ОРАЛНО ЗДРАВЈЕ

ИНТЕРДИСЦИПЛИНАРЕН ПРИСТАП И ПЛАН НА ТЕРАПИЈА КАЈ ПАЦИЕНТИ СО ОЛИГОДОНЦИЈА

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Извадок

Олигодонцијата е ретка дентална аномалија кај хуманата популација, која се карактеризира со недостаток на шест или повеќе заби. Во Европа, преваленцијата на синдромската и несиндромската олигодонција е 0,14%. Клиничките манифестации вклучуваат недостаток на шест или повеќе заби, недоволен развој на максиларниот и мандибуларниот алвеоларен гребен и редуцирана долна третина од лицето. Варијациите во денталната морфологија, редуцираната големина и аберантна форма, аномалиите во емајлот, како и доцната ерупција, додатно ја влошуваат клиничката слика. Олигодонцијата е асоцирана и со редуцирана саливарна секреција. Сето ова генерира функционални и естетски проблеми, со импакт на емоционалното здравје. Целта на студијата е да се прикаже случај на 12-годишно девојче со олигодонција, и преземените тераписки процедури за ортодонтско-протетска рехабилитација и воспоставување на нормална орофацијална функција. Може да се заклучи дека оралната рехабилитација кај индивидуите со олигодонција е долготраен процес во кој се вклучени различни специјалисти. Третманот зависи од возраста, а раната дијагноза е круцијална. Превенцијата на кариес, ортодонтскиот третман, автотрансплантацијата, денталните импланти, избегнувањето на препарации на забите и парцијалните протетски надоместоци се препорачани методи.

ORAL HEALTH

INTERDISCIPLINARY APPROACH AND THERAPY PLAN IN PATIENTS WITH OLIGODONTIA

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Abstract

Oligodontia is a rare developmental dental anomaly in humans characterized by the absence of six or more teeth. In European populations the estimated prevalence of both syndromic and non-syndromic oligodontia is 0.14%. Clinical features of oligodontia include six or more missing teeth, lack of development of maxillary and mandibular alveolar bone height and reduced lower facial height. Variation in tooth morphology, anomalies of the enamel, reduced size and aberrant form, delayed eruption have also been observed. Oligodontia is also associated with reduced salivary secretion rates. These bring a functional and esthetic limitations and impact on emotional well-being. The aim of this study was to present a case of a 12-year-old girl with oligodontia and therapeutic procedures for orthodontic-prosthetic rehabilitation and normal orofacial function. A multidisciplinary approach that includes orthodontic and prosthetic therapy is often necessary for dental management in young patients with oligodontia. Oral rehabilitation and maintenance care in individuals with many missing permanent teeth is a long-standing commitment that requires involvement of different specialists. Methods used are age-dependent, and early diagnosis is crucial. Orthodontic treatment, autotransplantation, dental implants, avoiding tooth preparations, and partial prosthetic dentures are treatment choices.

Introduction

Dental agenesis or hypodontia presents a situation of congenital absence of the teeth. If third molars are included, hypodontia is one of the most common developmental anomalies in men, with one or more third molars missing in more than 20% of the population. If more evident and stronger clinical expression of more than six teeth exist, it is oligodontia[1,2,3.] In dental dictionaries and lexicons, oligodontia is defined as „the formation of an incomplete dentition, associated with a reduced size of the persistent teeth." Hobkirk and Brook (1980) considered it „severe hypodontia".

Oligodontia is a rare dental anomaly in human population, and appears as an isolated anomaly or as a part of some syndromes.

In European populations, the estimated prevalence of syndromic and nonsyndromic oligodontia is from 0.14 to 0.25%. Possible causes include viral infection in pregnancy, genetic predisposition, metabolic imbalance, developmental abnormalities and factors of the environment. Autosomal dominant mutations in the AXIN2, PAX9 and MSX1 are identified as causes of dental defects in humans[4,5.]

Clinical manifestations include lack of six or more teeth, unsufficient development of the maxillar and mandibular alveolar ridge and reduced lower facial height of a person. Variations in dental morphology, the reduced size and aberrant form, anomalies in email, as well as late eruption, worsen the clinical condition. There are a whole series of variations in the size and number of the teeth, from asymmetric disadvantage to absence of more than half of the teeth and their microdontic presence6. Oligodontia is often accompanied with taurodontism, impaired mineralization and late or postponed development of the teeth, especially the premolars.

