and performed over long periods, this approach has the advantages of continuity and shared responsibility for therapy decisions.^{14,24,25}

In this case report, a multidisciplinary team approach, which included an orthodontist, an oral

surgeon and a prosthodontists, in the treatment of a patient with hypodontia was discussed. The orthodontic and prosthodontic treatment sequence, and successful therapy of an implant associated with no failure was presented.

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