ACTA
STOMATOLOGICA
CROATICA
www.ascro.hr

Acta stomatol Croat. 2015;49(2):145-150.
DOI: 10.15644/asc49/2/8

PRIKAZ SLUČAJA
CASE REPORT

Panagiotis Zoidis, Spyropoulou Panagiota, Gregory Polyzois

Most na teleskopima oblikovan s mogućnošću preinake fiksno-mobilnog nadomjestka: prikaz slučaja

A Fixed Telescopic Prosthesis Designed to Retrieve and Convert to Fixed-Removable Combination Case: A Clinical Report

Odjel za protetiku Stomatološkog fakulteta Atenskog sveučilišta, Atena, Grčka
Department of Prosthodontics, Dental School, University of Athens, Athens, Greece.

Sažetak
U ovom kliničkom prikazu opisan je, kod parodontno ugroženog pacijenta s nekontroliranim dijabetesom, fiksni maksilarni most od estetskoga kompozitnog materijala s metalnom bazom učvršćen na frezanim metalnim kapicama. Uključena su i mjesta za okluzalne upirače na ključnim mjestima ako se izgube lateralni zubi kako bi se most mogao prenamijeniti u kombinirani rad s mobilnom protezom. Nedostatak zuba u mandibuli nadomješten je klasičnim fiksnim metalkeramičkim mostom.

Zaprimljen: 8. veljače 2015.
Prihvaćen: 27. travnja 2015.

Adresa za dopisivanje
Panagiotis Zoidis
110 Laskaridou Str.
176 76 Athens, Greece
pzoidis@dent.uoa.gr

Ključne riječi
zubne proteze, djelomične, fiksne; zubne proteze, oblikovanje; zubne proteze, baze; stomatološke ljuske; protetske precizne spojke; dijabetes, komplikacije; parodontitis

Uvod

Proteze na teleskopima počele su se upotrebljavati u Sjedinjenim Državama potkraj 19. stoljeća, a naknadno usavršene uvode se u praksu u Europi tijekom 20. stoljeća. Teleskopska krunica može se definirati kao umjetna kruna prilagođena tako da odgovara manjoj kapici (1).

Teleskopske krune uglavnom se izrađuju u mobilnim protezama kako bi ih povezivale s preostalom denticijom (2, 3). Mogu također biti retencijski elementi u totalnim protezama retiniranima na bataljcima (4). Uz to, teleskopske krunice mogu se uspješno upotrebljavati kod mobilnih i fiksnih protetskih radova s dentalnim implantatima i prirodnim zubima (5 – 7). Primarna indikacija za fiksni teleskopski rad je parodontno ugrožen pacijent sa zubima kojima treba stabilizacija u cijelome zubnom luku (8 – 10).

Protetski radovi na teleskopima imaju mnogostruke prednosti. Tako, na primjer, umanjuju destruktivni horizontalni tok, iskorištavaju silu usmjerenu aksijalno kako bi se omogućila paralelizacija preostalih zuba i stabilizacija cijeloga zubnog luka, a zbog korištenja privremenog cementa omogućuju i uklanjanje (11).

Introduction

Telescopic dental prostheses (TDP) were introduced in the United States at the end of the 19th century and developed in Europe during the 20th century. The telescopic crown is defined as an artificial crown fabricated to fit over a coping (1).

Telescopic crowns have been used mainly in removable dental prostheses (RDP) to connect the dentures to the remaining dentition (2, 3). They may also be designated as retainers in completely abutment-borne detachable prostheses (4). In addition, telescopic crowns have been used successfully in removable and fixed dental prostheses supported by endosseous implants in combination with natural teeth including overdentures (5-7). The primary indications of a fixed telescopic dental prosthesis (FTDP) are the periodontally compromised abutment teeth that need splinting and cross arch stabilization (8-10).

Telescopic dental prostheses present multiple advantages such as minimization of destructive horizontal torque and enhancement of vertical long axis forces, achievement of parallelism of abutments using primary copings for common

Ova je tehnika maksimalno fleksibilna zato što se suprastruktura može ukloniti ako je potrebna dodatna parodontna terapija ili kirurški zahvat, popravak i ekstrakcija ugroženog zuba (12).

