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ORAL REHABILITATION OF A CHILD WITH HYPOHIDROTIC ECTODERMAL DYSPLASIA: SIX YEARS FOLLOW-UP STUDY

ОРАЛНА РЕХАБИЛИТАЦИЈА НА ДЕТЕ СО ХИПОХИДРОТИЧНА ЕКТОДЕРМАЛНА ДИСПЛАЗИЈА: ШЕСТ ГОДИШНО СЛЕДЕЊЕ И ТРЕТМАН

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Abstract

Introduction: Hypohidrotic ectodermal dysplasia (HED) is a congenital disorder affecting the tissues of ectodermal embryonic origin. Hypohidrosis, hypotrichosis, and hypodontia or anodontia represent a clinical triad of the syndrome. The ED individuals have typical facial features, while teeth agenesis in both dentitions, underdeveloped alveolar ridges, and improper maxillo-mandibular relations are the main characteristics of the oro-facial system. **Case report:** The manifestation of symptoms, way of communication, and the dental management of a patient with Hypohidrotic ectodermal dysplasia were described, following the patient from his 2.5 years until his 8.5 years of age. Removable acrylic dentures – complete denture in the mandible and maxillary teeth-supported overdenture, or mandibular complete denture and maxillary denture fenestrated in the anterior region, at 5.5 and 8.5 years of age respectively, have been produced, while the deciduous teeth have been reshaped using a composite material. **Conclusion:** When deciding on a dental treatment choice for a HED person, all the factors affecting the final success of the appliances should be considered, of which child's age and skeletal developmental stage are the most important factors. Production of a removable acrylic dentures seems to be the most reasonable, non-invasive and, cost-effective treatment solution in the growing ED patient with severe teeth agenesis. **Keywords:** Hypohidrotic ectodermal dysplasia, treatment choice, removable dentures.

Апстракт

Вовед: Хипохидротичната ектодермална дисплазија (ХЕД) е вродено нарушување на ткивата од ектодермално ембрионално потекло. Хипохидроза, хипотрихоза, и хиподонција или анодонција претставуваат клинички тријаз на синдромот. Лицата со ЕД имаат типичен изглед на лицето, додека пак агенезата на забите во двете дентиции, неразвиените алвеоларни гребени и нарушените меѓувилични односи се главни карактеристики на оро-фацијалниот систем. **Приказ на случајот:** Во овој труд се прикажани симптомите, терапевтскиот пристап и денталниот третман кај пациент со Хипохидротична ектодермална дисплазија, и неговото следење од две и пол годишна, до осум и пол годишна возраст. Во зависност од возраста изработени се различни видови на подвижни акрилатни протези – мандибуларна тотална протеза и максиларна покровна протеза на пет и пол годишна возраст, односно мандибуларна тотална и максиларна протеза фенестрирана во фронталната регија на осум и пол годишна возраст, кога млечните заби се преобликувани со помош на композитен материјал. **Заклучок:** При изборот на дентален третман кај лица со ХЕД, треба да се земат предвид сите фактори кои влијаат на крајниот успех на терапијата, од кои возраста на детето и скелетниот развоен стадиум се најзначајните фактори. Подвижните акрилатни протези се најразумен, неинвазивен, и најевтин избор кај децата во развој со Ектодермална дисплазија и изразен недостаток на забите. **Клучни зборови:** Хипохидротична ектодермална дисплазија, избор на третман, мобилни протези.

Introduction

Ectodermal dysplasia (ED) is a congenital disorder characterized by abnormal development of two or several tissues or structures of ectodermal embryonic origin, such as skin, hair, nails, teeth, sweat glands, mammary gland, eye lenses, parts of the inner ear, nerves. This syndrome was first described by Thurman in 1848[1], and until today several classification systems have been made. The most widely known one was introduced by

Freire-Maia, published in 1971[2], and upgraded several times afterwards. While initial classification systems were based on phenotypic features (clinical aspects) and mode of inheritance, the latest one, published in 2019 by an international advisory group, comprises of information from multiple domains including phenotype, mode of inheritance, genetic alteration, the components of complex molecular structures and the Online Mendelian Inheritance in Man number[3].

ED syndrome includes approximately 200 clinically different conditions which differ from each other according to tissues and structures that are not properly developed[4]. All these conditions can be grouped in two major categories depending on the functionality and number of the sweat glands: Hidrotic and Hypohidrotic or Anhidrotic type.

