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Pojednostavnjena protetička rehabilitacija pacijenta nakon uklanjanja oralnog karcinoma

Simplified Prosthetic Rehabilitation of a Patient after Oral Cancer Removal

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Sažetak

Terapija pacijenata s oralnim karcinomom složena je i zahtijeva multidisciplinarni pristup koji uključuje maksilofacijalni i oralni kirurg, onkologa i stomatološkog protetičara, a često je potrebna i psihološka pomoć. U ovom prikazu slučaja opisana je protetička rehabilitacija pacijentice nakon uklanjanja oralnoga karcinoma izradom resekcijske proteze. Resekcijska šupljina nalazi se na srednjem dijelu tvrdog nepca, a prema Aramanyju pripada trećem razredu maksilarnih defekata. Otisak ležišta proteze i resekcijske šupljine proveden je u dva koraka. Prvi je korak otisak ireverzibilnim hidrokoloidom za ležište proteze, a drugi, otisak resekcijske šupljine dobiven kondenzacijskim silikonskim materijalom s pomoću metalne baze resekcijske proteze. Resekcijskom protezom pacijentici su nadomješteni izgubljeni zubi te joj je, uz minimalne troškove, poboljšana oralna funkcija i estetika.

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Uvod

Rak usne šupljine ubraja se u skupinu karcinoma glave i vrata te predstavlja bilo koje maligno tkivo u usnoj šupljini, bez obzira na to je li ono primarno oralna lezija, metastaza udaljenog tumora ili pak tumor koji se u usnu šupljinu proširio iz susjednog područja (1 – 3). Planocelularni karcinom razvija se u 90 posto slučajeva te čini do 3 posto svih karcinoma u Sjedinjenim Američkim Državama, u 9 posto slučajeva riječ je o karcinomu žlijezda slinovnica, sarkomu ili limfomu, a samo je u 1 posto slučajeva riječ o metastazama, najčešće iz pluća, dojke, prostate i bubrega (1 – 3). S obzirom na spol, češće obolijevaju muškarci (4). Čimbenici rizika od razvoja karcinoma usne šupljine su alkohol i duhan, ali i humani papiloma virus te ultraljubičasto zračenje (2 – 5). Terapija karcinoma usne šupljine agresivna je i obuhvaća kirurško uklanjanje te radioterapiju i kemoterapiju (6,7). *Maksilektomija* je naziv za odgovarajući kirurški zahvat kojim se uklanja dio, ili pak cijela gornja čeljust u postupku liječenja karcinoma (8).

Introduction

Oral cancer belongs to the group of head and neck cancers, and it represents any cancerous tissue in the oral cavity, regardless of being primarily oral lesion, tumor metastases or a distant tumor that has spread into the mouth from the adjacent area (1-3). Squamous cell carcinoma develops in 90% of cases and makes up 3% of all cancers in the United States. In 9% of cases, it is salivary glands cancer, or sarcoma, lymphoma, and metastases occur in only 1% of cases, usually from lung, breast, prostate and kidney (1-3). With regard to the gender, oral cancer is more common in men (4). Risk factors for oral cancer are alcohol, tobacco, or human papilloma virus, and ultraviolet radiation (2-5). Oral cancer therapy is usually aggressive and comprises surgical removal followed by radiotherapy and chemotherapy (6, 7). Maxillectomy is an appropriate surgical procedure which means that either a part or maxilla or the entire maxilla is removed in the process of surgical treatment of oral cancer (8). After surgical

Nakon kirurškog uklanjanja malignoga tkiva najčešće ostaje velik defekt tkiva uz oroantralnu komunikaciju, što pacijentu otežava funkciju žvakanja i gutanja hrane, govor, narušava estetiku te općenito umanjuje kvalitetu života povezanu s oralnim zdravljem. Zato je takvim pacijentima nužna odgovarajuća protetička terapija, što može biti dodatno otežano zbog posljedica provedene kirurške obrade, ali i radioterapije, poput trizmusa i ograničenog otvaranja usta (10 do 15 mm ili manje) (9). Trizmus se pojavljuje vrlo brzo nakon radioterapije i zato je potrebno odmah početi s vježbanjem žvačnih mišića s pomoću otvarača usta ili špatula za jezik. Ako se fizioterapija ne provodi, a trizmus postane kroničan, nastaju fibrozne promjene na žvačnim mišićima. Ograničeno otvaranje usta ne otežava samo žvačnu funkciju, nego i protetičku rehabilitaciju takvih pacijenata (9).

