

NADOKNADA ZUBA ENDOOSEALNIM IMPLANTIMA KOD PACIJENTA SA EKTODERMALNOM DISPLAZIJOM -prikaz slučaja-

TOOTH REPLACEMENT USING ENDOSSEOUS IMPLANTS IN PATIENT WITH ECTODERMAL DYSPLASIA -case report-

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Kratak sadržaj

Stomatolozi današnjice su u stalnom sukobu sa sve većim brojem medicinski-kompromitovanih pacijenata koji imaju potrebu implantiranja ili ranog proteziranja zbog rehabilitacije tipa hipodoncije.

U literaturi se nalazi mali broj rešenja za oralnu terapiju pacijenata sa znacima hipodoncije, sa sindromom ektodermalne displazije, što je oboljenje ektodermalnih produkata (nokti, kosa, zubi i znojne žlezde). Cilj ovog rada bio je da preko prikaza slučaja hipodoncije, sa znacima ektodermalne displazije, izradimo kritičku evaluaciju pre- i post-operativnog toka implantacije, kao i momenat donošenja rešenja za terapiju tipa fiksnog proteziranja.

Stavili smo akcenat na plan proteziranja, imajući u vidu uticaj na rast i razvoj vilične kosti kod relativno mladog pacijenta. Sa plasiranjem implantata u gornjoj i donjoj vilici, kao i sa cementiranjem gornjih i donjih cirkularnih keramičkih mostova, uradili smo rehabilitaciju hipodoncije, govora, mastikacije i estetike kod pacijenta i dali smo mu novu dimenziju u životu, osmeh.

Ključne reči: hipodoncija, ektodermalna displazija, endoosealni implantanti, keramičke nadoknade

Uvod

Moderna protetska stomatologija bavi se tretiranjem krezubosti bilo da je stečene ili urođene prirode. Osnovni etiološki faktori za pojavu urođene hipodoncije, oligodoncije ili anodoncije su genetski, a mogući su svi modeli njihovog nasleđivanja: autosomno-dominantno, X-vezano, autosomno-recesivno ili poligeno.

Problem hipodoncije, tipa ektodermalne displazije, indicira heterogena grupa nasleđenih

Abstract

Nowadays, dentists are faced with an increasing number of medically compromised patients with necessity for implants or early prosthesis due rehabilitation in the sense of hypodontia. There is little direction in the literature for oral therapy of patients with hypodontic signs, with the syndrome of ectodermal dysplasia, which is the disease of ectodermal products (nails, hair; teeth, and sweat gland).

The aim of the paper was to make critical evaluation of pre- and post-operative course of implantation, and to present the moment of bringing conclusion about the therapy of fixed prosthesis type, using this case of hypodontia, taken from our practice.

Particularly, we put an accent on planning prosthesis, considering its influence on growth and development of the jawbones in a relatively young patient. By insertion of implants in the upper and lower jaw, as well as with cementing of metal-ceramic bridges, we accomplished rehabilitation of hypodontia, speech, chewing and esthetics, giving the patient a new dimension in life, a smile.

Key words: hypodontia, ectodermal dysplasia, endosseous implants, ceramic restorations

Introduction

The task of modern dentistry is to treat acquired or innate toothlessness - hypodontia. The basic etiologic factors for the appearance of the innate hypodontia, oligodontia, or anodontia are genetic, and there are possibilities for all models of its inheritance: autosomal-dominant, X-linked, autosomal-recessive or polygenic.

The problem of hypodontia, or a type of ectodermal dysplasia, indicate to heterogenic group

oboljenja ektoderma i njegovih produkta. Clarke¹, Jorgenson², Pinherio i Freire-Maia³ opisali su 154 tipova ektodermalne displazije i poddelili ih u 11 podgrupa, a zatim ih klasifikovali prema zahvaćenim strukturama (kosa, zubi i znojne žlezde), što je kasnije prihvaćeno kao bazična klasifikacija SZO.

