

Overcoming the Psychological Challenges by Prosthetic Rehabilitation of a Teenage Female with Ectodermal Dysplasia: A Clinical Report

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Abstract: Treatment planning of ectodermal dysplasia (ED) depends on the available alveolar bone structure, teeth present and the patient's age. In teenagers, psychological trauma is common because of the societal alienation they often face; hence, a psychological evaluation and management is also required. This report follows the prosthetic rehabilitation of a teenage girl with ED, with a tooth supported-overdenture in the maxillary arch and a mucosa-supported denture in the mandibular arch. The importance of prosthodontist is also highlighted in addressing the psychological aspects of ED along with motivating and encouraging the patient throughout the treatment.

Keywords: Ball attachment, hypohidrotic, retentive housings, tooth-supported overdenture, window technique.

I. Introduction

The intra-oral signs of ED are hypodontia, conical teeth, under-developed alveolar ridges, maxillary hypoplasia, protuberant lips and reduced vertical dimension. The extra-oral signs are retrusive malar regions, prominent forehead, high-set orbits, and a generalized reduction of the craniofacial complex. [1],[2]

According to Tanner, such abnormal features affect psychological development in young patients. This can cause awkwardness in getting along with others, particularly at school-going age. During the teenage years, looking 'different' may cause low self-esteem, speech defects, and social isolation. This results in inappropriate behaviour and impaired social interactions. All these physical and psychological features make prosthetic rehabilitation an important goal in treating an ED patient and facilitating fruitful social interactions. [3],[4],[5],[6]

However, before planning any treatment, the prosthodontist should understand that it should not only address physical deficiencies but should also evaluate and manage the possible psychological effects. Early intervention provides the teenager with the opportunity to develop normal forms of speech, chewing, and swallowing; normal facial support; and improved temporomandibular joint function. [7],[8]

Nowak said "treating the pediatric ectodermal dysplasia patient requires the clinician to be knowledgeable in growth and development, behavioral management, techniques in the fabrication of a prosthesis, the modification of existing teeth utilizing composite resins, the ability to motivate the patient and parent in the use of the prosthesis, and the long-term follow-up for the modification and/or replacement of the prosthesis." [9]

Thus, a prosthodontist's job is not only limited to mechanically fabricating the prosthesis but also skilfully and sensitively interacting with the patients to build an interpersonal relationship, making them more cooperative regarding dental care.

II. Clinical Report

A 16-year-old teenage female (of Indian origin) reported to the Department of Prosthodontics at Government College of Dentistry, Indore, India. Her chief complaints were multiple missing teeth and unusual facial appearance. Her parents gave a history of intolerance to heat and frequent fever in childhood. Medical history was not significant.

On oral examination, only three conical anterior teeth in the maxilla (right and left canine and right central incisor) and one retained deciduous root in the anterior mandible (deciduous right canine) were present. Underdeveloped alveolar ridges and loss of occlusal vertical dimension (OVD) were observed (Fig 1).

The patient showed typical extra-oral signs of ED, including sparse hair, protuberant lips, circumoral and circumorbital pigmentation, saddle nose, scaly skin and partial anodontia (Fig. 2).

Having refused any dental treatment in the past, the patient was not rushed into the treatment. She was engaged in a casual conversation regarding her schooling and social interactions. Her parents were asked about her general behaviour. She had left school two years previously, was being home-schooled at present, did not have any friends and preferred to avoid family functions.

At the next appointment, only radiographs were taken. The orthopantograph showed an impacted right permanent mandibular canine. The decision was made to leave this tooth buried as the parents did not want any surgical intervention (Fig. 3).

The treatment plan was discussed with the patient and her parents. Complete rehabilitation was planned by a tooth-supported overdenture in the maxillary arch and a mucosa supported denture in the mandibular arch with bilateral balanced occlusion. Removable cast-partial dentures were ruled out as the resultant design would be damaging to the remaining teeth. Implants were not indicated because of unfavourable bone architecture.

Although the concerned patient was a teenager, 'tell-show-do' technique was used to gain her trust. She was explained every step of the treatment. All relevant dental instruments were shown to her. All impression materials to be used were first given to her to smell and even taste.