Tradicionalno se u protetičkoj rehabilitaciji pacijenata nakon uklanjanja karcinoma izrađuju opturatori – resekcijske proteze kako bi se zatvorila resekcijska šupljina primarno na tvrdom nepcu, ali i na zahvaćenom okolnom alveolarnom i mekom tkivu (8). Pojedini autori opisuju izradu resekcijske proteze retinirane na preostalim zubima, a drugi opisuju resekcijske proteze retinirane implantatima (6, 10 – 14). Predlaže se pričekati do šest mjeseci nakon kirurške terapije kako bi se tkiva resekcijske šupljine dimenzijski stabilizirala (najprije nastaje edem, a zatim njegova kontrakcija) i tek tada pristupiti izradi resekcijske proteze. U navedenom razdoblju može se izraditi privremena resekcijska proteza koja bi pacijentu omogućila bolju funkciju (9). Prema stajalištu Hauga (13), za izradu definitivne resekcijske proteze dovoljno je pričekati samo tri mjeseca nakon kirurškoga zahvata ili provedene radioterapije. Na oblik, a time i na stabilnost resekcijske proteze, utječu opseg kirurške resekcije te broj i raspored preostalih zuba. Uz retenciju proteze na preostalim zubima, važno je bazu proteze maksimalno proširiti na preostale strukture u usnoj šupljini. Naime, maksimalno proširena baza resekcijske proteze prenosi žvačne sile na preostali dio nepca i alveolarni greben te tako ublažava žvačni stres. Klasifikacija defekata gornje čeljusti prema Aramanyju u 6 klasa temelji se na međusobnom odnosu položaja resekcijske šupljine i preostalih retencijskih zuba te je dobrodošla pomoć pri planiranju metalnih baza resekcijskih proteza (15, 16).

Prednost klasičnih resekcijskih proteza u odnosu na one retinirane implantatima jest relativno jednostavna i brža izrada, te lako održavanje oralne higijene, mogućnost kontrole tkiva resekcijske šupljine zbog mogućih tumorskih recidiva, ali i niža cijena, što je vrlo važno pacijentima lošijega imovnog stanja. Stoga je svrha ovoga rada bila prikazati izradu gornje resekcijske proteze nakon uklanjanja planocelularnog karcinoma gornje čeljusti, uz naglasak na jednostavnost i niže troškove ovog postupka.

Prikaz slučaja

Šest mjeseci nakon liječenja oralnog karcinoma 65-godišnja pacijentica dolazi u Klinički zavod za stomatološku protetiku Kliničke bolnice Dubrava radi protetičke rehabilitacije.