This condition is associated with the reduced salivary secretion rate. All this generates a functional and esthetic problems and emotional impact on health.

Isolated oligodontia should be distinguished from syndromic forms, like hypochondriacal ectodermal dysplasia with imunodeficiency, ECC syndrome, orofaciodigital syndrome type 1, syndromes with cleft lip and palate as Van Der Woude syndrome, Ellis-Van Creveld syndrome and Rapp-Hodgkin syndrome.

There are a number of variations in the number and arrangement of oligodontic teeth and in the form of existing teeth6.

The consequences of missing teeth are numerous and depend on the number and type of teeth missing. Speech, masticatory functional disorders, and esthetic problems caused by disturbed growth and development of the orofacial area, can occur frequently in oligodontia cases.

In contemporary literature, a small number of authors has clearly identified the plan of treatment and described the final results[7,8,9,10,11], especially when it comes to adolescents. The period of adolescence is the most critical age in the development of the person and his/her inclusion in the society. According to Kokich[12], treating oligodontia properly can give optimal results in the growing patients and decrease the need for radical interventions later. For the clinician, the larger challenge is when several frontal teeth are absent, which significantly disrupt the balance and harmonic appearance in patients.

Today exclusive orthodontic treatment in comprehensive and complex cases of oligodontia is unthinkable. Multidisciplinary approach combines the knowledge, skills and experience of various specialists, to obtain optimal results. The intellectual strength of the individuals included in the team has to be employed so that patients receive treatment with contemporary esthetic and functional results. It is necessary to have a unique plan and to determine the dynamics of the procedures. According to Rohlee[13] the team should include: orthodontist, periodontist, prosthodontics, implantologist and general dentist.

Factors that participate in the treatment plan of patients with oligodontia, besides age, are also sagital disharmony, degree of violated intercuspidation, inclination and eventual dysplasia, caries of the teeth, and dental hygiene. For finding the optimum individual solution, itis recommended to use the „set up model", which is defined as the reorganization of the position of the teeth in the plaster cast model[14]. This is necessary and recommendable for all cases where orthodontist, implantologist and prosthetist

are included to facilitate the assessment of their participation. This primarily helps to define the objectives of the presurgical orthodontic treatment and harmony in the position of the teeth. At the same time, this helps to educate the patient and to perceive the purpose of the treatment and the powerful results. Today's progress of the computer industry allows simulation of the parts of the face and head, so that all procedures and the effects can be easily visualized.

One of the main therapeutic challenges in these patients is space management between the existing teeth. In growing children, it is necessary to substitute the distorted esthetics, phonation and function with prosthetic time allowances; and when the period of growth is finished, the problem should be permanently solved. In the beginning, teeth must be orthodontically paralelized in both the crowns and the roots, and their position in dental arches must be optimized. Implants are recommended as the best biological solution for compensation of the missing teeth.

It should be noted that, when the restitution of oligodontic teeth is made by the implants, the neighboring teeth remain intact. But it has to be mentioned that possible problems in the future might emerge, regardless of the correct protocol in placement of the implants, such as the change of soft and hard tissues, depending on each case individually [15,16]. For setting the implants, is buco-palatinal width of the alveolar processus is very important. Uprighting and distalizing the canine, for example, leave enough wide space to implant the lateral incisor [17]. There is no doubt that implants are to be placed after the active growth of an individual is completed, which is prolonged to 20-21 years for the male population. Kokich 18 recommends telerendgenogram images every 6-12 months, and if there are no changes in drawing, it is a sign that the growth is completed.

The aim of this article is to present the case of 12-year-old girl with oligodontia, the undertaken therapeutic procedure for orthodontic-prosthetic rehabilitation and the establishment of normal orofacial functions.

Case report

A 12-year-old girl, the first of three children in the family, was recommended for orthodontic treatment in the Dental Clinical Centre in Skopje. After extra- and intra-oral inspection and X-ray recording, both gnatometric and cephalometric analyses were made. Orthopantomograph image confirmed oligodontia of 12, 14, 15, 18, 22, 24, 25, 28, 35 and 45, in total 10 teeth (Fig.1).