Nedostatci ovakve tehnike su obilno brušenje zuba nosača, zahtjevne laboratorijske tehnike, otežano postizanje zadovoljavajuće estetike (metalni rub primarnih teleskopskih kapica) te dodatni trošak. Ima slučajeva da su korištene keramičke kapice umjesto metalnih kako bi se poboljšali estetski rezultati i izbjegli ružni metalni rubovi (13).

Primarne teleskopske kapice moraju biti izrađene pod kutom od 2 do 12 stupnjeva. Nagib može varirati od zuba do zuba, ovisno o parodontu pojedinog nosača. Predloženi stupanj za parodontno ugroženi zub jest 6, a primarna teleskopska kapica u strukturi mora sadržavati cervikalni žlijeb. Izmjenama visine i nagiba kapice kontrolira se retencija suprastrukture na kapicama (14, 15).

U ovom prikazu opisan je maksilarni most na teleskopima koji se sastoji od frezanih kapica na izbrušenim zubima i metalne suprastrukture fasetirane kompozitom izrađene tako da se može prenamijeniti u kombinirani rad u slučaju gubitka lateralnih nosača. U mandibuli je korišten konvencionalni fiksni metalkeramički most.

Prikaz slučaja

Primljen je pacijent u dobi od 58 godina sa željom da mu se napravi fiksni maksilarni i mandibularni most zbog jakog refleksa na povraćanje. Nakon kliničkoga pregleda i iz anamneze potvrđeni su nekontrolirani dijabetes i kronični parodontitis.

Pregledom je ustanovljena zahvaćenost furkacije svih kutnjaka (molara), posebice na drugome desnom maksilarnom. Koštana potpora maksilarnih nosača budućega mosta iznosila je 40 posto, što je rezultiralo nepovoljnim odnosom između krune i korijena nosača.

Postojeće stanje u ustima uključivalo je fiksni most kojemu su kao nosači služili drugi desni kutnjak, prvi pretkutnjak i drugi sjekutić, a međučlanovi su bili prvi kutnjak, drugi pretkutnjak i očnjak. Drugi kutnjak s lijeve strane bio je opskrbljen posebnom krunicom. Preostali zubi bili su lijevi lateralni sjekutić te lijevi očnjak i nisu bili uključeni ni u kakvu konstrukciju.

Stanje zatečeno u mandibuli uključivalo je fiksni most na desnoj strani kojemu su nosači bili drugi kutnjak i prvi pretkutnjak, ali morao je biti izvađen zbog karioznog raspada zuba nosača. Mandibularni sjekutići ekstrahirani su zbog lošega parodontnog statusa (slika 1. a). Pacijentu je određena djelomična bezubost klase IV prema ljestvici Američkoga studija protetike (American College of Prosthodontists – ACP) (16).

path of insertion, cross arch stabilization and retrievability due to the use of provisional cement (11).

Therefore, this procedure provides maximum flexibility because the superstructure can be removed, if needed, for additional periodontal therapy or additional surgery, repair and extraction of hopeless abutment teeth (12).

Telescopic dental prostheses present disadvantages such as aggressive tooth preparations, complex laboratory procedures, difficulty in achieving aesthetics (metal collar of primary telescopic coping present) and additional cost. Attempts have been made to overcome the aesthetic limitation resulting from the presence of the metal collar of the traditional gold copings by incorporating all-ceramic primary telescopic copings (13).

The primary telescopic coping needs to be fabricated with taper between 2-12° and that taper can be different for each abutment under the same restoration usually depending on its periodontal condition. Mean taper of 6° is suggested for standard use when teeth with reduced periodontal support that require cross arch stabilization are involved while the primary telescopic coping ends with a chamfered cervical design. Modifying the height or degree of taper of the copings may control the amount of retention for the superstructure on the copings (14, 15).

This article describes a full-arch maxillary telescopic prosthesis, employing milled base metal primary copings and base metal superstructure veneered with composite, designed to retrieve and convert to a fixed – removable prosthesis in case of posterior tooth loss. In the mandible, a conventional fixed ceramo-metal fixed dental prosthesis was constructed.