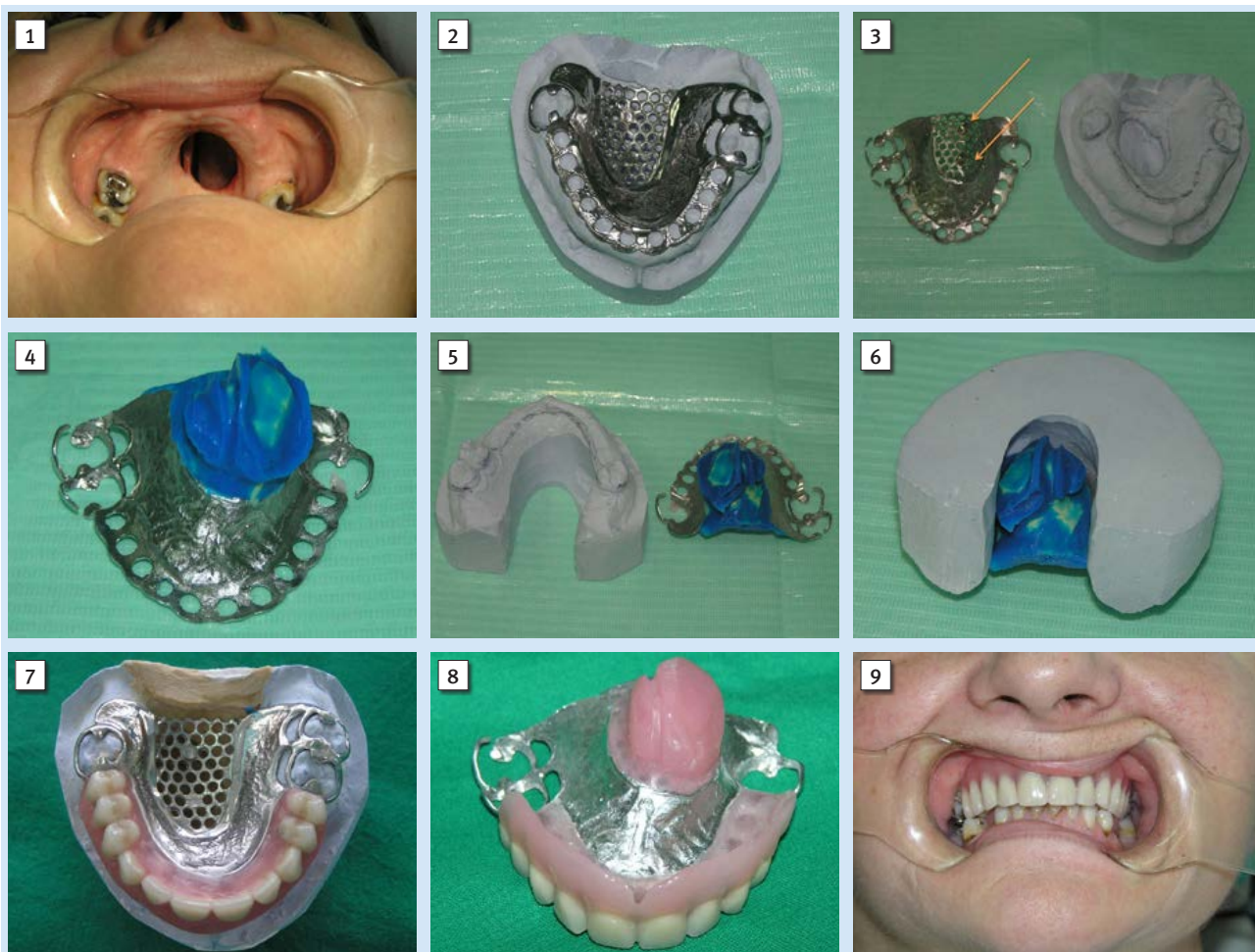
removal of cancerous tissue, a great tissue defect with oroantral communication remains, resulting in impaired function of chewing and swallowing, speech, esthetics, and generally impaired oral health related to quality of life. Therefore, in such patients it is necessary to perform appropriate prosthetic rehabilitation which can be additionally complicated by consequences of performed surgical, and radiation therapy such as trismus and limited mouth opening (10 to 15 mm or less) (9). Trismus begins shortly after radiotherapy, and therefore is necessary to start immediately with daily exercises of masticatory muscles using bite openers or a tongue blade. If physiotherapy is not carried out, trismus will become chronic with fibrosis of masticatory muscles. Limited mouth opening impairs masticatory function and prosthetic rehabilitation for such patients is a challenge for clinicians (9).

Traditional approach in the prosthetic rehabilitation of patients after surgical removal of oral cancer is fabrication of obturator (resection) prosthesis in order to close acquired resection cavity primarily on the hard palate, but also on contiguous alveolar and soft tissue structures (8). Some authors described the fabrication of obturator prosthesis retained on the remaining teeth, while others described the obturator prosthesis retained by implants (6, 10-14). The period of 6 months after surgical treatment, when tissue of resection cavity becomes dimensionally stabilized (first tissue swelling, and then shrinkage), is usually sufficient for the beginning of the fabrication of the obturator prosthesis. During this period, temporary obturator prosthesis could be fabricated in order to enable better masticatory function (9). According to Haug (13), a sufficient period for the beginning of fabrication of definitive obturator prosthesis is up to 3 months after surgery, or 3 months after radiotherapy. The extension of surgical resection and the number and position of the remaining teeth affect the form as well as the stability of obturator prosthesis. Apart from the retention of prosthesis on the remaining teeth, it is important to expand the prosthesis base over the remaining oral structures. Maximal extension of obturator prosthesis base transmits masticatory forces to the remaining part of the palate and alveolar ridge, thus reducing masticatory stress. Aramany classification of maxillary defects in 6 classes is based on the relationship between the position of resection cavity and the remaining retention teeth, and is very helpful in the planning of the obturator prosthesis framework design (15, 16).

