

# Prosthodontic Treatment Of A Patient With Ectodermal Dysplasia: A Case Report

I Sarikaya, A Güler

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## Abstract

Ectodermal dysplasia (ED) is a rare, congenital disease that involves the physical signs of the sweat glands, scalp hair, nails, skin pigmentation, and craniofacial structure. Oral symptoms of ED include multiple tooth abnormalities (such as hypodontia, anodontia, impacted teeth, and peg-shaped or conical anterior teeth) and lack of normal alveolar ridge development. A 13-year-old male patient, in the absence of any other systemic abnormalities, exhibited typical characteristics of ED, visited our department. In the clinical and radiographic evaluation, it was occurred that he had only maxillary cone shaped canine teeth in his mouth. A maxillary coping-retained overdenture and a complete mandibular denture were fabricated for prosthodontic rehabilitation after considering his growth and the number, and condition of his present teeth. At the 18-month follow up no major complications occurred.

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## INTRODUCTION

Ectodermal dysplasia have been described as a group of disorders of morphogenesis displaying 2 or more of the symptoms of trichodysplasia, dental anomalies, onychodysplasia, and dyshidrosis (1). It is usually described as being hypohidrotic or hidrotic, depending upon the degree of sweat gland function. Congenital malformation of teeth, hair, nails, or sweat glands may occur either as single isolated malformations or as a part of an ectodermal dysplasia syndrome.

Anhidrotic ectodermal dysplasia is considered to be a triad of hypodontia or anodontia, hypotrichosis, and hypohidrosis, and associated with other components that result from defective development of structures of ectodermal origin (2). Anhidrotic ectodermal dysplasia is X-linked condition, and is found in all races, with an incidence of 1-7 per 100.000 live births (3). Affected males usually have prominent supraorbital ridges, frontal swelling, thin eyebrow, fine-linear wrinkles, sparse hair, defective nails, and saddle nose (3, 4). Due to the altered anatomy in the lower third of the face, they resemble to edentulous old individuals.

Oral characteristics include complete or partial hypodontia,

anodontia, impacted teeth, loss of vertical dimensions of occlusion, protuberant lips, malformed and peg-shaped or conical teeth, and lack of alveolar growth. Oral symptoms of ED include multiple tooth abnormalities and lack of normal alveolar ridge development can complicate the restoration of an ideal occlusion, especially in a growing child. Lack of alveolar growth frequently results in increased interocclusal distance, which allows optimum artificial tooth placement (5). For rehabilitation, it is crucial to know the age, number and condition of present teeth, and the state of growth of the patient.

## CLINICAL REPORT

A 13-year-old male patient, in the absence of any other systemic abnormalities, exhibited typical characteristics of ED, including fine, sparse hair, thin eyebrow, fine-linear wrinkles, saddle nose, and severe hypodontia (Fig. 1). In the clinical and radiographic evaluation, it was occurred that he had only maxillary cone shaped canine teeth in his mouth (Fig. 2). The present permanent canine teeth were conical and hypoplastic, also loss of vertical dimension on occlusion, and underdeveloped alveolar ridges were detected on oral examination (Fig. 3).