Case Report

A white 58-year-old male patient came to us seeking a fixed maxillary and mandibular dental prosthesis due to intense gag reflex. The medical and dental examination revealed uncontrolled diabetes and severe periodontitis.

Maxillary molars presented severe furcation involvement, especially the maxillary second right molar. Osseous support was 40% for maxillary abutment teeth, resulting in an unfavourable crown to root ratio.

The existing maxillary restorations involved a fixed dental prosthesis with right second molar, right first premolar and right lateral incisor serving as abutments and the maxillary right first molar, the right second premolar and the right canine serving as pontics. A single crown was placed on the maxillary left second molar. Other maxillary teeth present were the left lateral incisor and left canine and were not restored in any way.

In the mandible, a fixed partial denture was present with the right second molar and first premolar serving as abutments, replacing the missing right second molar and premolar. This prosthesis had to be removed due to recurrent decay present in the abutment teeth. Mandibular incisors presented with poor periodontal prognosis and would have to be extracted (Figure 1A). Patient was classified as partial edentulism class IV according to the American College of Prosthodontists (ACP) (16).

Plan terapije

Implantati nisu dolazili u obzir zbog cijene i nekontroliranoga dijabetesa, kao ni mobilne proteze jer je pacijent imao izraženi refleks na povraćanje.

Terapijski plan uključivao je izradu fiksnog mosta na teleskopima. Zubi koji su dolazili u obzir bili su drugi desni maksilarni kutnjak, prvi pretkutnjak, lateralni sjekutić, lijevi lateralni sjekutić, očnjak i drugi lijevi kutnjak. Svi su izbrušeni kako bi se na njih mogle staviti primarne teleskopske kapice. Nakon toga izrađena je suprastruktura koja je privremeno cementirana.

Iz mandibule je uklonjen most na desnoj strani i izvađeni su sjekutići. Nadomješteni su fiksnim mostom s očnjacima kao nosačima. U maksili je estetska komponenta mosta zahtijevala fasetirani kompozit, a u mandibuli je korištena keramika. Fasetirani kompozit izabran je zbog dobrih estetskih svojstava, zadovoljavajuće cijene te otpornosti na lom.

Terapija

Obavljena je parodontna terapija, uklonjen je distalni korijen drugoga maksilarnog kutnjaka i izvađeni neupotrebljivi zubi. Svi maksilarni zubi endodontski su liječeni zbog okluzalne i aksijalne redukcije tvrdoga zubnog tkiva kako bi se pripremili za teleskopske kapice i krunice. Trepanacijski otvori zatvoreni su kompozitnim materijalom (Gradia Direct, GC America Inc., Alsip, Ill, SAD) (slika 1. b). Promijenjeni su svi stari maksilarni i mandibularni ispuni, obrušeni bataljci izbrušeni su ponovno te su inicijalno preparirani mandibularni očnjaci radi izrade fiksnoga mosta u fronti, a naknadno su izrađeni privremeni mostovi (slika 1. c). Privremeni mostovi ostavljeni su u ustima još šest mjeseci kako bi pacijent mogao održavati dobru oralnu higijenu te da bi dijabetes prehranom držao pod kontrolom jer je izbjegavao piti lijekove.

Izrada teleskopskoga maksilarnog mosta

Protetska izrada uključivala je nagib od 6 stupnjeva i izradu cervikalnog ruba s utorom. Frezane teleskopske kapice i suprastruktura isprobane su intraoralno kako bi se osiguralo pasivno prilijeganje (slika 2. a). Maksilarna metalna suprastruktura oblikovana je, navoštena i izlivena s utorima i površinama koje omogućuju prenamjenu u kombiniranu strukturu ako se izgube lateralni zubi (slika 2. b). Estetski fasetni kompozit korišten je u izradi maksilarne suprastrukture (Gradia, GC America Inc., Alsip, Ill, SAD) (slika 2. c), a mandibularni mostovi bili su keramički (slika 3. a).