Stomatološki tretman kod pacijenata sa hipodoncijom ili anodoncijom ima za cilj funkcionalnu, estetsku i psihološku rehabilitaciju. Zato je treba započeti od njihove najmlađe uzrasti. Farrington⁴ je registrovao najmlađeg pacijenta koji je imao samo 3 godine kada je dobio svoje prve proteze. Budući da je rast i razvoj vilica najintenzivniji sve do završetka puberteta, a i kasnije, od protetičara se traži da menja, dopuni i adaptira proteze svakih 6 meseci da bi se pratile promene alveolarnog grebena i vilice u celosti. Prema preporukama Nacionalne fondacije za oboljenja ektodermalne displazije, pacijenti se grupišu u 4 grupe prema uzrastu (1-4 godine; 5-11 godina; 12-14 godina i 15-50 godina). U prvoj, drugoj i trećoj grupi jedini izbor za tretman su kompozitne plombe kojima se modeliraju konačni zubi do njihovog normalnog oblika i mobilne proteze. U svom radu Dhanrajani i Jiffry⁵, u toku ispitivanja u četvrtoj starosnoj grupi, zaključili su da se pored mobilnih i fiksnih proteza može primeniti i tretman sa endossealnim implantima, ali odlučujući faktor je njihova skeletna i dentalna zrelost, a ne kalendarski uzrast.

Dakle, cilj ovog rada bio je da preko prikazivanja našeg pacijenta sa fiksne stomatološke protetike, sa znacima hipodoncije, tipa ektodermalne displazije, uradimo kliničku evaluaciju pacijenta od momenta njegovog prvog dolaska, pre- i post-operativnog toka implantiranja, sve do onog momenta kad smo doneli finalno rešenje za terapiju tipa fiksnog protežiranja.

Prikaz slučaja

Pacijent uzrasta 15 godina primljen je na Kliniku fiksne stomatološke protetike. Potražio je pomoć za rehabilitaciju oralne šupljine sa dominantnim simptomom hipodoncije. Ekstraoralni nalaz našeg pacijenta bio je tipičan za jednog nositelja hipodoncije, tipa ektodermalne displazije sa 3 kardinalna simptoma: hipotrihoza, hipohidroza i onihodisplazija.

of inherit illness of the ectoderm and its products. Clarke¹, Jorgenson², Pinherio and Freire-Maia³ have described 154 types of ectodermal dysplasias, dividing them in 11 subgroups, and then classified them by the affected structures (nails, teeth, and sweat glands), which was later accepted as basic classification in WHO.

Dental treatment of patients with hypodontia or anodontia has functional, esthetical, and psychological rehabilitation as a goal, because of which it is an essential part of solving the ectodermal dysplasia and should begin from their earlier age. Farrington⁴ registered his youngest patient who got braces at the age of three. Because the growth and development of jaws is under full way till the end of the puberty, and later, there is a need for brace changing, recompense and adapting of the braces every 6 months for following the changes of the ridge and the jaws in a whole. According to the reference of The National Foundation for people suffering from ectodermal dysplasia, the patients grouped themselves in four groups depending on age (from 1-4 years, 5-11 years, 12-14 years, and 15-50 years). In the first, second, and third group there is a choice of treatment just for the filling and reform of the mobile and fixed braces. In the fourth group, beside these two treatments, the endosseous implants can be also utilized, but definite factor is its dental and skeletal maturity, and not their age⁵.

Therefore, the aim of the paper, by presenting the case of our patient admitted to the clinic for fixed dental prosthesis with signs of hypodontia of ectodermal dysplasia type, was to make the clinical evaluation of the patient from the moment of his first arrival, pre- and post-operative implantation course, till the moment of bringing the final conclusion for the therapy of fixed prosthesis type.

Case report

The patient aged 15 years was hospitalized at the Clinic for Fixed Dental Prosthesis requiring help for rehabilitation of the oral cavity with a dominant symptom of hypodontia. The diagnosis of our patient was typical of a patient suffering from hypodontia of ectodermal dysplasia type, with three cardinal symptoms: hypotrihosis, hypohidrosis, and onyxhidrosis.

Ekstraoralnim pregledom moglo se primećiti: prominencija gornjih orbitalnih lukova, mali sedlasti nos, hipoplazija srednje trećine lica, ekstenziran filtrum, tanka gornja usna, evertirana donja usna, naznačen horizontalni sulkus na bradi, tanke i velike ušne školjke, retka i fina kosa, trepavice i obrve. Gubitak jasne granice vermilion, suva oralna sluznica i prominentne usne koje su nepoduprene zubima daju detetu starački izgled. Na inspekciji se utvrdila izrazito suva koža, osetljiva na sunce i lako diskeratotična. U anamnezi pacijenta i njegovog roditelja došli smo do saznanja da on od rađanja pa do trenutka prijema ima znake visokih rekurentnih temperatura koje su ponekada praćene respiratornim i drugim infekcijama.