Hidrotic ectodermal dysplasia, known as Clouston syndrome, is characterized by the clinical triad consisting of nail dystrophy, hypotrichosis, and palmoplantar hyperkeratosis. It is inherited as an autosomal dominant disorder, although de novo gene mutations have also been reported[5]. The main difference between Hidrotic and Hypohidrotic type of ED is that in the Hypohridotic type the number of sweat glands is reduced and some of them do not function properly[6,7]. This condition is characterized with heat-intolerance particularly in the summer or high ambient temperatures, and during exercise[8], as the body cannot cool itself by evaporating sweat. HED is especially dangerous in infants, during infection diseases, which, if not timely recognized, may cause febrile seizures (hyperthermic episodes) with brain damage[9], and consequent developmental retardation, and eventually lethal outcome. Other tissues and structures of ectodermal origin are also affected, making a triad of symptoms: hypohidrosis, hypotrichosis (skin- and scalp-hair anomalies accompanied by sparse and fine eyebrows and eyelashes) as well as anodontia or hypodontia (associated with small and conical incisors)[6,10]. It may be inherited as an autosomal recessive or autosomal dominant disorder affecting both sexes equally, or as X-linked recessive disorder, in which males are severely affected, while female carriers can be asymptomatic or have a milder phenotype[7]. The key symptom of rare subtype of HED, Anhidrotic ectodermal dysplasia with immunodeficiency (EDA-ID), is reduction in immune system function. It is characterized by low levels of immunoglobulins, while immune system T- and B- cells have a decreased ability to recognize and respond to bacteria, viruses, and yeast with glycan antigens attached to their surface. This is a reason for frequent and recurrent infections such as sinusitis, bronchitis, pneumonia, otitis and lymphadenitis[11, 12].

HED is associated with nail abnormalities, low-set, sticking-out ears and typical facial features such as protruding forehead, wrinkled eyelids, characteristic periorbital hyperpigmentation, saddle-bridged nose, protruding lips and hypoplasia of the mandible. Anodontia or hypodontia does not affect the development of the maxillary and mandibular alveolar ridges only, but has a negative impact on the masticatory efficiency and body growth overall, speech intelligibility, and facial appearance and aesthetic as well; the latest one having an impact over the mental development, self-confidence, and social life of the affected person[10].

The treatment of the individuals with HED is very complex, engaging several specialists: neonatologist, pediatrician, otolaryngologist, pulmonologist, ophthalmologist, dermatologist, plastic surgeon, speech therapist, and psychologist. Regarding the teeth disorders, pedodontist, orthodontist, oral surgeon and prosthodontist should be engaged, as well as maxillo-facial surgeon in the cases of skeletal malocclusions, and cleft lip and/or palate[13].

In this article, an oral rehabilitation of a child with Hypohidrotic ectodermal dysplasia and severe maxillary oligodontia and mandibular anodontia is presented, starting from his first visit to a dental office, until the production of the second pair of dentures.

Case report

A 8.5-year-old boy with Hypohidrotic ectodermal dysplasia (HED) and normal intellectual development came at the Department of Prosthodontics, University Dental Clinical Center, needing a new pair of acrylic dentures. The previous one, the maxillary overdenture and mandibular complete denture, had been successfully used for three years. Significant growth of the body and facial bones, especially mandible, has been noticed since his last visit - 6 months ago, the period when he barely wore the prosthesis because of discomfort and impossibility of adjustment as a result of the COVID 19 pandemic.

Case history: The boy had visited the Clinic for the first time when he was 2.5 years old, together with his parents and his 6.5-year-old brother having the same diagnosis and needing a new pair of acrylic dentures, as the previous ones didn't function well[10]. At that time, the prosthodontist couldn't get close to the younger boy, and was not able to do any kind of examination. The following recommendation was given: the parents should bring the younger son with them, during all appointments in which the older son's prosthesis were made. The idea was that the younger boy would get used to the Clinic's environment, to all the procedures of producing the prosthesis, and to make a connection with the prosthodontist. He was also present on the appointments that followed,

when the control examination or adjustment of the brother's prosthesis have been conducted. He realized that acrylic dentures can help during mastication, speaking, and can help eliminate the difference between his brother and his friends regarding the appearance of a lower face. The final decision of producing the first pair of maxillary and mandibular prosthesis was made when the boy reached the age of 5.

Family history: Parents denied any hereditary origin of the syndrome; mother, having agenesis of the upper lateral incisors only, stated that there were no differences between the pregnancies with the boys and the girls (14-years- and 2-years- old at the period of production of the second pair of dentures), born healthy, without ED. The older brother, having typical signs of ED, had been hospitalized several times because of bronchopneumonia, wheezing and asthmatic attacks, and has been diagnosed with Methicillin-resistant Staphylococcus Aureus (MRSA) in the nasal and pharyngeal mucosa recently.