Primarne teleskopske krunice cementirane su ojačanim staklojonomernim cementom (GC FujiCEM Automix; GC America, Inc, SAD), a suprastruktura je pričvršćena privremenim cementom (TempBond NE; Kerr Corp, Orange, Calif., SAD) kako bi se, bude li potrebno, mogla skinuti (slika 3. b).

Nakon cementiranja pacijent je dobio upute o oralnoj higijeni. Na kontrolu je bio naručen za tri mjeseca.

Treatment plan

Restorations employing implants were not included in the treatment options due to the cost and the uncontrolled diabetes. Removable dental prostheses were not included either since the patient had an intense gag reflex.

The prosthetic treatment employed a full-arch maxillary telescopic dental prosthesis using the maxillary right second molar, right first premolar, right lateral incisor, left lateral incisor, left canine and left second molar as abutments restored with primary telescopic copings. A full arch fixed superstructure was constructed over these primary copings and cemented with temporary cement.

In the mandible, the right fixed dental prosthesis was replaced and the four incisors that were extracted were replaced with a fixed prosthesis using the mandibular canines as abutment teeth. Base metal alloy was used due to finances along with composite for the maxilla and compatible veneering porcelain for the mandible. Composite was chosen over porcelain for the maxilla due to its resistance to chipping and excellent aesthetic appearance.

Treatment

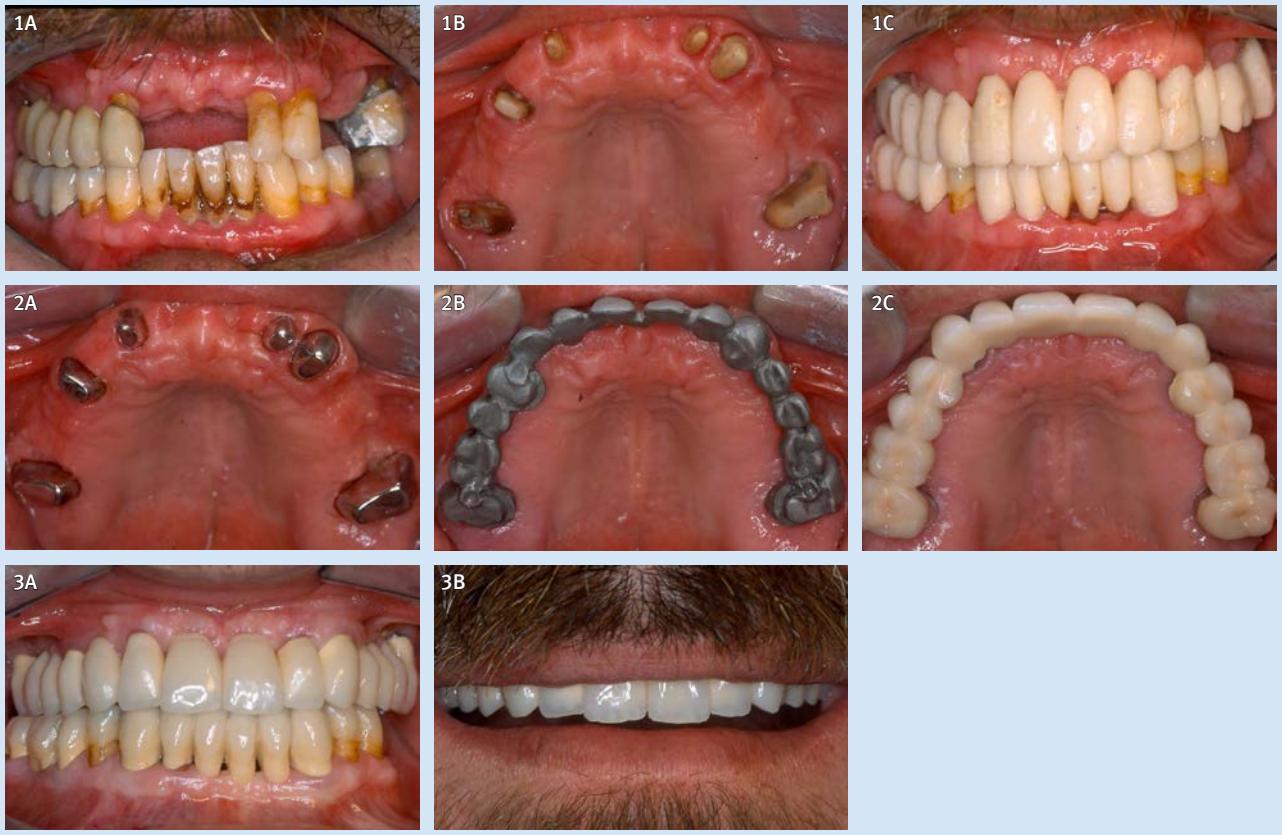
The periodontal disease was treated, the distal root of the second maxillary molar was resected and severely compromised teeth were extracted. All maxillary teeth were endodontically treated since the occlusal and axial reduction had to be sufficient for the fabrication of telescopic restorations. Access holes were sealed with composite material (Gradia Direct, GC America Inc., Alsip, Ill) (Figure 1B). Old maxillary and mandibular restorations were sectioned and removed, teeth preparations were refined along with the preparation for the mandibular canines for a fixed partial denture, and provisional restorations were placed (Figure 1C). The provisional restorations were used for a six month period in order to ensure that the patient complied with oral hygiene instructions and had his diabetes controlled through proper diet since he refused drug administration.