The advantages of classic obturator prosthesis related to the obturator prosthesis retained on implants is relatively simple and faster fabrication, simple maintaining of oral hygiene, the ability to control possible tumor recurrence on resection cavity tissues, as well as lower price, which is very important among the patients of lower economic status. The aim of this paper was to present a fabrication of maxillary obturator prosthesis after surgical removal of maxillary squamous cell carcinoma with emphasis on simplicity and lower costs of this procedure.

Case report

Six months after surgical treatment of oral cancer, a 65 year old patient visited Department of Prosthodontics at Clinical Hospital Dubrava seeking for prosthodontic reha-



- Slika 1.** Intraoralni status pacijenta
Figure 1 Patient's intraoral status.
- Slika 2.** Metalna baza resekcijske proteze
Figure 2 Cast framework of obturator prosthesis.
- Slika 3.** Metalna baza resekcijske proteze s retencijskim elementima – mrežica i retencijski kolčići (↓) te primarni sadreni radni model s prikazanim ulazom u resekcijску šupljinu
Figure 3 Cast framework of obturator prosthesis with retentive elements – mesh and retentive dowels (↓), and primary working cast poured in dental stone with reproduced entrance of resection cavity.
- Slika 4.** Otisak resekcijske šupljine kondenzacijskim silikonom na metalnoj bazi resekcijske proteze
Figure 4 Condensation silicone impression of resection cavity on cast framework of obturator prosthesis.
- Slika 5.** Primarni sadreni model s izrezanim dijelom ulaza u resekcijску šupljinu (lijevo), te otisak resekcijske šupljine kondenzacijskim silikonom na metalnoj bazi resekcijske proteze (desno)
Figure 5 Primary working cast with trimmed entrance to the resection cavity (left), and condensation silicone impression of resection cavity on cast framework of obturator prosthesis (right).
- Slika 6.** Metalna baza resekcijske proteze s otiskom resekcijske šupljine postavljena na modificirani model – pogled s bazalne strane modela
Figure 6 Cast framework of obturator prosthesis with impression of resection cavity placed on modified model – basal view.
- Slika 7.** Izliven sekundarni dio modela u tvrdog sadri (žuto) koji precizno prikazuje resekcijску šupljinu, te postavljene umjetni zubi na resekcijску protezu
Figure 7 Secondary part of working cast which precisely shows that resection cavity is poured in dental stone (yellow), and arranged artificial teeth in obturator prosthesis.
- Slika 8.** Gotova resekcijска proteza
Figure 8 Finished obturator prosthesis.
- Slika 9.** Resekcijска proteza postavljena u usta pacijenta
Figure 9 Obturator prosthesis inserted into the patient's mouth.
- Slika 10.** Resekcijска proteza postavljena u usta pacijenta uz zatvaranje oroantralne komunikacije
Figure 10 Obturator prosthesis inserted into the patient's mouth with closure of oro-antral communication.

Nakon kliničkoga pregleda zabilježena je Kennedyjeva klasa 4 gornjega zubnog luka s preostalim prvim i drugim molarom s desne strane te drugim molarom s lijeve strane. Resekcijski defekt nalazio se u središnjem dijelu tvrdoga nepca (klasa 3 prema Aramanyju) bez zahvaćanja alveolarnoga grebena i mekog nepca (slika 1.). Donja čeljust bila je djelomično ozubljena, ali bez defekta tkiva. Osmišljen je plan terapije prema kojem će se izraditi samo gornja resekcijaska proteza s metalnom bazom (Co-Cr-Mo legura, Wironit, Bego, Bremen, Njemačka) retiniranom Bonwillovom kvačicom desno te obuhvatnom kvačicom s lijeve strane. Na donjoj čeljusti uopće nije bila planirana protetička terapija zbog lošijeg financijskog stanja pacijentice.