Diagnostic casts were mounted in a semi-adjustable articulator (Hanau Wide-View Arcon 183-2, Whip Mix, Louisville, Ky) at the proposed OVD. Endodontic therapy of all three maxillary teeth was conducted and the deciduous canine was extracted. The right and left maxillary canine were selected to serve as the overdenture abutments. The central incisor was decided to be a passive, buried abutment, preserved for proprioception. The good alveolar bone height in the anterior maxillary region indicated the use of castable ball attachment (012PSM, Rhein 83, USA). Abutments were prepared, leaving a 1 mm dome-shaped structure, and a chamfer margin. Intra canal preparation was done. Impressions were made with custom-made acrylic posts (DPI RR-Cold Cure, Dental Products of India) and crown wax (Kronenwachs, Bego, Germany), and picked with alginate (Neocolloid, Zhermack, Italy). The cast was poured in Type IV gypsum (Kalrock, Kalabhai, India). Overdenture attachments were inserted in the cast and parallelism was achieved with a surveyor (Paraflex, Bego, Germany). The casting was done with Ni-Cr alloy (NDN, Germany). The attachments were cemented (Fig 4) with glass ionomer cement (Hy-Bond Glasionomer CX, ShofuInc., Japan). By this time, the previously uninterested patient was actively participating in her rehabilitation.

The primary edentulous impressions were made via the mucostatic technique. Flabby tissue areas were marked in maxillary and mandibular ridges and transferred on to the diagnostic cast. The final mandibular impression was made with the Window technique, by impression plaster (Gyprock, India) and zinc oxide eugenol impression paste (DPI Impression Paste, Dental Products of India). Jaw relations were recorded. Try-in was verified in the presence of patient's parents (Fig. 5), and the patient was encouraged to use a face mirror (she had not used one for an year).

Retentive housings were placed in the maxillary denture, and ball attachments were related to it with autopolymerising acrylic resin. On insertion of the definitive prosthesis, the patient appreciated her improved facial profile and the reduced lip protuberance (Fig. 6 A and B). She was given denture care instructions and scheduled for follow-up within 24 hours. She was recalled after 1 week, and then after 3 weeks. Prosthetic rehabilitation boosted the patient's self-confidence. Her parents noted that she had attended a family function and was thinking of rejoining school.

III. Discussion

The dental component of ED is completely treatable. However, psychological aspects of these patients should not be neglected. Sometimes either a psychological evaluation is not carried out, or to undergo one is often considered an unnecessary task. Hence, the successful completion of any treatment modality in such patients is affected by how well the prosthodontist handles their psychological condition. Recording a detailed case history with emphasis on past social interactions of the patient and maintaining a pleasant conversational tone can help the patient accept the treatment.

IV. Conclusion

By recording a detailed case history and taking care of psychological aspects of ectodermal dysplasia, a teenage female patient was successfully prosthodontically rehabilitated by a tooth-supported overdenture in the maxilla and a mucosa-supported denture in the mandible.

Figure legends:

Fig. 1. Malformed teeth and arch-shaped alveolar bone in ectodermal dysplasia patient.

Fig. 2. Pre-operative presentation of the patient.

Fig. 3. Orthopantamograph shows the undeveloped alveolar ridges.

Fig. 4. Castable ball attachments cemented in patient.

Fig. 5. Patient pleased with her try-in.

Fig. 6. A and B Notice the reduced lip protuberance and improved profile before and after denture insertion

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Fig. 1. Malformed teeth and arch-shaped alveolar bone in ectodermal dysplasia patient.

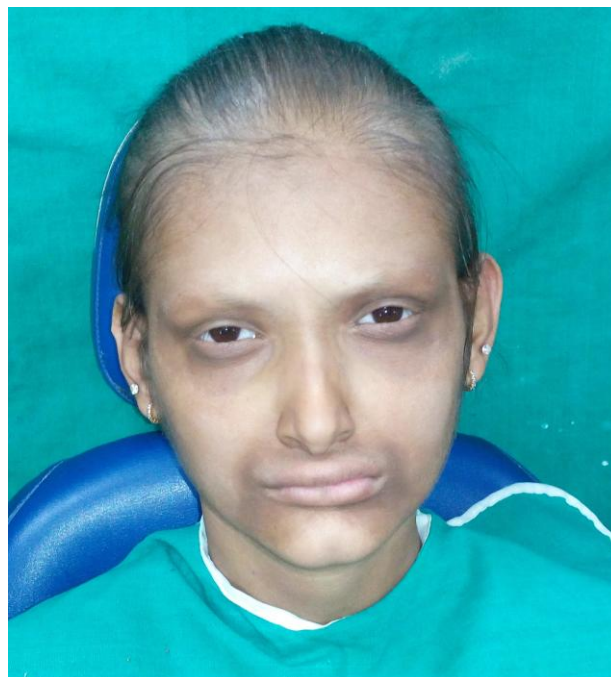


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Fig. 6A



Fig.6B

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