

## Immediate complete denture – a case report

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### SUMMARY

An immediate denture is a temporary or permanent removable denture fabricated in the presence of natural teeth. Patients diagnosed with periodontitis are usually indicated for this type of dentures. Fabrication according to the specific protocol can enhance functional, phonetic, and aesthetic rehabilitation immediately after tooth extraction. Laboratory procedures have few specificities in comparison to conventional complete dentures, but the most important one is trimming the cast according to previously examined periodontal status. Following the production protocol, it is possible to provide functional, phonetic and aesthetic rehabilitation of the patient immediately after tooth extraction. In addition, it is possible to achieve proper remodeling of the residual alveolar ridge owing to the direct contact of the denture base with the extraction wound during the consolidation period.

The aim of this paper is to present clinical and laboratory procedures in the process of making immediate complete denture.

**Keywords:** immediate denture; interim denture; prosthodontic rehabilitation of periodontitis

### INTRODUCTION

In contemporary implant-prosthodontic rehabilitation, conventional complete dentures become an interim therapeutic solution. Carriers are most often partially edentulous patients with and/or generalized periodontitis [1]. Due to immediate functional, phonetic and aesthetic rehabilitation, immediate complete dentures become the most common therapeutic solution. Predictability of the therapeutic success can be achieved by implementing the knowledge from different dental disciplines - prosthodontics, periodontology and oral surgery. Although they are considered to be temporary dentures, pre-extraction fabrication and placement within 1 hour after teeth extraction, divide them from other removable dentures [2, 3].

It is very important to analyze periodontal status using the intraoral examination. Most important difference in clinical and laboratory procedures compared to conventional denture fabrication are: different design of an individual impression tray (closed, opened and semi-opened) [4], and cast trimming according to periodontal status [5].

### CASE REPORT

A 48-year-old female was referred to Clinic for Prosthodontics, School of Dental Medicine for initial examination. Based on medical history, clinical examination, and radiological criteria, the present dentition was diagnosed with generalized periodontitis, complicated by tooth hypermobility due to secondary occlusal trauma (IV stage, C grade). The depth of periodontal pockets was measured within 8 measuring points (3 on vestibular, 3 on oral, mesial and distal surface) for each of the remaining 14 teeth. Obtained

values were written in the individual periodontal chart. Upon analyzing all the comprehensive results and interview with the patient, it was suggested that the treatment plan included complete immediate dentures. Teeth #12, #13, #23, and #22 were extracted two weeks before prosthodontics rehabilitation due to the presence of purulent suppuration. Preliminary impressions were done using the standard tray and irreversible hydrocolloid material. The final impressions were done using the method of individual open tray and a combination of C-silicone and Zinc oxide eugenol paste. After determining maxillomandibular relations, in the presence of natural teeth, the dentures were modeled in wax. Definitive casts were trimmed according to the previously measured attachment of the junctional epithelium. Thus, the amount of the removed plaster is adjusted to the expected collapse of soft tissues after teeth extraction.

Multiple extractions of present dentition were done and the sutures were placed. After acrylic polymerization, dentures were kept in a conventional disinfectant used at a Department for Prosthodontics until delivery. Upon cleaning with sodium chloride solution, dentures were delivered to the patient one hour after surgical procedure. The aim was to protect the surgical wounds, minimize swelling and prevent bleeding. The patient was given instructions to wear dentures continuously for 24 hours when a control examination was scheduled. A month later, denture bases were relined. During follow-up examinations (3, 6 and 12 months) there was no need for further relining.

### DISCUSSION

Prosthodontic rehabilitation with complete immediate dentures provides numerous advantages over



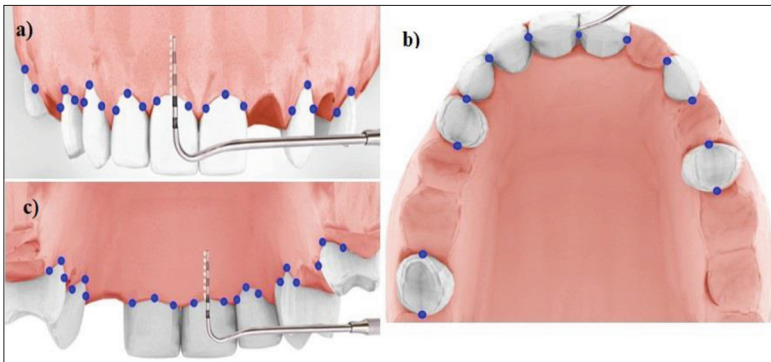
**Figure 1.** Extraoral examination of the patient an face  
**Slika 1.** Ekstraoralni izgled pacijenta *an face*