Zbog djelomično izraženog trizmusa (udaljenost između gornjeg alveolarnog grebena u predjelu središnjih sjekutića i incizalnih bridova donjih središnjih sjekutića iznosila je oko 35 mm) koji se kod pacijentice pojavio kao posljedica radioterapije, nemoguće je bilo u jednom *koraku* precizno otisnuti usnu i resekcijisku šupljinu. Zato je to učinjeno u dva *koraka*. U prvom je uzet otisak od ireverzibilnog hidrokoloida – alginata (Aroma Fine III; GC Corp, Tokio, Japan) kojim je precizno otisnut alveolarni greben s preostalim zubima, preostali dio tvrdog nepca te sam ulaz u resekcijisku šupljinu. Otisak je izliven u tvrdog sadri (Moldano, Heraeus Kulzer, Hanau, Njemačka) te je uobičajenim postupkom izrađena metalna baza (Co-Cr-Mo legura, Wironit, Bego, Bremen, Njemačka) resekcijiske proteze uz određene prilagodbe (slika 2.). Dio metalne baze resekcijiske proteze koji prekriva resekcijisku šupljinu izrađen je poput mrežice s dva retencijska kolčića (slika 3.). Retentivni elementi metalne baze – mrežica i kolčići prvotno služe kao nosači otisnog materijala u drugom *koraku* otiskivanja, a poslije kao retentivni elementi akrilatnog materijala opturatora. Metalna baza proteze retinirana je obuhvatnom kvačicom koja obuhvaća drugi molar s lijeve strane, te interdentalnom Bonwillovom kvačicom na prvom i drugom molaru s desne strane.

Precizan otisak resekcijiske šupljine (slika 4.) uzet je u drugom *koraku* kondenzacijskim silikonskim otisnim materijalom (Optosil/Xantopren L, Heraeus Kulzer, Hanau, Njemačka) te je s pomoću metalne baze resekcijiske proteze, koja je poslužila kao žlica, unesen u usnu šupljinu. Unatoč trizmu, a zbog odgovarajućeg oblika metalne baze, mogla se otisnuti cijela resekcijiska šupljina te otisak izvaditi iz pacijentovih usta. Postojeći sadreni model smanjen je tako da je izrezan onaj dio koji je prikazivao ulaz u resekcijisku šupljinu. Metalna baza zajedno s otiskom resekcijiske šupljine postavljena je na obrađeni model te je iz tvrde sadre (GC Fuji Rock, GC Europe, Leuven, Belgija) izliven otisak resekcijiske šupljine u objedinjen s primarnim sadrenim modelom (slika 5. i 6.).

U ustima pacijentice određeni su vertikalni i horizontalni međučeljni odnosi, pri čemu je iznos slobodnoga interokluzijskoga prostora u položaju fiziološkog mirovanja iznosio 3 mm. Nakon što su postavljeni zubi (slika 7.), isprobani su u ustima pacijentice kako bi se provjerili okluzija i estetika.

Slijedili su završni laboratorijski postupci pri izradi resekcijiske proteze, a koristio se toplo polimerizirajući akrilat (Probase Hot; Ivoclar Vivadent, Schaan, Lihtenštajn), pri čemu je osim akrilatnih krila proteze napravljen i akrilatni optura-

bilitation. During clinical examination, Kennedy Class 4 of maxillary dental arch was observed with remaining right first and second molars, and remaining left second molar. Resection cavity was located in the central part of the hard palate (class 3 according to Aramany classification), whereas the alveolar ridge and the soft palate were fully preserved (Figure 1). The mandible was partially edentulous but without abnormal tissue defects. Only the maxillary obturator prosthesis with metal framework (Co-Cr-Mo alloy, Wironit, Bego, Bremen, Germany) retained by Bonwill clasp on the right side, and by circumferential clasp on the left side was planned. Prosthetic treatment of the mandible was not planned due to the patient's low socio-economic status.

Because of partially expressed trismus (the distance between the maxillary alveolar ridge in the central incisors area and incisal edges of mandibular central incisors was 35 mm), which occurred as a result of radiotherapy, it was impossible to make a precise one step impression of both, oral and resection cavity. Therefore, the two step impression technique was used. First step impression was made using irreversible hydrocolloid material (Aroma Fine III; GC Corp, Tokyo, Japan), and precisely captured alveolar ridge with remaining teeth, remaining part of the hard palate and only the entrance part of the resection cavity. The impression was poured in hard dental stone (Moldano, Heraeus Kulzer, Hanau, Germany), and the obturator prosthesis framework (Co-Cr-Mo alloy, Wironit, Bego, Bremen, Germany) was fabricated by standard procedure with certain modifications in design (Figure 2). Retentive mesh and dowels on obturator prosthesis framework (Figure 3) were added over the resection cavity to ensure retention for secondary impression material, as well as for the retention of a future acrylic resin bulb of the obturator. The obturator prosthesis framework engaged second left molar by circumferential clasp as well as first and second right molars by interdental Bonwill clasp.

