Introduction

Ectodermal dysplasia (ED) is a rare heterogeneous group of congenital disorders characterized by defects in two or more inherited ectodermal tissues. The tissues in question are nails, skin, hair, sweat glands, and teeth. According to the mode of inheritance, ED can be classified as autosomal dominant, autosomal recessive, or X-linked. More than 200 different ectodermal dysplasias have been described. Patients with ectodermal dysplasia involving hypodontia, onychodysplasia, abnormal skin, and hair have been diagnosed under a number of different names, including odonto-onycho-dermal-dysplasia (OODD).1,2

One of the most common forms of ectodermal dysplasia is OODD. OODD is a rare case, characterized by hypodontia, a smooth tongue with signs of reduction of filiform and fungiform papillae, nail dysplasia, dry skin, palmoplantar keratoderma, and hyperhidrosis on the palms and soles. Hair is often reported to be dry, sparse, and thin in this disorder. The mode of inheritance is autosomal recessive, making the diagnosis of patients with this ectodermal dysplasia challenging, as there are a number of overlapping ectodermal dysplasia syndromes.3

A variation of this OODD abnormality is the presence of a delayed tooth eruption abnormality called delayed tooth eruption (DTE), hypodontia and peg teeth. Genetic disorder is the most common cause of delayed tooth eruption.4

In this case, prosthodontic rehabilitation is necessary to restore or provide dental and aesthetic function to enable patients confidently perform their daily activities without experiencing psychological distress or behavioral disturbances.

Case Report

A 12-year-old male patient with a diagnosis of Odonto-onycho-Dermal Dysplasia was referred from the Pediatric Dentistry Department with complaints of unerupted teeth. Radiographic examination showed unerupted seeds of teeth 55, 14, 24, 25, 65, 32, 34, 37, 42, 43, 44, 47. In this case, intraoral and extraoral examinations, radiographs, impressions of the maxillary and mandibular jaws, and denture-making procedures were performed.

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Abstract

Objective: This case report discussed the treatment pediatric patients with OODD require extensive prosthodontic treatment and collaboration between professionals.

Methods: A 12-year-old male patient was referred from the pediatric dentistry department with complaints that his teeth had not erupted after extraction. Intraoral examination showed that eruptions occurred exclusively in teeth 55, 14, 24, 25, 65, 32, 34, 37, 42, 43, 44, 47. In this case, intraoral and extraoral examinations, radiographs, impressions of the maxillary and mandibular jaws, and denture-making procedures were performed.

Results: After 3 months of wearing the removable denture, the maxillary left and right molars were visibly erupted, and the removable denture was then perforated in that area. A month later, the mandibular premolars also erupted, but surgical exposure was performed to accelerate the eruption of the teeth.

Conclusion: The delayed eruption of teeth in children due to ectodermal dysplasia is a multifaceted condition. Consequently, for optimal results, interdisciplined therapy is recommended.

Keywords: Delayed eruption teeth, Ectodermal dysplasia, Partial denture, Odonto-onycho-dermal-dysplasia

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Prosthetics management of odonto-onycho-dermal dysplasia pediatric patient: A case report
are given space to erupt, the premolar will erupt teeth. Hourya et al. expect the spontaneous eruption young children with good age and position of the tooth, whether orthodontic extraction is appro-
sive dental care is required during childhood as most recommended to treat ED patients. Early and exten-
misshapen, with limited alveolar bone development, most teeth are conical, molar. For the most part, existing teeth are conical,
sions, removable dentures are the most often reported of young patients who have serious edentulous condi-
be considered as alternative treatments for individuals

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patient and obtaining their informed consent regarding the proposed multidisciplinary treatment, an irreversible hydrocolloid was used to create anatomical impressions of the maxilla and mandible. Subsequently, a study model was constructed, and modeling wax was utilized to obtain preliminary measurements of vertical dimensions.

The second stage was the fabrication of individual tray carried out on the study model by making spacers from wax. The individual tray was made of acrylic material hardened with a light cure box. After the individual tray was made, border molding was done on the edentulous area using green stick compound (GC, Japan), followed by physiological impression using polyvinyl siloxane impression material for the regular type (Exaflex, GC, Japan).

A bite rim was created and fitted into the patient’s mouth and measured for alignment and vertical dimension. Subsequently, proceed with the tooth color selection process. The patient chose a tooth color that was whiter than the color of the teeth in the oral cavity. A try-in of the anterior and posterior teeth was performed to visualize and check for occlusion and alignment. After that the partial acrylic base dentures, figure 4A and figure 4B were inserted. After the insertion of partial acrylic base dentures, the patient was given an education on how to care for dentures, how to clean dentures, and advised to always maintain oral hygiene. The patient was instructed to wear the denture for 24 hours and returned to the hospital the following day for control. In the first and second control, a week later, the patient had no complaints. The denture was used to chew food, and the patient was delighted because it looked like natural teeth. figure 5A and figure 5B.