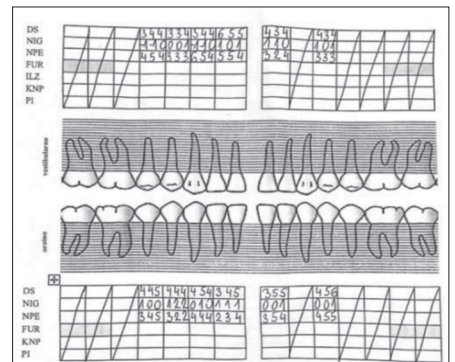
**Figure 2.** Orthopantomogram X-ray  
**Slika 2.** Ortopantomografski snimak



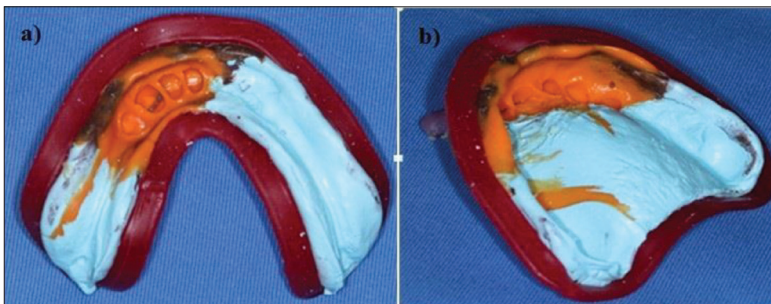
**Figure 3.** Intraoral examination of the patient  
**Slika 3.** Intraoralni pregled pacijenta



**Figure 4.** Schematic view of the periodontal pocket measurements.  
**Slika 4.** Shematski prikaz merenja dubine parodontalnih džepova



**Figure 5.** Periodontal chart  
**Slika 5.** Parodontalni karton



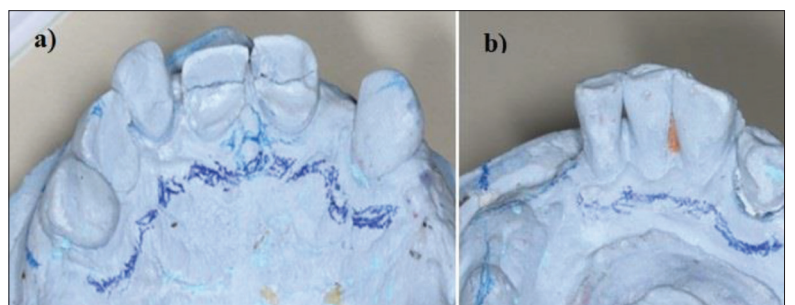
**Figure 6.** Definitive impressions with special red wax for protection of the borders: a) upper jaw impression; b) lower jaw impression  
**Slika 6.** Realizovani definitivni funkcionalni otisci i postavljena Kelerova traka za zaštitu rubova otiska: a) gornje vilice; b) donje vilice



**Figure 7.** Jaw relation records  
**Slika 7.** Određivanje međuviličnih odnosa



**Figure 8.** The wax try-in for dentures  
**Slika 8.** Proba postave zuba u vosku



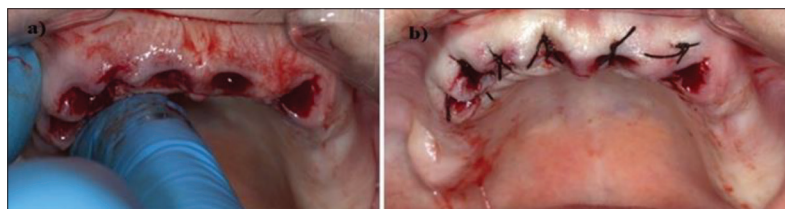
**Figure 9.** Periodontal pockets depth trasfered to definitive casts: a) palatal aspect of upper teeth; b) lingual aspect of lower teeth  
**Slika 9.** Vrednosti dubine parodontalnih džepova ucrtane na definitivnom radnom modelu: a) palatalni aspekt gipsanih zuba gornje vilice; b) lingvalni aspekt gipsanih zuba donje vilice





**Figure 10.** Laboratory procedure of cast trimming: a) Projection of vestibular aspect of cortical bone (45-degree labial bevel); b) cast after trimming; c) denture wax try-in positioned at the cast