In the second impression step, a precise impression of the resection cavity (Figure 4) was made. Condensation silicone impression material (Optosil/Xantopren, Heraeus Kulzer, Hanau, Germany) was placed on the obturator prosthesis framework which served as a tray, and inserted into the oral cavity. Despite trismus, and because of the appropriate design of obturator prosthesis framework, it was possible to make impression of the entire resection cavity as well as to remove it from the patient's mouth. The stone cast was then modified; the part of the stone cast which corresponds to the entrance of resection cavity was cut out. Obturator prosthesis framework with silicon impression of the resection cavity was placed on the reduced stone cast. The adjacent impression was poured in dental stone (GC Fuji Rock, GC Europe, Leuven, Belgium) in order to produce definitive stone cast (Figures 5 and 6).

In the patient's mouth, vertical and horizontal occlusal relationships were determined with interocclusal rest space of 3 mm at the physiologic rest position. After the artificial teeth were arranged (Figure 7), occlusion and esthetics were tested in the patient's mouth.

The obturator prosthesis was finished by laboratory procedures using heat-curing acrylic resin (Probase Hot, Ivoclar

tor (slika 8.) koji je obuhvatio retentivne elemente (mrežicu i kolčiće) na metalnoj bazi resekcijske proteze.

Proteza je nakon toga završno obrađena i polirana. Pri predaji resekcijske proteze pacijentici (slike 9. i 10.) provjeren je točnost dosjeda proteze, osobito na rubovima resekcijske šupljine te su dodatno provjereni okluzijski kontakti artikulacijskim papirom (Arti-Fol; Dr. Jean Bausch GmbH & Co KG, Köln, Njemačka), a kvačice su aktivirane.

Pacijentici su dane upute o higijeni resekcijske proteze, posebno opturatora koji ispunjava resekcijску šupljinu kako bi se smanjila opasnost od infekcije zbog naseljavanja mikroorganizama na njegovoj površini. Preporučeni su i redoviti kontrolni pregledi svakih tri do šest mjeseci (ili prema potrebi), uz napomenu da će možda trebati podložiti resekcijску protezu zbog promjena na koštanim i mekim tkivima njezina ležišta.

Rasprava

Terapija pacijenata s oralnim karcinomom zahtijeva multidisciplinarni pristup te uključuje maksilofacijalnog i oralnog kirurga, onkologa i stomatološkog protetičara, a često i psihološku pomoć (1, 17). Osnovna zadaća protetičke rehabilitacije u prikazanom kliničkom slučaju bila je izraditi odgovarajuću resekcijскую protezu kako bi se zatvorila komunikacija s nosnom šupljinom, nadomjestilo uklonjeno koštano tkivo i izgubljeni zubi te poboljšala oralna funkcija i estetika, a sve to uz što manje troškove za pacijenta. Protetička rehabilitacija pacijenata resekcijским protezama svakako ima prednosti – minimalan je dotok tekućine u nos i maksilarni sinus, omogućeno je žvakanje i gutanje te govor uz smanjenu ili uklonjenu hipernazalnost zbog razdvajanja usne od nosne šupljine (13, 18, 19). Izrada resekcijske proteze s opturatorom ne zahtijeva mnogo vremena, a resekcijская šupljina dostupna je pregledu kako bi se mogući recidiv tumora otkrio na vrijeme (13, 18).

U slučaju djelomično ozubljenih pacijenata s dovoljno preostalog alveolarnoga grebena i nepčane kosti, kirurško zatvaranje resekcijske šupljine nije prva opcija. Za takve pacijente, kao i u opisanom kliničkom slučaju, dobro je rješenje resekcijская proteza koja će funkcionirati kao klasična djelomična proteza. Uspjeh takve protetičke rehabilitacije ovisi o veličini i obliku zubnoga luka ostaloga nakon kirurškog uklanjanja karcinoma te o stanju mekih tkiva koja prekrivaju alveolarni greben i resekcijски defekt. U slučajevima s malo ili bez očuvane maksilarne kosti, izrada klasične resekcijske proteze otežana je i treba razmišljati o retenciji proteze implantatima (10, 12, 20). Aramanyjeva klasifikacija (15, 16) maksilarnih defekata pomaže u planiranju resekcijske proteze. U ovom kliničkom slučaju resekcijски defekt bio je u sredini tvrdog nepca, što je prema Aramanyju klasa 3, iako nisu bili očuvani svi zubi u zubnom luku. Resekcijska proteza retinirana je Bonwillovom i obuhvatnom kvačicom na molarima s retencijskim krakovima na bukalnim plohama te stabilizacijskim elementima na oralnim plohama zuba. Zbog lošijega financijskog stanja pacijentice, na preostalim molarima nisu

Vivadent, Schaan, Liechtenstein), where both, acrylic base and acrylic bulb of the obturator (Figure 8), which covered retentive elements (mesh and dowels) on the obturator prosthesis framework, were fabricated.

