



## Fixed prosthetic treatment in patients with cleft lip and palate

### Fiksnoprotetski tretman pacijenata sa heilognatopalatoshizom

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#### Abstract

**Introduction.** The prosthetic treatment of patients with cleft palate includes various treatment options such as fixed partial dentures, removable partial prosthesis, etc. The type of prosthetic appliance is determined by the oral health of each individual and the circumstances. We presented three adult patients with the cleft lip and palate subjected to prosthetic treatment. **Case report.** From the possible prosthetic solutions according to the conditions in the oral cavity and the circumstances, fixed partial dentures veneered with composite or ceramic were chosen. A proper relationship between the teeth was reached with the fixed partial dentures, and function established, the phonetics improved and satisfying aesthetics effect accomplished improving the profile appearance of the patient's face. Plastic surgery of the nose was performed after that. **Conclusion.** Multidisciplinary treatment is necessary for favourable long-term outcome in cleft lip and palate patients.

#### Key words:

cleft lip; cleft palate; prosthodontics; dental prosthesis; denture, partial, fixed; treatment outcome.

#### Apstrakt

**Uvod.** Protetsko lečenje pacijenata sa rascepom nepca uključuje različite opcije kao što su fiksne parcijalne proteze, parcijalne pokretne proteze i tako dalje. Tip protetskog aparata zavisi od oralnog zdravlja svake osobe pojedinačno, kao i od okolnosti. Prikazana su tri odrasla pacijenta sa heilognatopalatoshizom koji su zbrinuti protetski. **Prikaz bolesnika.** Od mogućih protetskih rešenja, u zavisnosti od uslova u usnoj duplji, izabrano je da se urade mostovne konstrukcije, fasetirane sa kompozitom ili keramikom. Sa mostovnom konstrukcijom uspostavljeni su međusobni odnosi zuba, postignuta je pravilna funkcija, poboljšala se fonetika, omogućena je zadovoljavajuća estetika i postignut je zadovoljavajući profilni izgled lica pacijenata. Usledila je plastična operacija nosa. **Zaključak.** Za povoljan dugoročni ishod lečenja bolesnika sa rascepom nepca i usne neophodan je multidisciplinarni pristup.

#### Ključne reči:

usna, rascep; nepce, rascep; protetika; zubna proteza; zubna proteza, parcijalna, fiksna; lečenje, ishod.

#### Introduction

The occurrence of congenital cleft lip and palate has several possible etiological factors. As possible causes stated in the literature are deficient diet and psychological stress during pregnancy, chemical teratogenic agents, infectious diseases (viral origin), radiation during pregnancy and hereditary factors, gene mutation or chromosome aberration. The increased incidence of cleft lip and palate was observed during the periods of war as compared with peaceful times <sup>1</sup>. For the treatment of patients with cleft lip and palate a multidisciplinary approach is required including maxillofacial and oral surgeon, orthodontist, prosthodontist, speech therapist, sociologist, pediatrician, and psychologist.

The prosthetic treatment in patients who had cleft palate includes various treatment options such as fixed partial dentures, removable partial prosthesis, overdentures, complete dentures and implant-supported prosthetic dentures <sup>2</sup>.

We presented three cases of managing cleft lip and palate in adult patients with fixed partial dentures.

#### Case report

Three adult patients with cleft lip and palate were referred to the Department of Prosthetics. They all had undergone lip and palate surgery at an early age, one of them was treated orthodontically and the other two patients were mentally disabled and had no orthodontic therapy. The first patient

and the parents of the other two declined the other suggested treatment modalities and requested fixed prosthetics therapy. The patients had visible scar tissue on the lip and in the cleft area, concave face profile and collapsed nose.

For proper analysis and treatment planning a complete history was taken from the patients and clinical examination was carried out assessing the overall state of the oral cavity (missing teeth, alignment of the present teeth, intraoral deformities, relationship of the alveolar arches in occlusion and the occlusion itself, vertical dimension, oral hygiene, gingival inflammation, length of the clinical crowns, and their ability to serve as abutment teeth for fixed partial dentures). Paraclinical tests were also conducted (pulp testing, x-ray). After performing periodontal treatment in order to obtain healthy supportive tissues, impressions were taken and diagnostic models were poured in dental stone, and were mounted in semiadjustable articulator in order to complete the analysis and information gathered previously. We evaluated the relationship of the alveolar arches and the occlusogingival relation, and diagnostic preparation and modeling in wax was made to determine the size and shape of the future prosthetic restoration. The present malpositioned teeth with insufficient length of radices and peg-shaped crowns were extracted.

