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Improving Quality Of Life Through Prosthodontic Intervention In Ectodermal Dysplasia: A Case Report

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Abstract-
Ectodermal dysplasia (ED) is a rare inherited disorder that affects ectodermal tissues such as hair, nails, teeth, and skin. Dental symptoms often include missing (anodontia) or reduced (hypodontia) primary and permanent teeth, conical teeth, and underdeveloped alveolar ridges. These orofacial issues frequently lead to psychosocial challenges, making the restoration of appearance and function particularly demanding. Hypohidrotic (anhidrotic) ED and hidrotic ED are the two most common syndromes in this group. The most prevalent form of ectodermal dysplasia is hypohidrotic ectodermal dysplasia (HED), which occurs in approximately one in every 100,000 infants. The primary symptoms of HED include hypohidrosis (reduced ability to sweat), hypotrichosis (sparse hair), and partial anodontia (missing teeth). Common facial features of ED include frontal bossing, sunken cheeks, saddle nose, thick everted lips. Treatment options for ED include removable, fixed, or implant-supported prostheses, either alone or in combination. This report describes the prosthetic rehabilitation of a patient with ED, focusing on improving both function and aesthetics.

Keywords- *basal implants, ectodermal dysplasia, fixed partial denture, implant supported prosthesis*

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I. Introduction

The term "ectodermal dysplasia syndromes" (EDS) refers to a broad category of diverse hereditary disorders that are typified by congenital anomalies in two or more ectodermal derivatives, including the skin, hair, nails, endocrine glands, and teeth. The two most common syndrome in this group are hidrotic ED and hypohidrotic (anhidrotic) ED[1] Hypohidrotic ectodermal dysplasia (HED) is a hereditary disorder of ectodermal origin and affects approximately 1 to 7 per 100,000 births. It may be present with increased pigmentation around the eyes and mouth, saddle nose, fine-line wrinkles around the eyes, scanty and fine hairs of scalp & eyebrows and heat intolerance [2][4].

Dentists are particularly interested in oral manifestations of HED since individuals with this condition almost always have missing or malformed teeth. Oral manifestations include underdeveloped alveolar ridges, impacted teeth, loss of vertical dimension of occlusion, protuberant lips, deformed and widely spaced conical-shaped teeth, and total or partial hypodontia. For ED patients seeking a significant alternative to maintain, stabilize, and support their prosthesis, dental implants have been recommended [6]

The present clinical report describes the multidisciplinary approach to a diagnosis and treatment planning of a 19-year-old boy with partial expression of HED. The treatment plan includes maxillary tooth supported fixed prosthesis and mandibular implant supported prosthesis to establish acceptable esthetics and provide function.

II. Case Presentation

Mr. Suraj Pal, a 19-year-old male patient, reported to the prosthodontics, crown and bridge, and implantology department in Maharana Pratap College of Dentistry and Research Centre with the chief complaint of unesthetic appearance and inefficient mastication due to absence of teeth.

Extraoral examination revealed dry skin, broad and prominent forehead, protruding lips, sunken cheeks, thin and scanty hair and eyebrows(fig.1).

Figure 1: Extraoral examination and pre-operative view(A&B)

Intraoral examination revealed partial anodontia, hypodontic molars, widely spaced conical incisors, loss of vertical dimension, underdeveloped atrophic ridges and a deep overbite (fig 2).

Figure 2: Intraoral examination

III. Treatment Plan

Presurgical phase- The patient underwent standard physical exams (blood pressure, HbA1C, complete blood count). After CBCT and OPG evaluation, plans were made for four basal implants in the mandibular arch(fig3).

Figure 3: Preoperative radiograph

Surgical phase- Surgery was performed in oral and maxillofacial department in MPCD & RC. Post-operative instructions and medications were prescribed. Patient was referred to dept of prosthodontics from dept of oral and maxillofacial surgery for the prosthetic phase. The patient was evaluated after an hour for bleeding or pain before beginning the prosthesis phase.

Figure 4: Intraoral view after basal implant placement

Prosthetic phase- The tooth preparations were initiated in the remaining permanent teeth of maxillary arch (15,16,11,21,25,26) with minimal occlusal and axial reduction with a moderate shoulder and chamfer finish line (0.5mm & 0.9mm) for buccal and palatal wall respectively after root canal treatment. Using putty and light body polyvinyl siloxane impression material, impressions were taken using the closed tray technique as soon as possible following surgery, following the placement of gingival retraction cord around the prepared teeth. The impression was poured with dental stone. A semi-adjustable articulator was used to articulate the mandibular and maxillary casts following the transfer of the facebow record.

The direct metal laser sintering method were used to construct the metal coping framework.

After a successful metal coping trial on the second day, bite registration using bite registration wax was carried out. Conventional methods were used for the layering, firing, glazing, finishing, and polishing of the porcelain.

On day 3, for mandibular arch extending from 34 to 44 all implants were functionally loaded and remaining prepared teeth of maxillary arch extending from 16 to 26 by cement-retained metal fused to porcelain prosthesis utilizing glass ionomer cement (fig5)

Figure 5: Final Prosthesis in situ

Post-rehabilitative instructions - The patient received postoperative instructions and a panoramic radiograph(fig.6). They were educated on maintaining proper oral hygiene and encouraged to attend routine check-ups at one week, one month, three months, and six months. The patient expressed satisfaction with the functional, linguistic, and aesthetic outcomes of the therapy, gaining self-assurance with their new smile and appearance (fig. 7).