Extraoral examination: The young patient had dry, warm, rough, thin and shiny skin (as a result of hypohidrosis), with several scratches, and pigmented areas as some wounds have healed. Hypohidrosis - reduced sweating is the reason for disability in the regulation of the body temperature as well, a condition especially problematic in the summer period (the boy usually lays down on the kitchen floor and has cold showers all the time), and during acute diseases followed by increased body temperature. The lacrimation, according to the mother's statement, was reduced, unlike his brother, who had no tears at all. Finger and toe nails were thick, slightly striated with white spots. The hair was sparse, very thin, soft and blond (hypotrichosis), including the eyebrows and eyelashes. The ears were prominent and pointed. Other signs of ED could be observed as well: square and bossing forehead, and prominent supraorbital ridges giving the dominant part of the upper third of the face; expressively wrinkled and slightly pigmented eyelids; short nose with anteverted nostrils, wide base and depressed nasal bridge contributing to the concave appearance of the middle third of the face; large philtrum, protruded upper lip, and indented lower lip, pointed chin with deep mentolabial and nasolabial folds, and reduced lower facial height (without first pair of dentures in child's mouth) giving a senile facial appearance (Fig.1; Fig. 11).

Intraoral examination revealed normal color and appearance of the oral mucosa and gingiva, and atrophic (knife-looking) alveolar ridges. In the period of producing the first pair of dentures (at the age of 5), underdeveloped maxilla and flat palatal vault with slightly prominent palatal tori, and presence of primary central incisors were detected only, while the edentulous mandible had poorly expressed tubers. In the following period, the maxillary deciduous canines have erupted and took their final position; the deciduous teeth were spaced and conically shaped (Fig.12a). Expressed growth of the mandible with prominent tubers has been noticed (Fig. 12b) several months after the COVID 19 pandemic had started.

Radiographic evaluation of the maxilla and mandible: Undeveloped alveolar ridges were confirmed by an orthopantomogram taken at the age of 5 (Fig.2), revealing four deciduous maxillary teeth, two of them - central incisors present in the mouth, and two deciduous canines still positioned in the maxillary bone; there were only two developing permanent teeth (the crown stage), in the frontal region of the maxilla, in the position of the permanent central incisors, without flat incisal line, but with cusp instead. There were no deciduous or permanent teeth in the mandible.

A retroalveolar radiography (Fig.13), taken right before starting the production of the second pair of dentures, revealed lowered position of the permanent teeth with partially developed radices, and radices resorption of the deciduous incisors.

Treatment procedure

Production of the teeth-supported overdenture in the maxilla and complete denture in the mandible was the treatment of choice at the age of 5 (Fig.8), considering the patient's age and the presence of the maxillary deciduous central incisors in the mouth only. Three and a half years later, it was decided that a maxillary denture fenestrated in the anterior region and a mandibular complete denture should be manufactured (Fig. 18), while deciduous teeth have been reshaped using composite material (Tetric EvoCeram, Ivoclar Vivadent, Liechtenstein).

The following routine procedures for making dentures were carried out:

Preliminary impressions (Fig.3; Fig.14) were taken with appropriate stock trays using fast setting irreversible hydrocolloid material (Alliget, Kulzer, Germany). Casts, made of dental stone (Fig. 4; Fig. 15), were used for production of custom trays (Fig.5a) (Hoffmann's Ultra Violet Base Plates for Individual Custom Tray, light cure; Hoffmann, Dental Manufaktur GmbH, Berlin, Germany). Thermoplastic material (Hoffmann's Impression Compound green, Germany) was used for border molding, while the final (functional) impressions were taken with condensation silicone impression material Stomaflex Light, Pentron, Spofa Dental, Czech Republic (Fig.16); when producing the first pair of prosthesis, functional impressions had been made using polysiloxane impression material -

Xantopren, L blue, Kulzer, Germany (Fig.5b). Final casts were prepared using hard dental stone, followed by production of temporary bases (Hoffmann's Shellac Base Plates, Germany), with wax rim (Modeling wax, summer/winter, Morsa Dental, Germany) (Fig.6). Vertical dimension of occlusion and centric relation were recorded. After that, casts were mounted on a semi-adjustable articulator and artificial teeth (Eray acrylic teeth, Eraylar, Turkey), the smallest size, were arranged according to a balanced occlusion (Fig. 17). In the absence of children's artificial teeth acrylic teeth for adults have been used, but when making the first pair of dentures at the age of 5 the same were reshaped considering the child's age (Fig. 7). Final trial was made to check vertical and centric relations, occlusion, phonetics, and aesthetics. Conventional heat cure acrylic resin, SR Triplex Hot (Ivoclar Vivadent, Schaan Liechtenstein) was used for production of the first pair of dentures (Fig. 8), while Meliodent (Kulzer, Germany) was used for production of the second pair of prosthesis (Fig. 18).