Maxillary fixed telescopic dental prosthesis fabrication

The prosthetic design employed a 6^0 taper and advocated a chamfered cervical line.

The milled maxillary primary telescopic copings along with the maxillary metal superstructures were fitted intraorally to verify passive seating (Figure 2A). The maxillary metal telescopic superstructure was designed, waxed and cast with underlying rest seats and milling surfaces that would transform the case to fixed-removable in case of posterior tooth loss (Figure 2B). Light cured composite resin (Gradia, GC America Inc., Alsip, Ill) was used to cover the maxillary metal superstructure (Figure 2C) whereas porcelain was used as a veneering material for the mandibular metal framework (Figure 3A).

Primary telescopic copings were cemented with reinforced glass ionomer luting cement (GC FujiCEM Automix; GC America, Inc) and the telescopic superstructure was cemented with provisional cement (TempBond NE; Kerr Corp, Orange, Calif) for retrievability reasons (Figure 3B). The permanent cementation protocol for the primary cop-



Slika 1. a Inicijalno stanje
Figure 1A Frontal pre-operative view.
Slika 1. b Okluzalni pogled na preparirane zube
Figure 1B Occlusal view of tooth preparations.
Slika 1. c Privremeni mostovi
Figure 1C Provisional Restorations.
Slika 2. a Okluzalni pogled na frezane teleskopske kapice
Figure 2A Milled maxillary primary telescopic copings-occlusal view.
Slika 2.b Metalna suprastruktura s mjestima za upirače
Figure 2B Metal telescopic superstructure with rest seats.
Slika 2. c Okluzalni pogled na maksilarni most na teleskopima
Figure 2C Maxillary fixed telescopic dental prosthesis-occlusal view.
Slika 3. a Krajnji ishod protetske terapije
Figure 3A Definitive dental prostheses, frontal view.
Slika 3. b Estetski izgled fiksnoga maksilarnog mosta na teleskopima
Figure 3B Esthetic appearance of the fixed maxillary telescopic dental prosthesis.

Rasprava

U ovom prikazu opisana je restauracija djelomično bezube maksile fiksnim teleskopskim mostom, a korištene su metalne legure i kompozitne fasete. Kapice na maksilarnim zubima frezane su kako bi se postigao idealni nagib i paralelizacija, a zatim je suprastruktura privremeno cementirana.

Metalna legura izabrana je zato da bi se smanjio trošak, a kompozit jer je otporniji na frakture negoli keramika. Osim toga u slučaju loma fasete kompozit se može intraoralno i ekstraoralno lakše reparirati nego keramika.

Discussion

This report describes the restoration of a partially edentulous maxilla with a fixed telescopic dental prosthesis (FTDP) using base metal alloy, and composite veneering material. The maxillary primary telescopic copings were milled in order to achieve ideal taper and parallelism and the telescopic superstructure was cemented with provisional cement.