Fig. 1: Orthopantomograph image of the patient

The history of the patient confirmed normal eruption of the dairy teeth, with no signs of hypodontia, but at the time of the examination, the patient had no (persistence of the) deciduous teeth. Intraoral, labial frenulum was within normal limit, gingiva and parodont were healthy. Gnathometric examination showed smaller width of maxillary dental arch in comparison with the mean value for girls at the same age, which was manifested as a bilateral crossbite. Measurements showed maxillar retrognatism and slightly concave profile.

Initially, the therapy began with upper active plate for the expansion of the upper jaw with the aim of softening the maxillary compression (Fig. 2).

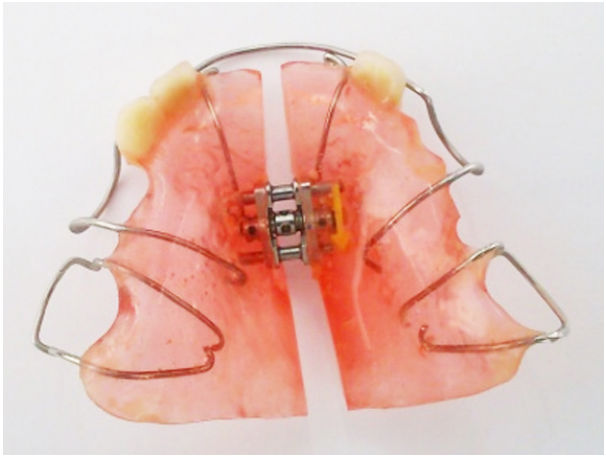

Fig. 2: Mobile appliance in the first orthodontic phase

One year later, treatment was extended with upper removable denture for the substitute of frontal missing teeth (Fig. 3,4,5).

Fig. 3: Intraoral view before placement of temporary prosthetics appliance

Fig. 4: Appearance of temporary prosthetics appliance

Fig. 5: Intra- and extraoral appearance with the denture

The patient was recommended to control the occlusion every 6 months until the growth period is finished, and if necessary, to make a new denture.

After the end of the active growth and development, fixed appliances will be placed in both dental arches, for alignment the teeth and for creating space for placing the implants and prosthetic compensation of the lateral incisors and premolars in the upper jaw and the second two premolars in the lower jaw. The goals of therapy include occlusal stability, the correct vertical dimension and preserving the health of soft and hard oral tissues and TMJ.

Discussion

Oligodontia is the term used most commonly in describing the phenomenon of congenitally missing teeth and has been classified as isolated or non-syndromic and syndromic hypodontia. Although oligodontia can occur along with 60 different syndromes, these anomalies can occur without any syndrome or systemic disease. However, oligodontia is more common in non-syndromic or familial form than in syndromic form.

The biologic basis for the congenital absence of permanent teeth is partially explained by the failure of the lingual or distal proliferation of the tooth bud cells from the dental lamina. The causes of hypodontia are attributed to environmental factors such as irradiation, tumors, trauma, hormonal influences, rubeolla, and thalidomide or to hereditary genetic dominant factors, or to both. MSX1and PAX9 genes play a key role in early tooth development. PAX9 is a paired domain transcription factor that plays a critical role in odontogenesis. All mutations of PAX9 identified to date have been associated with non-syndromic form of tooth agenesis.

Oligodontia should not be neglected as it may impact on various disturbances like abnormal occlusion, altered facial appearance which may cause psychological distress, difficulty in mastication and speech. Treatment depends on extent of hypodontia and should consist of interdisciplinary approach. Therefore, early diagnosis is important in such conditions. Case of tooth agenesis should be recorded with complete clinical history including medical and radiological investigations to rule out any syndrome.

Conclusions

It can be concluded that oral rehabilitation in individuals with oligodontia is a long-term process in which various dental specialists are included. Treatment depends on the age and an early diagnosis is crucial. The caries prevention, orthodontic treatment, autotransplantation, dental implants, avoiding tooth preparations and partial dentures are suggested methods.

The main problem in the treatment of patients with ologodoncija is not in the opening or closing of the space, but in attaining the overall esthetics and function of the stomatognathic system. Interdisciplinary treatment is long and specific, but the challenge is to achieve esthetic and functional rehabilitation and stable results, which of course are mandatory for adolescents and young patients. Restoration often needs to

be changed several times, depending on the age and dentition, while there are no conditions for the definitive solutions. The time duration of these transitional phases and waiting to the end of the growth, for implementation the final restoration, may be frustrated for young patients.

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