

Telescopic dentures - A treatment modality for patients with ectodermal dysplasia: Report of two cases

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Abstract

Ectodermal dysplasia is characterized by developmental defects of structures of ectodermal origin like teeth, nails, and hair. Anodontia or hypodontia are prominent dental manifestations requiring extensive treatment planning. A multidisciplinary approach is often needed for the proper rehabilitation of such patients. Telescopic dentures are a boon for such patients. They are mainly removable dental prostheses used to connect dentures to the remaining dentition. They exhibit multiple advantages such as minimal destructive horizontal torque, enhanced vertical long axis forces, the parallelism of abutments, cross arch stabilization, and retrievability.

Keywords: Anodontia, Ectodermal Dysplasia, Hypodontia, Telescopic Dentures

Introduction: Ectodermal dysplasia is a group of complex disorders characterized by abnormal development of two or more ectodermal-derived structures.[1] The occurrence of ectodermal dysplasia is one in every 100000 live births. It has two types a) hypohidrotic (most common) and b) hidrotic.

Extraoral features include sparse hair, eyebrows, eyelashes, and other body hair. Patients with ectodermal dysplasia might experience hyperthermia because of greatly deficient sweat glands.[2]

Patients are usually afflicted by complete or partial anodontia which possesses a great challenge to restorative dentistry. Because of the missing teeth and teeth buds, the alveolar processes fail to develop leading to loss of vertical dimension of occlusion. The teeth that are present are usually small and malformed usually peg-shaped anterior teeth. The posterior teeth might show evidence of taurodontism.[3,4]

This case series describes the rehabilitation of two patients with ectodermal dysplasia.

Case 1

A 55-year-old male, reported to the Department Of Prosthodontics, with the chief complaint of missing teeth and difficulty in mastication.

Extraoral examination of the patient revealed thin, sparse scalp hair, protuberant forehead, scanty eyebrows, flat nasal bridge, retrognathic maxilla, and hyperkeratotic nails and palms which all are the striking features of ectodermal dysplasia.

Intraoral examination of the patient revealed a completely edentulous upper arch and the presence of only 33 and 43 in the lower arch. The crowns were normal in shape showing signs of cervical abrasion and horizontal bone loss.

OPG of the patient did not reveal any impacted teeth. The roots of 33 and 43 were long and ovoid with no evidence of periapical pathology or periodontal widening. The crown root ratio was 1:1. The patient had dry oral mucosa as a result of decreased salivation.

A definitive treatment plan for the patient included maxillary complete denture and mandibular telescopic denture. Informed consent was obtained before starting the clinical procedure.

Primary impressions were made and poured in type III gypsum product. Diagnostic articulation was done after tentative jaw relation and interarch space was assessed.

The mandibular teeth were planned for intentional root canal treatment to bring an optimized crown root ratio to best receive the telescopic denture. The custom tray was fabricated following which final impressions were made using the green stick and zinc oxide eugenol for the maxillary arch. Record bases were made and facebow records taken and models mounted in centric relation on a semi-adjustable articulator (Hanau H2). Mandibular

tooth preparation was done. Teeth parallelism was maintained and was assessed using an intra-oral mirror and later cast analysis was done on a surveyor. Impression was recorded with the help of the putty reline technique.

Primary copings were cast using cobalt-chromium alloy. The fit of the primary copings were checked and luted with temporary cement to avoid any kind of error due to displacement while impression making and a pick-up impression was made with medium viscosity addition silicone. With this impression, a secondary master model was made. The second model together with the primary coping was used for the fabrication of the refractory cast. A cobalt-chromium superstructure was fabricated and the fit of the framework was evaluated before cementing the primary copings with glass ionomer cement. Jaw relation and face bow transfer was done and the master cast mounted on a semi-adjustable articulator (HANAU H2) in centric relation. Maxillary and mandibular teeth setting were done. Denture trial was done. Cobalt-chromium framework was embedded in acrylic. The denture was finished, polished, and delivered to the patient. At the 24 hours follow up occlusal adjustments were done. Subsequent follow-ups were done at one week, one month, and three months. Post insertion instructions were given. The retention and esthetics of the prosthesis were good.

Case 2

A 35-year-old female reported with the chief complaint of missing teeth leading to problems in mastication and was not satisfied with her facial appearance.