After the final processing and polishing, the dentures were inserted in the patient's mouth followed by a careful adjustment of the bases, as well as occlusion, and articulation. Improvement of the facial frontal and profile appearance was evident (Fig. 9), which satisfied the patient (Fig. 10). The boy was given instructions for maintaining the dentures' hygiene although he was already familiar with all of the procedures. Finally, he was suggested to wear the dentures during the day only, thus enabling further jaw development.

First control visit was done after 24 hours and the necessary corrections were conducted few days later. The patient accepted the dentures within the first week, without any problems during the mastication process, and talking. Subsequent visits were scheduled at 2-months interval.

Discussion

All of the patients with ED have similar tissue disorders, and as is in all the cases of different syndromes, they have similar phenotype and resemble each other. Besides typical facial appearance, hypodontia or anodontia is one of the main characteristic of this congenital disorder. Early prosthodontic treatment of those children is important not only for the efficiency of the mastication process itself, but for the establishment of a new dietary habits that will enable normal body growth, proper swallowing and intelligible pronunciation of voices and words. All of these, along with improved aesthetic appearance, will allow normal psychological development and social integration of the child, especially in kindergarten or in school[10].

The choice of the treatment modality for patients with ED depends on numerous factors: severity of hypodontia (how many teeth are existing), teeth arrangement in the dental arches, their status (sound crowns or with decay), patient's age – developmental stage of the craniofacial bones, socio-economic status of the parents / guardians, as well as presence of other disorders such as malocclusions or cheilo-gnatho-palatoschisis.

Removable complete dentures are the only solution in cases of anodontia, when bones have not reached their final developmental stage, or in cases with completed craniofacial growth but with low socio-economic status.

Overdentures may be manufactured in the cases of severe oligodontia, when the existing teeth (microdontia) allow to be covered with the denture, and serve for additional denture's retention and stabilization (teeth-retained overdenture)[10]. Telescopic overdenture produced over the telescopic copings made on the prepared natural teeth (taking an advantage of fixed and removable dental prosthesis), is a viable treatment alternative for ED patients with hypodontia and limited finances[14]. Implant-retained overdenture is the treatment of choice in the cases with anodontia or severe oligodontia[15]; however the patient requires a high income and completely developed bones. Mandibular implant-retained overdenture may be manufactured even during the childhood, but only if the implants are inserted in the anterior portion of the mandible[16].

Partial acrylic removable dentures with retainers are a solution not only for an adult ED patient with hypodontia, but for the growing patients as well; in such patients, retaining metal clasps should not produce any pressure on the existing deciduous teeth or erupted permanent teeth with incomplete root development. Therefore, flexible dentures seem to be a better solution as they allow jaws' growth, and the flexible clasps do not create pressure on the teeth which serve for retention, and the same are tooth-colored providing better esthetic; this type of dentures are stronger and biocompatible as the material is acrylic monomer- and metal-free, and comfortable for wearing and using[17,18].

In the ED patients with mild or moderate hypodontia, underdeveloped maxilla or mandible and/or malposition of the existing teeth, acrylic partial denture with artificial teeth, and incorporated orthodontic elements such as expansion screw is the best solution; the treatment may continue using orthodontic/prosthetic modular appliance[19]. This type of mobile appliances not only replace the missing teeth, but also guide the sagittal and transversal jaws' development[20]. Space management and definitive tooth alignment in preparation for implant-supported fixed restorations is achieved with fixed orthodontic therapy[21].

Fixed prosthesis could be a prosthodontist's treatment choice in patients with completed craniofacial development and mild or moderate hypodontia with a sufficient number of permanent teeth only, or with severe hypodontia (at least 4 permanent teeth), but with favorable teeth arrangement in the dental arch (two canines and two molars). Dental bridge crossing the midline, interferences with a maxillary transversal development in growing patients; in such patients, frontal bridge can be made only in the mandible.

The last, along with the successfully inserted implants in the anterior mandible even in very young children[22], is enabled by the growing pattern of the lower jaw: the lateral growth of the anterior mandible is usually complete by the third year of age. Despite scientific and clinical findings suggesting that the relative implants' position remained unchanged, the National Foundation for Ectodermal Dysplasia recommends implant insertion in the mandibular body around eight years of age[23] (for implant-supported overdenture). However, fixed dental prosthesis made over the implants is recommended to be produced at around 18 years of age, after additional implants have been inserted[23].