Base metal alloy was utilized to reduce cost and composite was used for the maxillary telescopic restoration due to its resistance to chipping. In addition, composite can be easily

Najveća prednost ovoga protetskoga rada jest to što se može izvaditi iz usta u slučaju eventualne parodontne terapije. Tome pridonosi i uporaba privremenog cementa zbog lakoće uklanjanja i otkrivanja svih nosača mosta. Sljedeća prednost je prenamjena fiksnoga u kombinirani rad. Suprastruktura se može lako skinuti kako bi se uklonili nepotrebni dijelovi mosta te otkrila ležišta i utori da bi se prenamijenio u kombinirani protetski rad.

Nepovoljni aspekti ove terapije su uporaba kompozitnog materijala umjesto keramike na mandibularnim mostovima te obojenje.

Mandibularni zubni luk s lijeve strane ostao je skraćen zato što pacijent nije bio dobar kandidat za implantate ili mobilnu protezu.

Glavni cilj i kliničko značenje ovoga tretmana jest mogućnost lakšeg održavanja i eventualna izmjena rada u slučaju gubitka zuba.

Kontrole su bile u razmaku od tri mjeseca i svaki put bila je skinuta suprastruktura.

Promjena tretmana omogućena je uključivanjem okluzalnih uporišta na izvornome fiksnom radu. U slučaju ekstrakcije drugoga maksilarnog desnog kutnjaka koji je bio najslabija karika, teleskopski most može se skinuti i skratiti distalno od prvoga desnog pretkutnjaka. Uporište je locirano mezijalno od prvoga maksilarnog premolara, a eksponirani su lijevi maksilarni očnjak i drugi kutnjak. Nakon toga bi se ostatak mosta trajno cementirao kako bi podupirao jednostrani distalni produžetak mobilne proteze s kratkom palatinalnom pločom kao glavnim spojem i omogućio dugotrajnije korištenje protetskoga rada.

repaired either intraorally or extraorally.

The main advantage of such prosthetic design would be retrievability since periodontal maintenance is often required. The use of the temporary cement would account for this, and would make periodontal treatment more effective since the superstructure could be detached and the abutments could be fully exposed. Convertibility is another advantage of such a prosthetic design. It can be removed easily, expose the underlined rest seats in the laboratory, cut the unsupported framework, and convert to a fixed-removable combination case.

However, the treatment presented disadvantages such as wear of the composite resin opposing mandibular ceramometal FDP, and staining.

The mandibular left side remained as a shortened dental arch since the patient was not a good candidate for dental implants or a removable prosthesis.

The main goal and clinical significance of such a treatment modality would be the recall factor and the treatment alteration in case of future tooth loss.

The recall issue was addressed through a 3 month recall evaluation, done more effectively with the superstructure removed.

The treatment alteration due to posterior abutment tooth loss was addressed by incorporating occlusal rest seats on the fixed telescopic dental prosthesis. In the case of extraction of the maxillary second right molar which presents as the weakest abutment with an already resected root, the temporarily cemented telescopic restoration will be detached and will be sectioned distally to the maxillary right first premolar, while the rest seats mesially to the maxillary first premolar, the maxillary left canine and the maxillary second left molar will be exposed. Then, the remaining telescopic dental prosthesis will be permanently cemented in order to support a unilateral distal extension partial removable dental prosthesis (PRDP) employing a short palatal plate as a major connector, offering the patient additional years of prosthetic treatment use.

Zaključak

Uključivanje dodatnih uporišta u fiksnu teleskopsku konstrukciju ima određenu prednost jer je moguće prenamijeniti fiksni rad u mobilni, odnosno u kombinirani te omogućiti pacijentu dugotrajnije korištenje mosta. Ovakav terapijski pristup odabire se za skupinu graničnih pacijenata s parodontnom bolesti i oslabljenim nosačima, a spremni su na suradnju kad je riječ o oralnoj higijeni i održavanju protetskoga rada.