A complete intraoral examination revealed the presence of second primary molars and first permanent molar on the right and left side of the maxillary arch. In the mandibular arch, a permanent second molar was present on the left side, and the first and second permanent

molar was present on the right side. The maxillary molar crowns were small in size. There was no evidence of caries or any periodontal pathology. There was presence of large soft tissue undercuts in the maxillary anterior region and mandibular lingual region. The mucosa of the patient was dry as a result of decreased salivation. The treatment planning was decided as maxillary removable partial denture and mandibular telescopic denture after the diagnostic jaw relation. Informed consent was obtained before starting the procedure.

The primary impression was made and the custom tray was fabricated. Border molding was done and a final impression was made. Mandibular tooth preparation was done. The parallelism of the teeth was maintained. The mandibular final impression was made for the fabrication of primary copings. The primary copings were cemented using temporary cement and a pick-up impression was made. A master model was poured. A refractory cast was made and a wax pattern for the telescopic framework was adapted. The casting was done using cobalt-chromium alloy. The primary copings were placed and the fit of the telescopic framework was checked and the primary copings were cemented with GIC. Wax rims were adapted on the custom tray in the maxilla and the telescopic framework of the mandible and jaw relation and face bow transfer was done to the semi-adjustable articulator in centric relation. The teeth setting of the maxillary arch was done and ceramic veneering on the overlay part of the telescopic framework was done. The teeth setting of the mandibular arch was done. Try-in was done in the patient and phonetics and esthetics were evaluated. The maxillary denture was cured using heat cure acrylic denture base material. The mandibular telescopic denture was fabricated. Finishing and polishing of the denture were done before insertion.

Post insertion instructions were given to the patient. Instructions for the proper cleaning and maintenance of the dentures were given.

Discussion

Ectodermal dysplasia patients require careful planning and good knowledge for its proper management. As per the dictum by M.M Devan, “ it is essential to retain that which is present originally in the oral cavity than to replace what is lost due to any reason”, hence any treatment should not compromise the structures already present.[5] Mark stated that removable prosthesis is the most frequently reported treatment modality which included complete dentures, partial dentures, and overdentures.[6,7] The overdentures present advantage of preservation of alveolar ridge in contrast to the conventional dentures. Implants tend to be promising for the rehabilitation of such patients but special attention needs to be given to the amount of alveolar bone present and the age of the patient.

In both cases, heat cure acrylic denture base material has been used for the replacement of teeth in place of any fixed implant-supported prosthesis because of sparse maxillary bone as well as the cost that would be involved in the treatment. The conventional denture provided an easy and cost-effective replacement and restoration of the esthetics as well as the masticatory function of the patient. It does not allow supra-eruption of the teeth of the opposing arch.

The advantages of telescopic denture have been captivating as it provides an option for both fixed and removable prosthesis. The mechanism of tenso-friction on which the telescopic denture is based allows better retention without any rocking or moving of the prosthesis. The advantages include better distribution of stress, rigid bilateral splinting, better retention and

support as well as the preservation of the existing dentition.

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Legend Figures



Figure 1



Figure 2



Figure 3



Figure 4



Figure 7



Figure 5



Figure 8



Figure 6



Figure 9



Figure 10

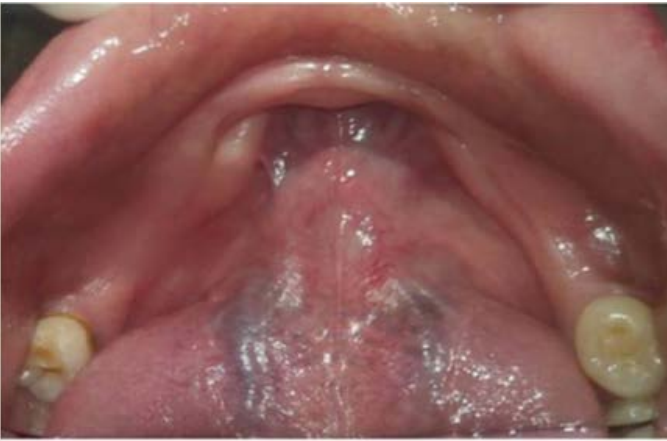


Figure 11



Figure 12