



## PROSTHODONTICS REHABILITATION OF A PATIENT WITH ECTODERMAL DYSPLASIA WITH AN OVERDENTURE: A CASE REPORT

### Dental Science

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### ABSTRACT

Ectodermal Dysplasia (ED) is a hereditary disorder characterized by the absence or defects of two or more ectodermally derived tissues including teeth, nails, hairs and sweat glands of which anodontia or hypodontia is the most striking dental manifestations. Prosthetic rehabilitation of such case can be accomplished with tooth tissue supported or implant-supported prosthesis. Prosthetic rehabilitation of a case of 6 year old child with ED with partial anodontia is presented. Tooth tissue supported overdenture in the mandibular arch and a removable partial denture in the maxillary arch were fabricated to establish an acceptable function, esthetics and psychological well-being.

### KEYWORDS

ED, overdenture, partial anodontia, prosthetic rehabilitation

#### INTRODUCTION:

ED is a heterogeneous group of inherited disorders that is characterized by primary defects in the development of two or more tissues derived from embryonic ectoderm.<sup>1</sup> It represents large and complex group of disease compromising more than 170 different clinical conditions affecting both males and females. The incidence of these conditions is 1:100,000 with the mortality rate of 28% in males up to 3 years because of intermittent pyrexia.<sup>2</sup> The triad of nail dystrophy, alopecia or hypotrichosis and palmoplantar hyperkeratosis is usually accompanied by lack of sweat glands and a partial or complete absence of primary or permanent dentition.

The person is diagnosed as ED when atleast 2 types of ectodermal features occur such as malformed teeth and extremely sparse hairs. ED is classified clinically (clinically distinguished) into two different types depending (based) on the number and functionality of sweat glands:

- A) Hypohydrotic or Anhydrotic (Christ –Siemens syndrome) in which sweat glands are either absent or significantly reduced in number.
- B) Hydrotic (Clouston syndrome) in which sweat glands is normal.

Dentition and hairs are involved similarly in both types but hereditary patterns of nails and sweat glands involvement are different.<sup>3,4</sup> Hypohydrotic ED is the most common type. Hydrotic type is inherited in an autosomal dominant pattern.

Oral manifestations of ED may reveal as anodontia or hypodontia with or without a cleft lip and palate. The lack of tooth bud causes hypoplastic alveolar bone leading to reduced vertical dimension of lower face, the vermilion border disappears, existing teeth are malformed, the oral mucosa becomes dry and lips become prominent. The face of an affected child usually has an appearance of old age. Other manifestation includes fine sparse hairs, reduced density of eyebrow and eyelash hairs.<sup>5</sup> The affected child may have prominent forehead, a sunken nasal bridge, thick lips and/or large chin. The skin may be abnormally thin, dry and soft with an abnormal lack of pigmentation. The skin around eyes may be darkly pigmented. Finger nails and toe nails may also show faulty development and may be small, thick or thin, brittle, discolored, cracked and/or ridges.

The most frequent prosthetic treatment for the dental management of ED is removable prosthesis. The present report describes the prosthetic rehabilitation with tooth supported overdenture in mandibular arch and removable partial denture in maxillary arch of a young boy manifesting Ectodermal Dysplasia with partial anodontia.

#### CASE REPORT:

A 6 year old boy reported to the department of Pediatric Dentistry, Government Dental College, Trivandrum with the chief complaint of missing teeth, speech problems, mastication difficulty which resulted in restricted diet and esthetic concern.

On extraoral examination, patient exhibited classical features of ED. The nails were normal. Intraoral examination revealed severe hypodontia. In the maxillary arch, left and right 2<sup>nd</sup> deciduous molar, semi erupted permanent 1st molar and root stumps of left deciduous canine were seen, whereas in mandibular arch only a left canine was present. The growth of jaws was normal. Radiographic investigation (opg) did not show any succeeding tooth germs.

The child was referred to the department of Prosthodontics at Government Dental College for further evaluation and management. To avoid extraction and to maintain the alveolar bone height it was decided to retain the deciduous teeth till the normal exfoliation occurs and thus he was provided with an overdenture in the mandibular arch and removable partial denture in maxillary arch.

The parents were informed of the possibility that the child may not be co-operative for the clinical procedures and in the initial phase he may not even wear the denture. Behaviour management techniques such as tell- show- do were used throughout the procedures for construction of prosthesis. The maxillary deciduous molars were endodontically treated and later given stainless steel crowns. While evaluating the coronal structure of the existing mandibular deciduous canine, its axial wall inclination was considered to determine the path of insertion, retention and stabilization of an overdenture. A custom tray was fabricated and an impression was made using medium body silicone impression material. The casted coping was cemented to the tooth with Glass Ionomer cement.

Maxillary and mandibular primary impression were made with irreversible hydrocolloid impression material and poured with type III dental stone. On mandibular primary cast, special tray was fabricated, a border moulding was done with the heavy body addition silicone and final impression was obtained with light-body vinyl siloxane impression material. Permanent denture base of heat cure acrylic resin and occlusal rim was constructed. This recorded jaw relation was transferred on to mean value articulator. Teeth arrangement in lower and upper denture base was done. In the next appointment trial dentures was tried for retention, stability, occlusion and esthetics. Lower overdenture and upper removable partial denture was constructed. After the final insertion, routine oral hygiene instructions was given to both the child and his parents. The patient was advised to have soft diet for few days. Patient was advised for follow up visits

every 3 months for the adjustments and replacement of denture. The patient had no difficulty in adaptation and felt that there is an improvement in his speech and mastication.



1) Pre-operative



2) Intraoral



3) Intraoral



4) Metal coping



5) Final Impression



6) Try-in



7) Final Prosthesis



8) Post-operative.

**DISCUSSION:**

ED is a congenital, diffuse and non progressive disease. The treatment plan of the ED patient is aimed at improving the sagittal and vertical skeletal relationship as well as in achieving improvements in esthetics, speech and masticatory efficiency.<sup>3</sup> The dental findings may range from hypodontia to anodontia of permanent or primary teeth. The most common treatment plan includes a removable or fixed denture, complete overdenture prosthesis and implant retained prosthesis. There is no definitive time to begin treatment but Till and Marques recommended that an initial prosthesis could be delivered when the child starts school so that he may enjoy a better appearance and will have time to adapt the prosthesis.

In this case, the overdenture was planned in order to avoid extraction and to maintain the alveolar bone height. Therefore the maintenance of these teeth would provide larger area for distribution of the chewing force and a greater retention of denture. An adequate masticatory efficiency and esthetics were achieved. Although dentures are poor alternatives to healthy dentition they create condition for the maintenance of normal satisfactory diet for the child.

Periodic recalls of young patient with ED is also important because prosthetic modification or replacement will be needed as a result of continuing growth and development.

**CONCLUSION:**

Prosthetic management of children with complete or partial anodontia associated with ED is important because

1. It provides good esthetics, phonetics and masticatory function.
2. It maintains healthy alveolar bone and reduces resorption.
3. It boots up the patients self confidence.

Regular recalls, relining and remarks of the dentures are necessary in such patients to adapt to the growth pattern of the individual.

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