In this case report, a prosthodontic treatment of a boy suffering from Hypohidrotic ectodermal dysplasia, with severe hypodontia in the maxilla, and anodontia in the mandible is presented, from his first visit at the Department of prosthetic dentistry at 2.5-years of age, until his 8.5-years of age. The first pair of acrylic dentures, maxillary overdenture and mandibular complete denture, were made when he was 5 years old, while the second pair, maxillary denture fenestrated in the anterior region and mandibular complete denture, were made 3.5 years later.

Despite the patient's age, all of the clinical procedures were performed regularly without major problems, even when he was five years old. Living with an older brother having the same syndrome and wearing dentures, and having enough time to get used to the dental office and acquisition of mutual trust with the therapist, as well as awareness of the benefit of the dentures regarding nutrition, phonetics, and facial appearance, enabled all of the procedures, while making the prostheses, to be performed without stress, anxiety or fear. The reflex of vomiting was reduced by taking impressions in the morning, when the child was rested, and before any meal was taken. He performed all required lips, cheek and tongue movements necessary to determine the borders of the dentures; at 5 years he was instructed to do the facial muscles' movements without trays in his mouth, imitating the prosthodontist and his older brother; when he was 8.5 he performed all of the movements on his own. Time was needed to establish proper maxillo-mandibular relations as there were no pair of antagonist teeth that, in closing position, would provide secured individual's mandibular position and occlusion. Moreover, the child had no sense of centered positioning of the mandible in relation to the maxilla, unlike most of the edentulous adult patients who had their natural teeth before. Due to the lack of children's artificial teeth, standard teeth (except second molars) with smallest dimensions were selected, reduced, and reshaped when needed for the manufacturing of the first pair of dentures, while smallest dimensions of standard teeth (except second molars and maxillary frontal teeth) were selected for the second pair of dentures.

Since a maxillary overdenture was produced when the boy was five, the deciduous canines started to erupt. In the period that followed, occasional adjustments to the maxillary denture were inevitably necessary in order to make space for the canines, and to keep its stability. During the first several months of the COVID 19 pandemic, the deciduous canines reached their final position. However, the impossibility of providing health care resulted in discomfort while wearing, lost retention, and stability. The lengthening of the clinical crown of the existing deciduous teeth resulted in the maxillary prosthesis perforating the frontal region when adjusted, and loosening the vacuum. On the other hand, retroalveolar radiography, made before starting a procedure for manufacturing the second pair of dentures, revealed lower position of the permanent teeth in the alveolar bone causing physiologic apical root resorption of the deciduous central incisors. Extraction of the deciduous incisors was not recommended as the root development of the permanent teeth was not completed, a reason why pedodontist decided to reshape the deciduous teeth with a composite material instead.

Adjustments of the firstly made mandibular complete denture have been conducted many times in order to enable jaw growth. Three and a half years later, the complete denture became short, not covering the mandibular tubers as the mandibula has shown significant sagittal growth.

The abovementioned changes influenced the decision to produce a new pair of prostheses considering the patient's age, and an upcoming eruption of the permanent frontal teeth: complete mandibular denture and maxillary denture fenestrated in the intercanine region so the deciduous teeth can be exposed to the oral cavity. Metal clasps were not inserted in the acrylic base, because they would retain on the deciduous canines and produce a pressure on them; the aim of the prosthodontics treatment in this patient is to preserve the deciduous teeth as long as possible, especially canines, as there are no permanent canine teeth buds in the maxillary bone. However, frequent adjustment of the vestibular part of the denture will be

performed in order to allow transversal growth of the anterior part of the maxilla.

Subsequent visits are scheduled at 2-months interval; regular adjustments of the removable prosthesis and making a new pair after the periods of expressed body growth during the childhood, will enable unimpeded development of the maxillary and mandibular bone.

Proper and regular oral and denture hygiene was recommended in order to prevent inflammation of the oral mucosa and gingivitis, as well as to prevent tooth decay; preserving the teeth in the mouth as long as possible is a paramount of dental care, thus preventing teeth extraction and consequent bone resorption.

Conclusion

Early dental treatment of children with Ectodermal Dysplasia, having hypodontia or anodontia, is of great importance. The missing teeth should be replaced by the time they reach the school age, not only for masticatory efficiency and improved nutrition, but for improved speech and aesthetic facial appearance that should help children be accepted by their peers and friends. All these will have a positive impact on the psychological and emotional development of the affected persons.

The treatment choice depends on several factors such as severity of the hypodontia, patient's age i.e. skeletal maturation stage, presence of malocclusion, as well as the socio-economic status of the patient's family. Production of a removable acrylic dentures is recommended, reasonable, and a cost-effective treatment in the growing ED patients. Completing of the cranio-facial bones' development enables definite dental treatment based on a dental implants insertion and production of implant-supported overdentures or fixed prosthesis.