In the next step, the obturator prosthesis was finished and polished. At insertion of obturator prosthesis (Figures 9 and 10) the accuracy of obturator prosthesis fit was verified, especially on the edges of the resection cavity. The occlusion was tested by articulation paper (Arti-Fol, Dr. Jean Bausch GmbH & Co. KG, Cologne, Germany), and the clasps were activated.

Hygiene instructions (especially for the obturator surgical site) were given to the patient in order to avoid possible infections due to microbial contamination of the obturator's surface. Regular follow-up every 3 to 6 months, or as needed was recommended to the patient, with a remark on possible need for obturator prosthesis relining procedure due to the occurring bone and mucosal tissue changes.

Discussion

An overall therapy of patients with oral cancer requires a multidisciplinary approach. It should include the maxillofacial surgeon, the oral surgeon, the oncologist, and the prosthodontist. Besides, the psychologist is often needed (1, 17). The aim of the prosthetic rehabilitation in the present case report was to fabricate appropriate obturator prosthesis in order to close communication with nasal cavity, replace lost bone tissue and teeth and improve oral function and esthetics. In addition, the aim was to accomplish this task at lowest cost. The prosthetic rehabilitation of patients with obturator prosthesis has the following advantages: fluid leakage into the nasal cavity and maxillary sinus is minimized; mastication, swallowing and speech with reduced or eliminated hypernasality are enabled due to separation between the oral and nasal cavity (13, 18, 19). The fabrication of the obturator prosthesis shortens the procedure time, and the resection cavity can be easily examined after removing the obturator prosthesis in order to detect tumor recurrence in time (13, 18).

Surgical reconstruction of resection cavity should not be of primary consideration for partially dentate patients with remaining teeth and palatal bone after surgical resection. For such patients, as well as for the patient presented in this case report, the fabrication of obturator prosthesis which functions similarly to removable partial dental prosthesis would be a good solution. The success of prosthetic rehabilitation with obturator prosthesis depends on the size and shape of dental arch after surgical removal of cancer as well as on the quality of the soft tissue covering the alveolar ridge and resection cavity. In cases with little or no preserved maxillary bone, the fabrication of the classic obturator prosthesis is more difficult, and the retention of obturator prosthesis on implants may be a good solution (10, 12, 20). Aramany classification (15, 16) of maxillary defects is very helpful in planning of the obturator prosthesis. In this clinical case, Aramany class 3 defect was present. The resection cavity was located in central part of the hard palate; however, not all the teeth in dental arch were preserved. The obturator prosthesis was

izrađene modificirane krunice, no položaj i morfologija zuba bili su dovoljni za postizanje zadovoljavajuće retencije resekcijske proteze.

Ozbiljan problem vezan za protetičku rehabilitaciju pacijenata nakon radioterapije jest trismus, odnosno ograničeno otvaranje usta. Zato je klinička implikacija ovoga rada bila prikazati uzimanje otiska u dva koraka pri ograničenom otvaranju usta, uz naglasak na jednostavnost u postupku izrade i na finacijsku prihvatljivost kad je riječ o pacijentima lošijega finacijskog statusa.

Kao materijale izbora za izradu opturatora Depprich i suradnici (18) navode akrilate (polimetilmetakrilat), silikone i titanij. Nedostatak akrilata i silikona jest sklonost naseljavanju mikroorganizama zbog površinske poroznosti i hrapavosti, što može rezultirati prodorom mikroorganizama u unutrašnjost opturatora. Ovisno o općem zdravstvenom stanju pacijenta i patogenosti mikroorganizama može se pojaviti lokalna ili čak sistemska infekcija. U ovom je kliničkom slučaju opturator bio izrađen od toplinski polimerizirajućeg akrilata čija se površina može bolje ispolirati, što olakšava održavanje higijene i smanjuje nakupljanje mikroorganizama. Katkad, zbog osjetljivosti sluznice resekcijske šupljine, potrebno je opturator izraditi od mekog akrilata, iako će tada, zbog poroznosti materijala, održavanje higijene biti otežano. S druge strane, titanij ima dobra biomehanička svojstva, biokompatibilan je, male je težine i otporan na koroziju, ne izaziva alergije i može se izvrsno polirati. Nedostatak je to što ga je teško prilagođavati i podlagati, a i cijena takva protetičkog rada znatno je veća (18).

