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PROSTHETIC REHABILITATION OF ISOLATED OLIGODONTIC PATIENT WITH INTERDISCIPLINARY APPROACH: A CASE REPORT

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ABSTRACT

Oligodontia is the permanent deficiency of six or more teeth, excluding third molar teeth. Isolated oligodontia is generally referred to as "syndrome-free oligodontia"; different from syndrome, it only causes congenital tooth deficiency in patients. In the therapy planning of oligodontia patients; the patient's age, incompleting and condition of missing teeth, the condition of the supporting tissues, occlusion and interocclusal distance should be evaluated. The purpose of this case report is to present the interdisciplinary treatment and clinical follow-up of a 5-year-old patient with isolated oligodontia.

Keywords: *Agenesis, child prosthesis, dental anomaly, oligodontia, tooth.*

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İZOLE OLİGODONTİ HASTASININ İNTERDİSİPLİNER YAKLAŞIMLA PROTETİK REHABİLİTASYONU: VAKA RAPORU

ÖZ

Oligodonti; 3.büyük azı dişleri hariç altı veya daha fazla dişin kalıcı eksikliğidir. İzole oligodonti ise genellikle 'sendromsuz oligodonti' diye adlandırılır; sendromdan farklı olarak hastalarda yalnızca konjenital diş eksikliğine yol açar. Oligodonti hastalarının tedavi planlamasında; hastanın yaşı, eksik diş sayısı ve durumu, destek dokuların durumu, okluzyon ve interokluzal mesafe değerlendirilmelidir. Bu olgu sunumunun amacı; izole oligodonti tanısı konulmuş 5 yaşındaki hastanın interdisipliner yaklaşımla tedavisinin ve klinik takibinin sunulmasıdır.

Anahtar Kelimeler: Agenezis, çocuk protezi, dental anomali, oligodonti, diş

INTRODUCTION

Congenital tooth deficiency (tooth aplasia, tooth agenesis) is the most general craniofacial anomaly which means the number of teeth is absent due to the disorders or gene mutations that occur during odontogenesis.[1] Congenital tooth deficiency is examined in three parts as hypodontia, oligodontia and anadontia. Hypodontia is the deficiency of less than six permanent teeth excluding third molars, while oligodontia (severe hypodontia) is the deficiency of six or more permanent teeth excluding third molars. Anadontia is the most severe condition and the deficiency of all teeth.[2,3] Congenital tooth deficiency can occur in patients who have Cleft Lip-Palate, Ectodermal Dysplasia, Incontinentia pigmentia, Nance-Horan Syndrome, Down Syndrome, Riger Syndrome, Wolf-Hirschhorn Syndrome, Van Der Woude Syndrome, Hemifacial Microsomia with involvement of the skin, nails, eyes, ears and skeletal system.[4]

The Oligodontia arises from complex interplaying among genetic, epigenetic and environmental elements in the protracted period of dental improving.[1] In the studies the prevalence of oligodontia in permanent teeth was reported as % 0.1-0.2[5] or % 0.08-0.016.[4] "Familial isolated oligodontia" is commonly known as "syndrome-free oligodontia" and results in a varying number of congenital primary and permanent tooth deficiency in patients.[6] Familial isolated oligodontia

has Mendelian dominant or autosomal recessive transition and its prevalence is higher in individuals with the hereditary familial predisposition than the general population. In genetic studies; 'AXIN2, MSX1, PAX9, EDA, EDAR' genes are determined to be associated with this anomaly.[7] The local etiological causes of oligodontia are physical obstruction or deterioration of the dental lamina, functional anomalies in the dental epithelium, failure in the formation of mesenchyme[8], radiation, hormonal and metabolic factors, trauma, osteomyelitis, displacement of permanent tooth germ during primary tooth extraction.[9]

Oligodontia can have dramatic effects on the child's oral health and quality of life. In the treatment of the disease early diagnosis is important to improve function, phonation, growth-development, aesthetics and to reduce the psychosocial effects of anomaly in a paediatric patient. Optimal treatment should be conducted by an interdisciplinary team which includes paediatric dentist, orthodontist, maxillofacial surgeon and prosthodontist. The approach of paediatric dentists to congenital tooth deficiency should be in the form of gaining lost functions with prosthetic rehabilitation and preventive applications.[10] Prosthetic rehabilitation options in the treatment of patients with oligodontia are removable partial dentures, implant, fixed and adhesive partial dentures. However, pediatric patient's being in the period of growth and development limits implant, fixed and adhesive partial denture alternatives.[11]

In this case report, it is aimed to present the interdisciplinary treatment and clinical follow-up of a 5-year-old patient with isolated oligodontia.

CASE REPORT

A 5-year-old male patient applied to the Kahramanmaraş Sütçü İmam University, Faculty of Dentistry, Department of Pedodontics due to chewing, aesthetic and psychological problems in consequence of tooth deficiency. In medical history taking; it was learned that the patient did not have any systemic or diagnosed genetic disorders. No family history of radiation exposure, drug use, trauma during pregnancy or consanguineous marriage was reported. It was learned that the patient's two siblings did not have a tooth deficiency. The patient was highly compatible and was "definitely positive" according to the Frankel's Behavior Rating Scale.[12]

In the extraoral examination of the patient, no face asymmetry was

detected. Due to oligodontia, maxillary and mandibular retrognatism and decrease in vertical dimension were observed. No anomaly was detected in the hands, feet, nails, eyes, skin and skeletal system. In the intraoral examination; #16, 26, 36 and 46 were determined to be erupted before the normal eruption time and placed in the mouth, however, digital panoromic radiography revealed presence of 8 unerupted permanent teeth germs (15, 25, 31, 32, 35, 41, 42, 45) (Figure 1). While the size, shape and color anomaly was not observed at the erupted teeth, the root development of the teeth was found to be insufficient in the radiographic examination. While the jaws were in centric occlusion, deep over-bite and knife-edge alveolar ridges were observed in the incisors (Figure 2).