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Figures 1-10: took out during the production of the first pair of dentures at an age of 5:

Figure 1. *Extraoral photo shows characteristic features of Ectodermal Dysplasia in a 5-years-old boy:*
- ***a.)*** *profile view - deep mentolabial and nasolabial folds and lower facial height (vertical dimension), protruding lips and pointed chin.*
- ***b.)*** *hands with dry skin and thick and striated nails.*

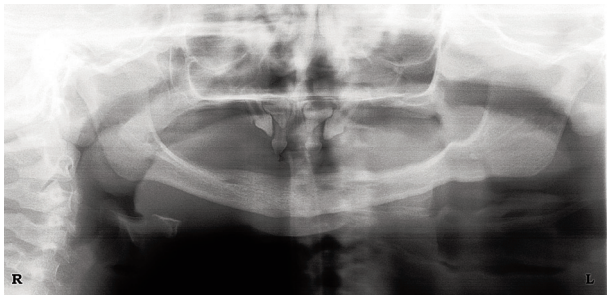

Figure 2. *Orthopantomogram reveals severe hypodontia and undeveloped alveolar ridges: four deciduous teeth and two developing permanent teeth in the frontal region of the maxilla, and anodontia in mandible.*

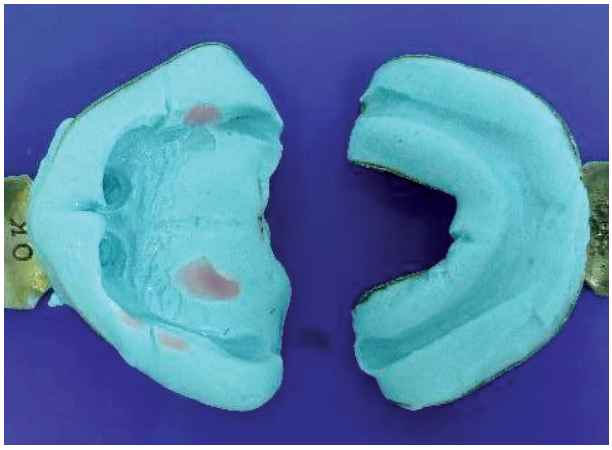

Figure 3. *Preliminary impressions made with irreversible hydrocolloid material.*

Figure 4. *Stone models.*

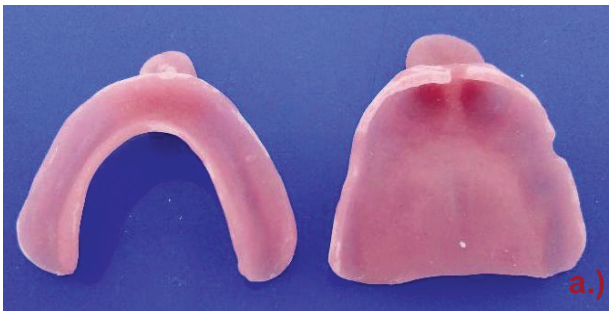

Figure 5.

a.) *Custom-made trays.*

b.) *Final impressions made using thermoplastic material and light body polyvinyl siloxane impression material.*

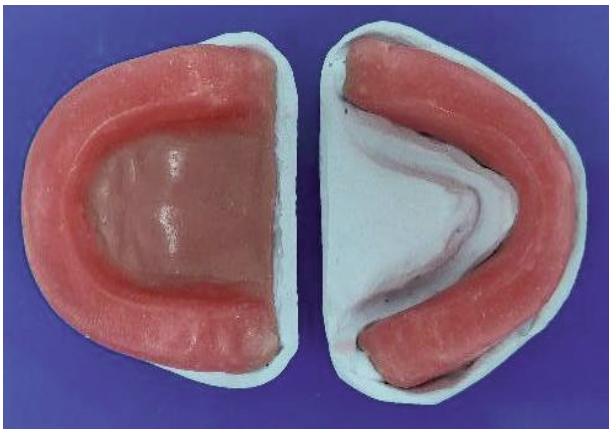

Figure 6. *Temporary bases with wax rims.*

Figure 7. *Artificial teeth embedded in wax and arranged according to a balanced occlusion:*

a.) *frontal view;*

b.) *profile view.*

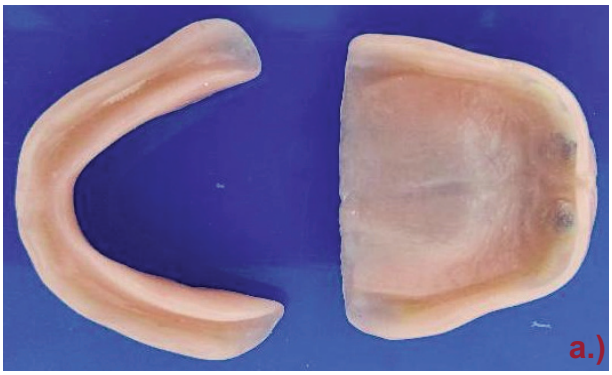

Figure 8 a-d. *Prosthesis made of heat cure acrylic resin: Teeth-supported overdenture in the maxilla and complete denture in the mandible.*