Zaključak

Protetska rehabilitacija nakon uklanjanja oralnog karcinoma složena je, te je izazov svakom protetičaru. Komplikacije nakon operacije i radioterapije, poput trismusa, dodatno otežavaju protetičku rehabilitaciju. U dva koraka može se precizno otisnuti ležište buduće resekcijske proteze s resekcijском šupljinom, osiguravajući dobar dosjed proteze i opturatora na ležištu, dobru retenciju i adekvatno zatvaranje resekcijske šupljine. U protetičkoj rehabilitaciji takvih pacijenata često je važno tražiti što jednostavnije rješenje koje omogućuje lagan pregled resekcijske šupljine, a uz to protetički rad učiniti što jeftinijim kako bi bio dostupan i pacijentima lošijega finacijskog stanja.

retained by Bonwill clasps and circumferential clasps on the molars with retention arms positioned on the buccal surfaces and stabilization elements on the oral surfaces of the teeth. Due to the patient's low socio-economic status, the remaining molars were not covered by crowns with rests. However, the locations and morphology of the teeth were satisfactory to establish retention of obturator prosthesis.

A serious problem associated with the prosthetic rehabilitation of a patient after radiotherapy is trismus or limited mouth opening. In addition to the clinical implications discussed throughout this paper, the aim of this paper was to present a two-step impression technique with emphasis on the simplicity of obturator prosthesis fabrication as well as on economic acceptability for the patients of low socio-economic status.

Depprich et al. (18) stated that acrylates (polymethyl methacrylate), silicone and titanium are commonly used materials for fabricating the obturator. Disadvantage of acrylates and silicones is in affinity to microorganisms' contamination due to the surface porosity and roughness which can result in penetration of microorganisms into the interior of the obturator. Depending on the general health condition of the patient and pathogenicity of microorganisms, locally or even systemic infections can occur. In present clinical case obturator was made of heat-curing acrylic resin whose surface could be better polished thus facilitating hygiene and reduces the microorganisms' accumulation. Sometimes, because of the vulnerability of resection cavity mucosa, it is necessary to use soft acrylates for obturator fabrication. In that case, obturator hygiene maintenance will be more difficult due to the surface porosity of the material. On the other hand, titanium has good biomechanical properties, it is biocompatible, low weight, corrosion resistant, nonallergic material, and its surface can be polished good. Disadvantage is that titanium is not easily to adjust or relin, and the price of such prosthetic appliance is higher (18).

Conclusion

Prosthetic rehabilitation after surgical removal of oral cancer is complex and challenging for prosthodontist. Trismus, as a complication after surgery and radiotherapy, complicates further prosthetic rehabilitation. Using the two-step impression technique it is possible to make an accurate impression of the denture-bearing area and the resection cavity, thus providing a good seating of obturator prosthesis, good retention, and adequate closure of the resection cavity. In prosthetic rehabilitation of such patients, it is important to search for simplified treatments which enable simple examination of resection cavity, and simultaneously, lower the costs in order to be acceptable to patients of low socio-economic status.

Abstract

The treatment of patients with oral cancer is complex: a multidisciplinary approach needs to be taken and maxillofacial and oral surgeons, an oncologist, a prosthodontist should be included, and a psychologist is often needed. This case report describes the prosthetic rehabilitation of a patient after surgical removal of oral cancer with obturator prosthesis. Resection cavity was located in central part of the hard palate and the condition belonged to Aramany class 3 maxillary defects. The two-step impression technique of denture bearing area and the resection cavity was performed. A primary impression-the impression of denture bearing area was made using irreversible hydrocolloid material, while the second impression – the impression of resection cavity was made using condensation silicone material and obturator prosthesis framework. The obturator prosthesis replaced lost teeth, improved oral function and esthetics at minimal costs.

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Key words

Mouth Neoplasms; Palatal Obturators;
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Technique

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