**Slika 10.** Laboratorijska faza pripreme modela donje vilice: a) projekcija vestibularne površine kortikalne kosti na modelu (zakošavanje pod uglom od 45°); b) izgled modela po završenom radiranju; c) voštani model proteze na pripremljenom modelu



**Figure 11.** Post-extraction wound: a) procedure of digital pressure; b) surgical sutures

**Slika 11.** Postekstrakcione alveole: a) postupak reponiranja; b) postavljeni hirurški šavovi



**Figure 12.** Immediate dentures

**Slika 12.** Izgled gotovih proteza

rehabilitation with conventional dentures with delayed loading [6]. Besides beneficial effect on post-extraction healing, these dentures preserve vertical occlusal dimension as well as correct position of orofacial muscles. Shah et al. suggested an advantage of the immediate denture as a temporary and preventive solution in order to preserve and prepare the alveolar ridge for implant placement [7].

It is important to mention that the quality of rehabilitation correlates with patient satisfaction [8, 9]. A significant social component for the patient is the avoidance of the period of complete edentulism necessary for osseous consolidation in conventional complete dentures. Furthermore, shape, position and shade of the natural teeth can be copied, which leads to patient's faster biological adaptation [10, 11].

Literature-based evidence suggested that extractions should be done at two stages [11]. In the first stage, it would be preferable to extract posterior teeth and those with signs of acute infection. The second stage includes teeth extraction before denture delivery.

By proper planning, measuring the depth of the periodontal pockets, and subsequent trimming of the cast, optimal retention of denture base can be achieved. With this in mind, negative impact of surrounding muscles and progressive bone remodeling can be minimized [12].

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# Imedijatna totalna proteza – prikaz bolesnika

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## KRATAK SADRŽAJ

Imedijatna proteza je privremena ili trajna mobilna nadoknada koja se izrađuje u prisustvu prirodnih zuba. Budući nosioci ovih nadoknada su najčešće pacijenti sa uznapredovalim parodontitisom. Laboratorijska specifičnost izrade u odnosu na konvencionalne proteze tiče se pripreme definitivnih radnih modela prema podacima dobijenim na osnovu parodontalnog statusa pacijenta. Uz poštovanje protokola izrade moguće je obezbediti funkcionalnu, fonetsku i estetsku rehabilitaciju pacijenta odmah po vađenju zuba. Pored toga, kontakt protezne ploče sa postekstrakcionim alveolama tokom perioda konsolidacije usmerava pravilnije oblikovanje rezidualnog alveolarnog grebena.

Cilj ovog rada bio je da se prikažu kliničke i laboratorijske procedure u izradi imedijatne totalne proteze.

**Ključne reči:** imedijatna proteza; privremena proteza; totalna proteza; protetska terapija parodontitisa proteze

## UVOD

U eri implantatno-protetske rehabilitacije, konvencionalne totalne proteze preuzele su ulogu privremenog terapijskog rešenja. Nosioci ovih nadoknada su najčešće pacijenti sa prethodno dijagnostikovanom minimalnom krezubošću i/ili uznapredovalim parodontitisom [1]. Zahvaljujući mogućnosti trenutne funkcionalne, fonetske i estetske rehabilitacije, imedijatne totalne proteze postaju najčešći izbor terapeuta. Objedinjavanjem znanja i iskustava iz različitih stomatoloških disciplina, protetike, parodontologije i oralne hirurgije, može se uspostaviti predvidivost terapijskog uspeha. Iako spadaju u grupu privremenih, metoda preekstrakcione izrade i predaja unutar jednog sata od vađenja zuba odvajaju ih od ostalih mobilnih nadoknada [2, 3]. Neizostavan deo u okviru kliničkog pregleda podrazumeva analizu obaveznog parodontalnog statusa. Specifičnosti kliničkog rada tiču se mogućnosti realizacije funkcionalnog otiska različitim vrstama individualnih kašika (zatvorene, otvorene i delimično otvorene) [4], uz obavezno radiranje gipsanih zuba na modelu do prethodno izmerenog nivoa koronarnog kraja pripojnog epitela [5].

Cilj ovog rada bio je da se prikažu kliničke i laboratorijske procedure u izradi imedijatne totalne proteze.