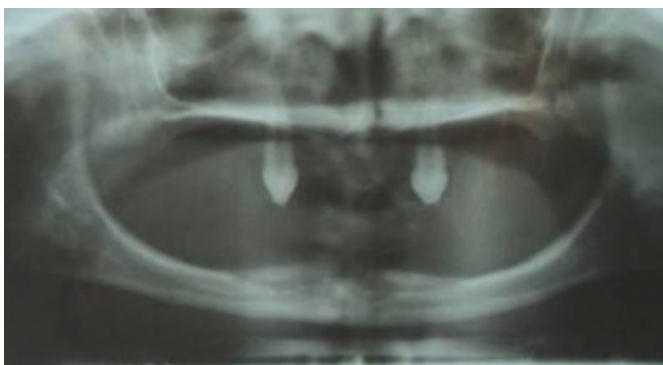
**Figure 1**

Figure 1: Frontal view of the patient



**Figure 2**

Figure 2: Panoramic radiographic evaluation



**Figure 3**

Figure 3: Intraoral view of the present cone shaped maxillary canine teeth



A maxillary coping-retained overdenture and a complete mandibular denture were planned for prosthodontic rehabilitation after considering his growth and the number, and condition of his present teeth. Milled copings were planned for the abutment teeth of the overdenture prosthesis, and therefore maxillary canine teeth were prepared. Because the preparation of parallel walls was difficult, near-parallelism with an angle of convergence or taper of approximately 5 degrees was achieved. The cervical one third of the teeth was prepared to be as parallel as possible to one another. After the teeth were prepared, a definitive impression of the dome-shaped teeth for coping fabrication was made with a custom tray using medium viscosity additional silicone impression material (Elite H-D; Zhermack, Italy). The impressions were cast in type-IV dental stone (BegoStone, Bego, Bremen, Germany), and the definitive casts were mounted in an articulator. The copings were cast with Cr-Ni base metal alloy (Wiron 99; Bego, Germany).

The copings were luted with glass ionomer cement (Meron; Voco GmbH, Cuxhaven, Germany) (Fig. 4). The day after cementation of the copings, impressions for the maxillary overdenture, and complete mandibular denture were made with custom trays and medium viscosity additional silicone impression material. A bilateral balanced occlusion was developed using 33-degree anatomic acrylic resin teeth (Optognath; Bayer, Leverkusen, Germany). The maxillary overdenture and the complete mandibular denture were processed with heat polymerizing acrylic resin (Meliodent; Heraeus Kulzer Inc, South Bend, Ind) (Fig. 5).

**Figure 4**

Figure 4: Frontal view of the copings



**Figure 7**

Figure 7: After 18-months in service



**Figure 5**

Figure 5: Finished prosthesis are in the mouth



The patient was examined 48 hours later for post insertion adjustments, and then followed on a monthly basis (Fig. 6). He had no notable complaints about the dentures. Good esthetic and functional results were achieved. At the 18-month follow up no major complications occurred (Fig. 7).

**Figure 6**

Figure 6: Appearance of the patient after treatment



## DISCUSSION

Hypodontia and anodontia were frequently seen in many cases of ectodermal dysplasia (2, 6). Prosthetic rehabilitation of patients with ED is an ordinary process. Early and extensive dental treatment is needed throughout childhood because of the absence of most of the deciduous and permanent dentition. A multidisciplinary team approach to management of these patients is recommended (7). Osseointegrated implants should be an alternative treatment in older patients with ED (6, 8-11). Considering the poor economical situation of the present case, it was deemed better to postpone osseointegrated implants.

That is commonly a difficult condition to manage the patients with prosthodontics because of the typical oral deficiencies and because the afflicted individuals are quite young when they are evaluated for treatment. It is important that these individuals receive dental treatment at an early age for physiologic and psychosocial reasons. Adaptation to the prosthesis is depends on various factors as, capability of the specialist, age of the patient, and cooperation in a growing child. A removable partial denture or an overdenture is often a suitable treatment choice, because of the need to easily modify the intraoral prosthesis during rapid growth periods (10,11). Also these treatment options are easy, affordable, and reversible rehabilitation methods.

The treatment goals for this patient were establish a functional occlusion with prosthetic rehabilitation and, to obtain an esthetic smile with adult-sized teeth. Because any prosthesis was not wear by the patient before. Also nutrition of the patient is improved, and a self-confident appearance is provided.

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**Author Information**

**I?1 Sarikaya, DDS, Ph.D.**

Research Assistant, Department of Prosthodontics, Faculty of Dentistry, Ondokuz Mayıs University

**Ahmet Umut Güler, DDS, PhD**

Associate Professor, Department of Prosthodontics, Faculty of Dentistry, Ondokuz Mayıs University