Sa kliničkim pregledom oralne šupljine i panoramskim RTG snimkom (sl.1) utvrdili smo sledeći oralni nalaz: hipodontija sa preostalim malformiranim, konačnim zubima, to jest rudimentirani incizivi i taurodontni molari.

U maksili su bila prisutna oba centralna sekutića, oba oćnjaka i prvi molari. Iz razloga što su prvi molari bili rudimentirani bez ikakvog kapaciteta za nošenje protetske konstrukcije odlučili smo se podvrgnuti ih ekstrakciji. U istoj seansi, u sveže ekstrakcione rane desnog i levog prvog molara plasirani su endoosealni implanti (sl. 2).

U mandibuli su bila prisutna samo dva oćnjaka i oba druga molara. Oba molara i levi oćnjak nisu ispunjavali uslove za indikaciju protetskog tretmana i u sledećoj poseti su bili ekstrahirani i zamenjeni endoosealnim implantima. Zbog potrebe statike koronarnih delova donjih oćnjaka, a i zbog potrebe statike celog cirkularnog mosta predviđenog u mandibuli, bilo je indicirano postavljanje još jednog implanta u predelu drugog levog premolara (sl. 3).

Implantirane patrljke montirane na endoosealne implante bilo je potrebno sastrugati zbog međusobnog paraleliziranja i boljeg aksijalnog prenošenja pritiska mastikacije na vilićnu kost. Iz estetskog razloga, prvo su izraćena dva semicirkularna gornja mosta od metalkeramike (sl. 4). Zatim smo pristupili izradi donjeg cirkularnog mosta istim principima (sl. 5).

Da bi se osigurali kvalitetom osteointegracije i rubnim zatvaranjem mostove konstrukcije sa implantima ponavljali smo RTG snimanje

In the anamnesis, the extraoral look of the patient indicated to: prominence of the upper orbital arches, small nose, hyperplasia of the middle third of the face, extended filtrum, thin upper lip, horizontal wrinkle on the chin, thin and big ear lobes, thin and fine hair, lashes and eyebrows. The loss of the clear border of vermilion, dry oral slime and prominent lips unsupported by teeth, gives an old look to the child. On inspection, extremely dry skin, sensitive to sunlight was observed. From the child and his parent we came to knowledge that ever since his birth there were signs of high temperature occasionally followed by respiratory and other infections.

With clinical examination of the oral cavity and with panoramic RTG imaging (Figure 1), we obtained the following: hypodontia with the remaining malformed teeth, in other words rudimental incisions and taurodontic molars.

In the maxilla, there were two central incisions, two canines and the first molars. Because the first molars were not capable for carrying brace construction, we decide to extract them. Upon the same occasion, in the fresh extraction wounds of the right and left molar, endosseous implants were inserted (Figure 2).

In the mandible, only two canines and two other molars were present. The two molars and the left canine were inappropriate for the prosthesis treatment indication, and in the next visit they were replaced. Because of necessity of statics of coronary parts of lower canines as well as whole circular bridge planned in the mandible, there was an indication for the setting of one more implant at the place of the second left premolar (Figure 3).



Slika 1. Polazni RTG status pacijenta sa hipodontijom
Figure 1. First panoramic RTG X-ray of the hypodontia patient

The implanted fabric block mounted on the endosseous implants had need for mutual parallelism for better axial transferring of the chewing pressure unto the jawbone. After this phase, we took precise impressions of the two jaws.



Slika 2. Oralni nalaz pacijenta nakon insercije implanta u gornjoj vilici

Figure 2. Oral status after implant insertion in the maxilla

nakon mesec dana, tri meseca (sl. 6), jedne i nakon tri godine (sl. 7) od integriranja mostova u ustima.