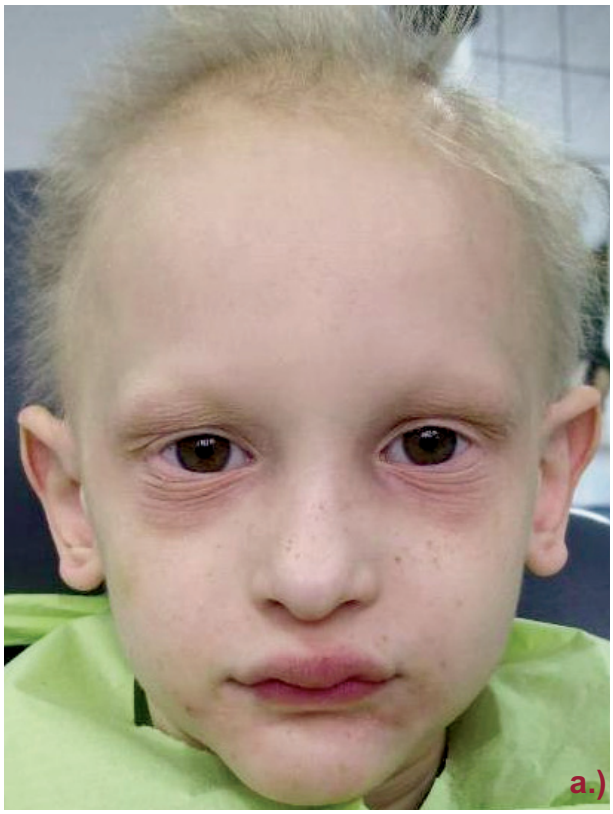

Figure 9. *Improved facial appearance after insertion of the dentures:*

a.) *frontal view;*

b.) *profile view.*

Figure 10. *Satisfied patient after insertion of the dentures.*

Figures 11-18: took out during the production of the second pair of dentures at an age of 8.5:

Figures 11. *Extraoral photo of the patient:*

a.) *frontal view;*

b.) *profile view;*

c.) *hands;*

d.) *arm: dry skin with scratches.*

Figures 12.

a.) *Intraoral photo of the maxilla: 4 deciduous teeth: 2 incisors and 2 canines;*

b.) *Intraoral photo of the mandible: atrophic alveolar ridge and prominent tubers;*

Figure 13. *Retroalveolar radiography (8.5 years of age) reveals lowered position of the permanent incisors teeth with a cusp instead of incisal edge and partially developed radices; deciduous canines are completely erupted without radices resorption while deciduous incisors are with complete radices resorption.*