Figure 6: Post-operative radiograph

Figure 7: Post-operative view of satisfied patient

IV. Discussion

Hypodontia is the most distinctive oral trait of ectodermal dysplasia. Ectodermal dysplastic children and adolescents may require extensive and complex prosthetic treatment. Since the majority of these patients were first diagnosed when they were still youngsters, removable prostheses would be the most typical course of treatment during the early stages of the patients' development [5]. However, the final treatment strategy following development should be unique and dependent on the patient's age, medical history, number and quality of accessible edentulous alveolar ridge, appearance, and attitude, among other considerations [1][2]. Therefore, preprosthetic procedures such as bone augmentation and bone grafting would be necessary for the ultimate rehabilitation. These procedures will take time and create suffering to the patient because of their senile appearance and social exclusion. Compared to a traditional removable prosthesis that would negatively affect the patient's mental health, an implant-supported prosthesis provides a more natural appearance while improving both masticatory function and aesthetics. Alveoloplasty, sinus lifts, and bone grafting are just a few of the intricate surgical procedures that are frequently required in order to insert traditional endosseous implants. Additionally, due to the delayed formation of alveolar bone, these implants offered less alternatives for length and diameter to suit the needs of all different oral diseases [3]. An ED patient with extensive atrophy of the remnant alveolar ridge and maxillary and mandibular oligodontia is the subject of this case study, which details a unique approach to complete mouth rehabilitation with basal implants. The primary objectives were to restore lost bone and teeth, determine the ideal vertical dimension, and offer support for the delicate tissues in the face. Although there was a 2-year limit on the follow-up period, it was necessary to identify any implant failures and alveolar bone resorption. There was no visible bone resorption and no implant loss during this time.

Overall, this article's case study illustrates how an adult HED patient's oral rehabilitation can be accomplished with fewer teeth and underdeveloped alveolar bone are potential causes. Through this treatment, the patient's functional and aesthetic condition were greatly improved, and his self-esteem and social confidence increased noticeably.

References

[1] Sweeney Ip, Ferguson Jw, Heggie Aa, Lucas Jo. Treatment Outcomes For Adolescent Ectodermal Dysplasia Patients Treated With Dental Implants. International Journal Of Paediatric Dentistry. 2005 Jul;15(4):241-8.

[2] Rathee M, Chhikara N, Ahlamat A, Divakar S, Chahal S. Prosthodontic Rehabilitation Of Young Adult Ectodermal Dysplasia Patient With Immediately Loaded Basal Implants: A Case Report. Annals Of The Romanian Society For Cell Biology. 2022 Nov 18;26(01):3496-504.C

[3] Koyuncuoglu Cz, Metin S, Saylan I. Full Mouth Rehabilitation Of A Patient With Ectodermal Dysplasia With Dental Implants. J Oral Implantol. 2014;40:714-723

[4] Ramos V, Giebink Dl, Fisher Jg, Christensen Lc. Complete Dentures For A Child With Hypohidrotic Ectodermal Dysplasia: A Clinical Report. J Prosthet Dent. 1995 Oct;74(4):329–31.

[5] Bergendal T, Eckerdal O, Hallonsten Al, Koch G, Kurol J, Kvint S. Osseointegrated Implants In The Oral Habilitation Of A Boy With Ectodermal Dysplasia: A Case Report. Int Dent J. 1991 Jun;41(3):149-56. Pmid: 1860721.

[6] Kutkut A, Abu-Eid R, Sharab L, Abadi B, Van Sickels J. Full Mouth Implant-Supported Rehabilitation Of A Patient With Ectodermal Dysplasia: Clinical Report And Literature Review. Journal Of The International Academy Of Periodontology. 2015 Apr 1;17(2):34-41.

[7] Machado M, Wallace C, Austin B, Deshpande S, Lai A, Whittle T, Klineberg I. Rehabilitation Of Ectodermal Dysplasia Patients Presenting With Hypodontia: Outcomes Of Implant Rehabilitation Part 1. Journal Of Prosthodontic Research. 2018 Oct 1;62(4):473-8.

[8] Moshaverinia A, Torbati A, Kar K, Aalam Aa, Takanashi K, Chee Ww. Full Mouth Rehabilitation Of A Young Patient With Partial Expressions Of Ectodermal Dysplasia: A Clinical Report. The Journal Of Prosthetic Dentistry. 2014 Sep 1;112(3):449-54.

[9] El Charkawi H, Barakat A, Eldean Hi. Full Mouth Implants Rehabilitation Of A Patient With Ectodermal Dysplasia After 3-Ds Ridge Augmentation. A Clinical Report. Future Dental Journal. 2016 Jun 1;2(1):4-14.

[10] Öczakir C, Balmer S, Mericske-Stern R. Implant-Prosthodontic Treatment For Special Care Patients: A Case Series Study. International Journal Of Prosthodontics. 2005 Sep 1;18(5).