After three months, the patient was seen to have erupted teeth in the posterior area, specifically the left and right maxillary molars. A removable partial denture was then perforated in that area. A month later, the patient reported the same issue in the region of the lower mandible, along with a broken mandibular denture. Then, another panoramic radiograph was taken, which revealed that teeth 34 and 35 were about to erupt. After consulting with the pediatric dentistry department, it is suggested that the tooth be exposed.

Discussion

Regarding oral aesthetics, the rehabilitation of Ectodermal Dysplasia (ED) patients with missing teeth presents a significant challenge. According to the number of missing teeth, it can be classified into hypodontia (missing less than six teeth), oligodontia (six or more missing teeth), and anodontia (no teeth at all). The problems associated with missing teeth are directly proportional to the number of missing teeth in primary and permanent dentition. The least frequently missing teeth are the maxillary central incisors, maxillary canines, and maxillary first
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This treatment aims to restore tooth mastication and occlusion, restore self-confidence, improve speech, maintain growth, and prevent tooth movements such as intrusive traction and correction of malocclusion.

According to the number of missing teeth, it can be classified into hypodontia (missing less than six teeth), oligodontia (missing six or more teeth, excluding the third molars), and anodontia (absence of all teeth), with hypodontia being the most common type. Oligodontia or anodontia are frequently accompanied by additional systemic disorders such as Down syndrome or ectodermal dysplasia. Ectodermal Dysplasia (ED) patients with missing teeth, the distribution of those that are missing along the dental arch is a critical determinant in the prognosis of treatment. Dental implant restorations, fixed prosthetics, and adhesive restorations are all viable options for patients with a limited number of missing teeth. Permanent removable partial dentures should be considered as alternative treatments for individuals with a significant number of missing teeth, such as the patient in the present case. For the dental treatment of young patients who have serious edentulous conditions, removable dentures are the most often reported treatment choice.

A denture is a type of prosthesis that replaces some or all of the missing teeth and surrounding tissue. The goal of constructing the prosthesis is to restore the function, esthetic, comfort, and health that were lost as a result of tooth loss. Extensive edentulous can occur due to oligodontia, hypodontia, anodontia, or even multiple delayed eruptions like in this case. Multiple delayed eruptions caused the patient to wear acrylic removable dentures. Acrylic removable has non-toxic, non-irritating, insoluble in oral fluid, good aesthetics, easy to process, easy to repair, and small dimensional changes. While the drawback is that it is easily broken when it falls on a hard surface or due to fatigue due to long use and changes color after some time of use.

In a 12-year-old patient, in this case, only teeth 14, 24, 25, 32, 34, 37, 42, 43, 44, 47 were erupted. Nevertheless, following the initial three months of denture use, teeth 16 and 27, in addition to teeth 35 and 45, experienced eruption on the gingival surface. However, teeth 35 and 45 were assisted with the surgical exposure method so that they erupted quickly. Temporarily perforating the dentures was performed in teeth 16 and 27 to facilitate space regain and prevent growth barrier. The factor that causes the eruption can be the use of dentures, which causes occlusion of the upper and creates pressure in the lower jaws, which can stimulate tooth growth. A new eruption mechanism based on earlier research, the cause of the eruption process is an innervation-provoked pressure in the tooth's apical region that necessitates constant adaptation from the periodontal membrane and active movement of the crown follicle, which results in the destruction of the surrounding bone tissue.
According to the number of missing teeth, tooth agenesis, also known as hypodontia, is defined as the congenital absence of one to five teeth, excluding the third molars. Oligodontia is the term for congenitally missing six or more teeth, excluding the third molars, while anodontia is the extremely unusual condition of having all of the teeth in the dental arches missing. Oligodontia or anodontia are frequently accompanied by additional systemic disorders such as down syndrome or ectodermal dysplasia. Oligodontia, also known as non-syndromic oligodontia, can also manifest on its own.16-17

Most people only had one or two permanent teeth missing, and very few had more than six. The maxillary lateral incisors and the mandibular second premolars were found to be the most likely to be missing. Notably, there is evidence that tooth agenesis has become more common in the past few decades. But there is not any concrete data to show that this apparent increase is brought on by more sophisticated screening and diagnosis or by other factors.16,17

This treatment aims to restore tooth masticatory and aesthetic function, retain the remaining teeth, restore emotional and psychological health, restore self-confidence, improve speech, maintain tooth position, and prevent tooth movements such as tilting, extrusion, or migration.18-20

Conclusion

Multiple delayed tooth eruption is an uncommon disorder that is frequently observed in conjunction with syndromes, especially Odonto-Onycho-Dermal Dysplasia. In this case, interdisciplinary treatment that includes a pediatric dentist and a prosthodontist provides the best possible treatment. By conducting surgical interventions and offering oral health education, pediatric dentists try to encourage tooth development, whereas prosthodontists work to improve speech, mastication, and aesthetics while simultaneously promoting growth.

Acknowledgment

None.

Conflict of Interest

The authors report no conflict of interest

References