## PRIKAZ BOLESNIKA

Pacijentkinja starosti 48 godina javila se na Kliniku za stomatološku protetiku Stomatološkog fakulteta Univerziteta u Beogradu na prvi pregled. Na osnovu anamneze, kliničkog pregleda i analize ortopantomografskog snimka (slike 1, 2 i 3), ustanovljen je parodontitis IV stadijuma, C stepena, komplikovan hiper-mobilnošću zuba usled primarnog okluzalnog traumatizma. Merenje dubine parodontalnih džepova za svaki zub vršeno je u osam tačaka (tri tačke vestibularno, tri tačke oralno, mezijalno i distalno) (Slika 4). Izmerene vrednosti unošene su u individualni parodontalni karton pacijenta (Slika 5). Nakon analize prikupljenih podataka i razgovora sa pacijentkinjom predložena je izrada gornje i donje imedijatne totalne proteze. S obzirom na to da je u regiji zuba #17, #25, #32 i #33 detekovan gnojni eksudat, ekstrakcija ovih zuba prethodila je početku protetske rehabilitacije. Anatomske otiske su realizovani ireverzibilnim hidrokoloidom u standardnim kašikama. Funkcionalni otisci su

uzeti kombinacijom C-silikona ređe konzistencije i cink-oksida eugenolne paste u individualno izrađenoj kašici zatvorenog tipa (Slika 6). Nakon određivanja međuviličnih odnosa preko postojećih zuba (Slika 7) usledila je faza preliminarne probe postave zuba u vosku (Slika 6). U okviru naredne laboratorijske procedure gipsani zubi definitivnih radnih modela su radirani prema rezultatima merenja koronarnog kraja pripojnog epitela za svaki zub (slike 8 i 9). Na ovaj način veličina gipsa koji se uklanja je prilagođena očekivanom kolapsu postekstrakcione alveole.

Nakon toga usledila je multipla ekstrakcija svih prisutnih zuba i ušivanje rana (Slika 10) na Klinici za oralnu hirurgiju. Alveole su digitalno reponirane, a šavovi postavljeni u predelu interdentalnih prostora. Modeli gotovih proteza predati su pacijentu sat vremena posle hirurške intervencije (Slika 11) sa ciljem da zaštite hiruršku ranu i prisutne šavove, deluju antiedematozno, kao i da spreče krvarenje. Pacijentkinji su data uputstva da proteze nosi kontinuirano 24 časa, nakon čega je bio zakazan prvi kontrolni pregled.

Nakon mesec dana usledilo je podlaganje proteza. Tokom daljeg opservacionog perioda (3, 6 i 12 meseci) nije bilo potrebe za istim kliničkim postupkom.

## DISKUSIJA

Protetska rehabilitacija imedijatnim totalnim protezama sadrži brojne prednosti nad rehabilitacijom konvencionalnim protezama sa odloženim opterećenjem [6].

Pored toga što ostvaruju povoljan efekat na proces zarastanja ekstrakcionih rana, ovim nadoknadama čuva se vertikalna dimenzija okluzije, kao i tonus i funkcija mišića orofacijalne regije. U kliničkim studijama pokazan je značaj imedijatne proteze kao privremenog i preventivnog rešenja u cilju očuvanja i pripreme alveolarnog grebena za ugradnju implantata [7].

Rezultati prospektivnih studija pokazali su da kvalitet rehabilitacije imedijatnim protezama korelira sa zadovoljstvom pacijenta [8, 9]. Značajnu socijalnu komponentu za pacijenta predstavlja odsustvo perioda neizbežne bezbosti neophodnog za konsolidaciju rana kod konvencionalnih totalnih proteza. Takođe, odabir boje, oblika i veličine veštačkih zuba može se mnogo lakše prilagoditi prirodnim zubima, što vodi bržoj biološkoj adaptaciji pacijenta [10, 11].

Prema literaturno dostupnim podacima, ekstrakcije bi trebalo sprovesti u dve faze [11]. U prvoj fazi preporuka je izvaditi zube bočnog segmenta (ukoliko ne održavaju optimalnu vertikalnu dimenziju) i zube sa registrovanom akutnom infekcijom potpornog aparata. Druga faza ekstrakcije podrazumeva vađenje svih preostalih zuba neposredno pre predaje gotovih proteza.

Merenjem dubine parodontalnih džepova, usmerenim odsecanjem zuba na modelu i eventualnim intervencijama na vrhovima koštanih alveola može se unapred isplanirati dobra adaptacija protezne ploče prema nosećim tkivima. Na taj način sprečeni su progresivna koštana remodelacija i negativan uticaj mišića usne duplje na oblikovanje rezidualnih alveolarnih grebenova [12].