Diskusija

Naši rezultati dobijeni kliničkom inspekcijom i analizom RTG snimaka urađenih nakon jednog meseca, a zatim nakon tri meseca, jedne godine i nakon tri godine, pokazali su da mostove konstrukcije u odnosu na gingivalnog nalegnuća, rubnog zatvaranja, okluzije i međuviličnog odnosa u granicama su normale fiziološkog nošenja u ustima. Osim toga, postoji i ispunjenje osnovnih protetskih principa kao što su funkcija, fonacija i estetika. Na RTG snimcima, pored toga, može se videti i potpuna osteointegracija između postavljenih implantata i kosti, sa jedne strane i potpuno uklapanje



Slika 4. Dva polucirkularna mosta u gornjoj vilici pacijenta nošeni od četiri prirodna zuba i dva implanta

Figure 4. Two semicircular bridges in upper jaw supported by four natural teeth and two implants



Slika 3. Oralni nalaz pacijenta nakon insercije implanta u donjoj vilici

Figure 3. Oral status after implant insertion in the mandible

Firstly, the impression were overflow and then, for esthetic reasons, two semicircular upper bridges from metal-ceramics were made and then cemented in the patient's mouth (Figure 4). The same process was repeated for the lower bridge (Figure 5).

To ensure the quality of the osseointegration and the edge closing of the bridge constructions with implants, we repeated the RTG imaging after one, three months (Figure 6), and after one and three years (Figure 7) after the integration of the bridges in the mouth.

Discussion

The results obtained after clinical inspection and the analyses of RTG imaging made after one, three months and two years show that the bridge constructions are in the borders of normal physiological carrying in the mouth. Besides, the basic prosthetic principles, such as



Slika 5. Cirkularni most u donjoj vilici pacijenta od jednog prirodnog zuba i četiri implanta

Figure 5. Circular bridge in the lower jaw from one natural tooth and four implants



Slika 6. RTG status pacijenta nakon tri meseca od cementiranja mostova

Figure 6. Panoramic X-ray status three months after the bridge cementation

mostovih konstrukcija preko postavljenih implantata i preostalih zuba, sa druge strane.

Oralna rehabilitacija našeg pacijenta bila je vrlo teška zbog čega je bilo potrebno pratiti je od strane jednog multidisciplinarnog tima koji čine: pedodont, ortodont, protetičar i oralni hirurg. Tretman je zavisio od: tipa displazije, broja prirodno izniklih zuba i morfologije alveolarnog grebena što odgovara mišljenju Lo Muzio-a i saradnicima⁶.

Uglavnom, kod svih obolelih od hipodontije, kao i kod našeg pacijenta principi terapije su: da se nadopuni kost i zubi koji nedostaju, da se postigne normalna vertikalna dimenzija i da se stvori potpora mekom tkivu lica. Konvencionalna protetska pomagala (totalne i parcijalne proteze, mostovi ili kombinacija od fiksnih i mobilnih proteza) često su u sukobu sa teškim problemima zbog anatomskih abnormalnosti postojećih zuba i alveolarnih grebena, što rezultira slabom retencijom i labilnim protezama, Kearns i saradnici⁷, Dhanrajani Jiffry⁵.

Sudeći prema preporukama i kriterijumima za implantiranje i proteziranje kod nosioca ektoermalne displazije, postavljanje implantata za nosače protetske suprastrukture opravdano je iz razloga što naš pacijent nije imao povoljni raspored preostalih prirodnih zuba, a i već iznikli su bili konični, izotirani i slabi za nošenje. Još veća prednost postoji zato što je pacijent imao dovoljno razvijene alveolarne grebene za inserciju endoosealnih implanata, čiji je profil bio izabran u saglasnosti sa debljinom, širinom i visinom kosti. Sa istim tim problemom susreli su se i Ekstrand i Thomsson⁸, Kraut⁹, Bergendal, Davarpanah, Guckec, Simith i saradnici¹⁰⁻¹³.

Endoosealni implantati koji su bili postavljeni direktno u ekstrakcionu ranu bez hirurškog reza na pripojnoj sluznici, prema Cronin, Oesterle



Slika 7. RTG status pacijenta nakon tri godine od cementiranja mostova

Figure 7. Panoramic X-ray status three years after the bridge cementation

function, phonation, and esthetics are satisfied. On the RTG imagings, the entire osteointegration between the set implants and the bone on one hand, and an entire fitting of the bridge constructions upon the set implants and the rest of the teeth on the other hand are noticeable.