Conclusion

The incorporation of underlined rest seats in fixed telescopic reconstructions offers the distinct advantage of converting to fixed-removable combination cases, offering the patient more years of prosthetic service. This treatment approach is especially useful for borderline periodontal cases with weakened abutments and requires patients who can comply with oral hygiene instructions and maintenance.

Abstract
This clinical report describes a fixed maxillary telescopic dental prosthesis (FTDP) employing milled base metal copings and a metal superstructure veneered with composite resin, for the restoration in a periodontally compromised patient with uncontrolled diabetes. The telescopic prosthesis framework design incorporated occlusal rest seats in key positions along the arch in case of future posterior tooth loss, in order to be converted to fixed - removable combination prosthesis. The mandible was restored with a conventional fixed ceramo-metal dental prosthesis.

Received: February 8, 2015
Accepted: April 27, 2015

Address for correspondence
Panagiotis Zoidis
110 Laskaridou Str.
176 76 Athens, Greece
pzoidis@dent.uoa.gr

Key words
Denture, Partial, Fixed; Denture Design; Denture Bases; Dental Veneers; Denture Precision Attachment; Diabetes Complications; Periodontitis

References

1. The Glossary of Prosthodontic Terms. J Prosthet Dent. 2005 Jul;94(1):10-92.
2. Langer A. Telescope retainers and their clinical application. J Prosthet Dent. 1980 Nov;44(5):516-22.
3. Langer A. Telescope retainers for removable partial dentures. J Prosthet Dent. 1981 Jan;45(1):37-43.
4. Langer A. Tooth-supported telescope restorations. J Prosthet Dent. 1981 May;45(5):515-20.
5. Sethi A, Sochor P. Restoration of the maxillary arch using implants, natural teeth and the Konus crown. Dent Update. 1994 Mar;21(2):52-5.
6. Laufer BZ, Gross M. Splinting osseointegrated implants and natural teeth in rehabilitation of partially edentulous patients. Part II: principles and applications. J Oral Rehabil. 1998 Jan;25(1):69-80.
7. Besimo C, Graber G. A new concept of overdentures with telescope crowns on osseointegrated implants. Int J Periodontics Restorative Dent. 1994 Dec;14(6):486-95.
8. Amsterdam, M; Abrams, L. Periodontal prosthesis. In: Goldman, H; Cohen, DW –editors. Periodontal therapy. 5th ed. St Louis: CV Mosby Co; 1968. p. 1001-4.
9. Yuodelis, RA; Faucher, R. Long-term stabilization. In: Schluger, S; Yuodelis, R; Page, RC; Johnson, RH - editors. Periodontal diseases: Basic phenomena, clinical management, and occlusal and restorative interrelationships. 2nd ed. Philadelphia: Lea & Febiger; 1990. p. 672-6.
10. Mengel R, Kreuzer G, Lehmann KM, Flores-de-Jacoby L. A telescopic crown concept for the restoration of partially edentulous patients with aggressive generalized periodontitis: a 3-year prospective longitudinal study. Int J Periodontics Restorative Dent. 2007 Jun;27(3):231-9.
11. Breitman J, Nakamura S, Freedman A, Yalisove IL. Telescopic Retainers: An Old or New Solution? A Second Chance to Have Normal Dental Function. J Prosthodont. 2012 Jan;21(1):79-83.
12. Weaver JD. Telescopic copings in restorative dentistry. J Prosthet Dent. 1989 Apr;61(4):429-33.
13. Pellecchia R, Kang Hi-Ko, Hirayama H. Fixed partial denture supported by all-ceramic copings: A clinical report. J Prosthet Dent. 2004 Sep;92(3):220-3.
14. Ohkawa S, Okane H, Nagasawa T, et al. Changes in retention of various telescope crown assemblies over long-term use. J Prosthet Dent. 1990 Aug;64(2):153-8.
15. Langer Y, Langer A. Tooth-supported telescopic prostheses in compromised dentitions: A clinical report. J Prosthet Dent. 2000 Aug;84(2):129-32.
16. Mc Garry TJ, Nimmo A, Skiba JF, et al: Classification system for partial edentulism. J Prosthodont. 2002 Sep;11(3):181-93.