In the first examination, topical fluoride theraphy (Sultan, USA) was applied to the patient and it was planned to make upper and lower removable child prosthesis. At the next appointment, the study model was obtained from the first alginate impression (perforated metal tray, Alginate; 3M, St. Paul, MN, USA). The second impression was taken with personal spoons prepared in the study model. Vertical dimension was determined, denture base and wax try-in were prepared. In the clinical and radiographic examination, #11,21 were expected to be erupted soon, therefore the alveolar crest area of these teeth was left empty. The occlusal relations of the acrylic denture, which was completed following the tooth positions were checked. The patient and his family were taught how to use the dentures and then denture was delivered (Figure 3). The patient's family was directed to orthodontic treatment and speech therapy. Follow-up appointments were scheduled at the end of 1 week, 1, 3, 6 months. In the 3rd and 6th month follow ups, it was observed that 11 and 21 erupted. It was learned that the patient was satisfied with her removable partial dentures and the problems he suffered due to the lack of teeth decreased to a minimum (Figure 4,5 and 6). The patient is under regular follow-up in our clinic.

DISCUSSION

Oligodontia can be seen separately as a phenotypic change or with a syndrome in individuals. “Familial isolated oligodontia” appears as a deficiency of primary and permanent teeth in individuals with hereditary familial predisposition regardless of syndrome.[7] In this case report, the interdisciplinary treatment of a 5-year-old male patient diagnosed with

isolated oligodontia was reported. As a result of the intraoral and radiographic examination of the patient, multiple teeth deficiency was detected; however, since no anomaly was observed in the hand, foot, nail, eye, skin and skeletal system, the diagnosis of "familial isolated oligodontia" was made. The Oligodontia usually manifests itself in the period of permanent dentition and the diagnosis is usually made by clinical and radiographic examination following the delay in eruption of permanent teeth at the age of 6-12 years.[13] In this anomaly; differences in dental morphology such as over-bite, cross-bite, inclusions in maxillary incisors, increase in free-way space, attrition, ectopic eruption, multiple diastema, rotation in teeth, microdontia and conical shape in incisors and canines can be observed. In addition, characteristic growth and facial appearance changes such as maxillary retrognatism and hypoplasia, mandibular retrognatism, decreased vertical dimension and lower facial height, transversal and vertical decrease in alveolar crest height, and decrease in the labiomental angle are encountered in the patients' maxillofacial skeletal system.[5]

In the theraphy planning of patients diagnosed with oligodontia; the age of the patient, the number of missing teeth, the condition of the supporting tissues, occlusion and interocclusal distance should be evaluated.[14] In the reported case, treatment plan, consisting of 2 stages, was made with an interdisciplinary team of paediatric dentists, orthodontics and prosthodontist. In the first stage, upper and lower removable child prosthesis were made and the patient was rehabilitated in terms of function, phonetics and aesthetics. In addition, prosthetic rehabilitation provided improvement in over-bite, low vertical dimension and position of the tongue. In the second stage, tongue and speech disorders were planned with speech therapist to be corrected. In addition to the positive effects of all these treatments on the growth and development of the patient, it was aimed to achieve a complete physical and emotional health by providing psychological and aesthetic benefits. According to the Frankel's Behavior Rating Scale, it is gratifying that the patient, who is 'definitely positive', accepts and uses the child prosthesis. After increasing the chewing habit with food such as meat, vegetables and cheese, it was observed that our patient gained weight and get longer at the control of 1,3 and 6 months after treatment. In addition, it was learned that our patient pronounced letters

such as ‘f, v’ more accurately, his self-confidence was increased, and his social relationship with friends and school straightened.

In congenital tooth deficiency, beside child prosthesis; implant, adhesive and fixed partial dentures are other treatment options.[11] In some cases, implant supported dentures may be a good option in the long term. The 'ankylosed' implant applied to pediatric patients in the growth-development period will remain in infraocclusion in the coming years. Peker et al.[15] reported the patient who had 22 permanent and 10 primary teeth deficiency, rehabilitated with child prosthesis. On the other hand, implant application was claimed to be successful in a 3-year-old patient who was diagnosed with anadontia and had adequate alveolar bone support.[16] In the patient reported in this case; 8 permanent and 20 primary tooth deficiencies were detected and the problems experienced by the patient due to tooth deficiency were rehabilitated with child prosthesis and speech therapy. Preferring child prosthesis in oligodontia patients is advantageous because it does not require invasive procedures, is easy and low cost, supports hard and soft tissues and allows modifications in acrylic structure.[17] In this case, it is planned to make modifications in the child prosthesis of the patient in accordance with the growth and development in the dental and surrounding tissues.

CONCLUSIONS

Oligodontia has important effects on the patient's oral health and grade of life. Following the early diagnosis, an interdisciplinary treatment protocol should be carried out in line with the growth and development in the dental and surrounding tissues. Child prosthesis provide an improvement in the patient's functional, phonetic and aesthetic rehabilitation, as well as over-bite, low vertical dimension, and the position of the tongue. Treatments provide psychological and aesthetic benefits in addition to create positive effects of patient's growth and development. Genetic studies in individuals affected by this anomaly may help to better understand the underlying factors involved in the pathogenesis of the disease.

Conflict of Interest

The authors claimed that there is no conflict of interest

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None

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