The oral rehabilitation of our patient was very difficult, and there was a need for the follow-up by a multidisciplinary team consisting of pedodontist, orthodontist, prosthetist, and maxillofacial surgeon. The treatment depended on: type of dysplasia, number of naturally erupted teeth and morphology of the alveolar ridge, which coincides with opinion of Lo Muzio et al⁶.

Mostly, in all those suffering from hypodontia, as is the case with our patient, the therapy principals are: to restore the missing bone and teeth, to achieve normal vertical dimension, and to create support for the face soft tissues. The conventional prosthetic devices (total and partial prosthesis, bridges or combination of fixed and mobile prosthesis) cannot solve the serious problems because of the anatomic abnormalities of the present teeth and alveolar ridges, which results in instability of the braces^{5,7}.

Judging from the recommendation and the criteria for implanting and prosthesis in subjects suffering from ectodermal dysplasia, setting implants is justified for the reason that our patient did not have advantageous distribution of the remaining natural teeth and also the grown ones were rotated and thin. A greater advantage is that the patient had alveolar ridges sufficiently developed for insertion of the implants, whose profiles were chosen according to the bone thickness, width, and elevation. Ekstrand and Thomsson⁸, Kraut⁹, Bergendal, Davarpanah, Guckec, Smith et al. had to deal with the same problem¹⁰⁻¹³.

Endosseous implants which were directly placed in extraction wound without making surgery cut could be exerted according to Cronin

i saradnicima^{14,15}, mogu se imedijatno opteretiti pa se dala prednost trimesečnoj osteointegraciji implanta. Ponovljen panoramski RTG snimak dao je potvrdu da je došlo do koštanog srašćenja implanta i nakon njihovog ogoljenja, pa smo sa dozvolom oralnog hirurga, pristupili dizajniranju protetske suprastrukture.

Iz literaturnih podataka Kearns-a i saradnika⁷ koji su došli do saznanja da transalveolarni rast mandibularne simfizialne suture obično prestaje prvih šest meseci od implantacije, pa se neće očekivati interferencija transalveolarnog rasta ukoliko se implantati inseriraju u anteriornoj mandibuli, i zato smo se u donjoj vilici odlučili za cirkularni most u celosti.

Metod izbora terapije sa implantima i fiksnim proteziranjem kod pacijenta pokazao se efektivnim pošto smo izvršili kliničku i RTG kontrolu od njihovog trogodišnjeg korišćenja. Snimci su pokazali da ne postoje nikakvi znaci lize kosti oko implantata, niti prekomerna osifikacija zbog preopterećenja na implantima. Ovaj metod koji smo mi izabrali poklopio se sa mnogobrojnim literaturnim podacima ove oblasti, a i sa našim dobijenim rezultatima.

Najbitnije od svega je to što je naš pacijent prezadovoljan novim zubima i uvek je nasmejan, a njegov osmeh je naš najbolji rezultat.

Zaključak

Kao rezultat našeg trogodišnjeg opserviranja pacijenta došli smo do saznanja da su postavljeni implantati i mostovi konstrukcije prihvaćeni od strane organizma pacijenta. Pacijent je zadovoljan, nasmejan, a i njegova psiha je promenjena u pozitivnom smeru, što je i bio naš krajni cilj.

and Oesterle and all^{14,15}, so a preference was given to three-month-long osseointegration of the implants. The repeated RTG panoramic imaging confirms the bone coalesce of the implants, and with permission of oral surgeon, we approached to designing of their prosthetic superstructure. Starting from these scientific proofs, we decided to place two separate bridges left and right in the upper jaw.

From the literature data given by Kearns et al.⁷ who came to knowledge that the transeversal growth of the mandibular symphyseal suture usually stops in the first six months of the implementation, and an interference of the transeversal growth if the implants are inserted in the anterior mandible should not be expected. Therefore, we decided to place the circular bridge in the upper jaw.

The method of therapy choice with implants and fixed brace in the patient showed to be effective after the clinical and RTG control of their three-year usage. The images showed that there are no signs of excessive ossification because of the pressure of the implants. Our approach to the method of construction with fixed prosthesis coincides with numerous literature data from this area.

The most important is that the patient is satisfied with his new teeth, constantly smiling, and his smile is our best result.

Conclusion

As a result of our three-years-long follow-up of the patient, we came to conclusion that the placed implants and bridge constructions have been accepted by the patient's organism. The patient is satisfied, smiles, and also his psyche was positively changed, which was our main goal.

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