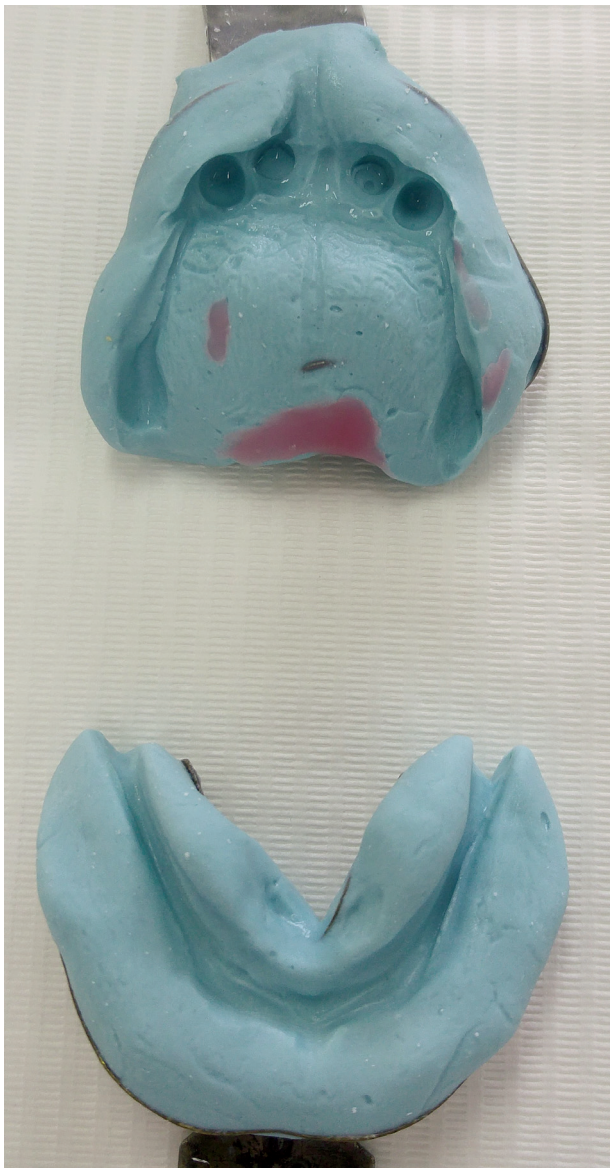

Figure 14. *Preliminary impressions made with irreversible hydrocolloid material.*

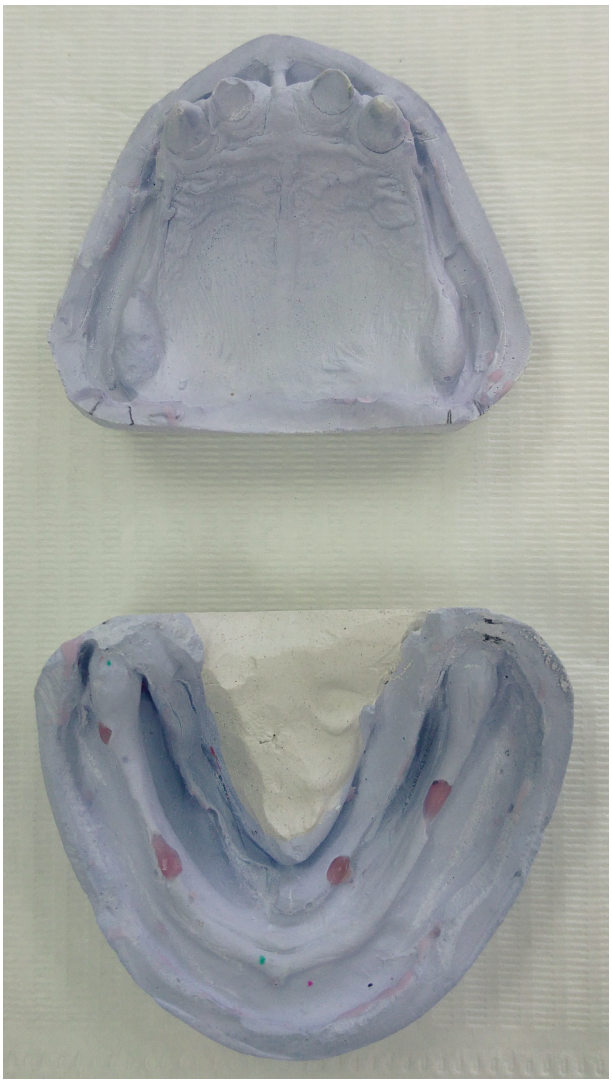

Figure 15. *Stone models.*

Figure 17. *Artificial teeth embedded in wax:*
a.) *frontal view;*
b.) *profile view.*

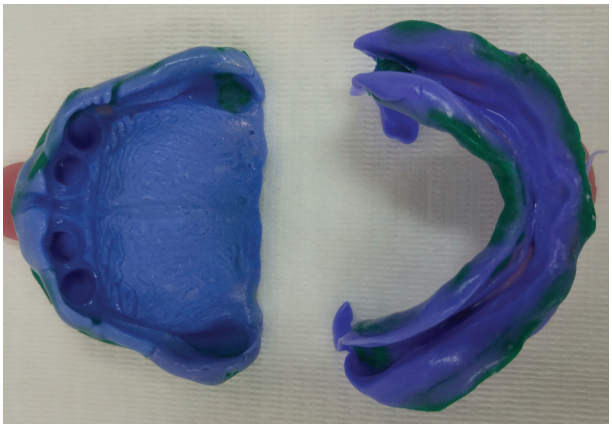

Figure 16. *Final impressions made using thermoplastic material and condensation silicone impression material.*

Figure 18. *Prosthesis made of heat cure acrylic resin: maxillary prosthesis fenestrated in the frontal region; mandibular complete denture:*

- ***a.)*** *frontal view;*
- ***b.)*** *right profile view;*
- ***c.)*** *left profile view;*
- ***d.)*** *comparison of the dimensions with a dentures made for an adult patient;*
- ***e.)*** *dentures inserted in the mouth; deciduous teeth reshaped with composite material.*

Figure 19. *Extraoral photo of the patient with inserted dentures in the mouth (frontal view).*