The remaining teeth in the frontal region which were properly aligned and shaped were prepared according to the biomechanical principles and impressions were made using putty/wash silicon impression materials in order to fabricate fixed partial dentures made from metal framework veneered with composite or ceramic.

#### Case 1

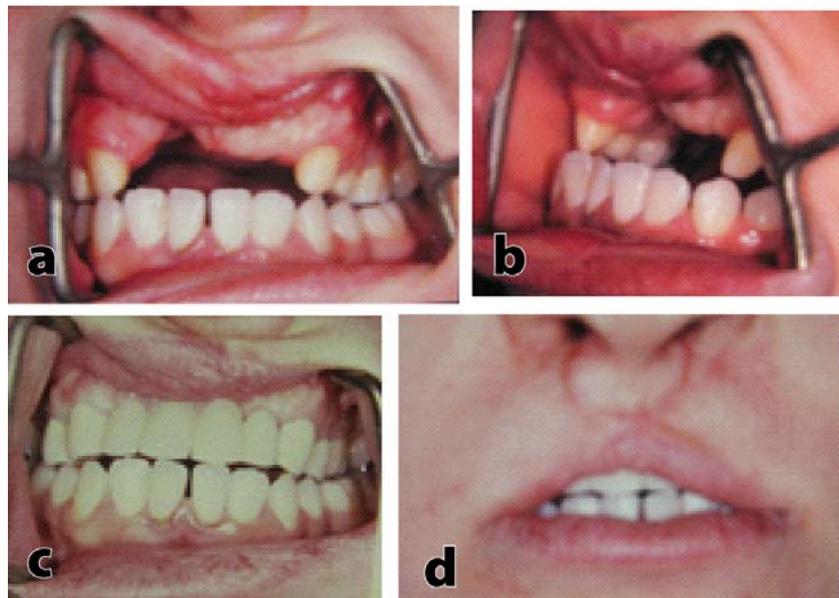
A 18-year-old patient had missing teeth in the frontal region and ectopic teeth scattered on the palate (Figures 1 a and b). The ectopic teeth were extracted. After careful planning a fixed partial dentures were made using precious alloy veneered with composite (Figure 1 c).

#### Case 2

A 18-year-old patient had missing four incisors, the first left premolar, a part of the alveolar arch in the maxilla (Figures 2 a and b). With the previous orthodontic treatment groups *tet-a-tet* relationship of the upper and lower teeth was reached. Fixed partial denture was made from precious alloy veneered with composite and the missing part of the alveolar arch was restored with acrylic (Figures 2 c and d).



**Fig. 1 – a) Dental status in the oral cavity and the maxilla; b) The dental arches in maximal intercuspation; c) Mounted fixed partial denture.**



**Fig. 2 – a) and b) Condition in the patient's oral cavity; c) Patient with completed prosthodontic restoration; d) Patient appearance.**

## Case 3

A 18-year-old patient with no orthodontic treatment had scars on the outer and inner part of the lip after the oral surgery. The intraoral status showed micromaxilla and pseudoprogenia, missing and malpositioned teeth, central incisors that were rotated and rudimentary, gingival inflammation and crossed bite in the posterior region (Figures 3 a–c). Because of the skeletal mismatch of the maxilla and mandible there was discrepancy between the alveolar arches. After careful planning, the improperly aligned and rudimentary teeth were extracted and periodontal treatment carried out. The existing vertical dimension was used for fabrication of fixed partial denture from metal-ceramic. The teeth were prepared, and an impression was taken for the dental laboratory. With the finished fixed partial denture, mounted in the patient mouth, the function improved, the upper lip lifted taking teeth-supported position and the aesthetics of the patients face was improved (Figures 3 d–f). Prosthetic treatment was followed with plastic surgery on the nose. Since the patient had low smile line and the gingival third of the fixed partial denture was not visible the aesthetic appearance of the restoration was improved.

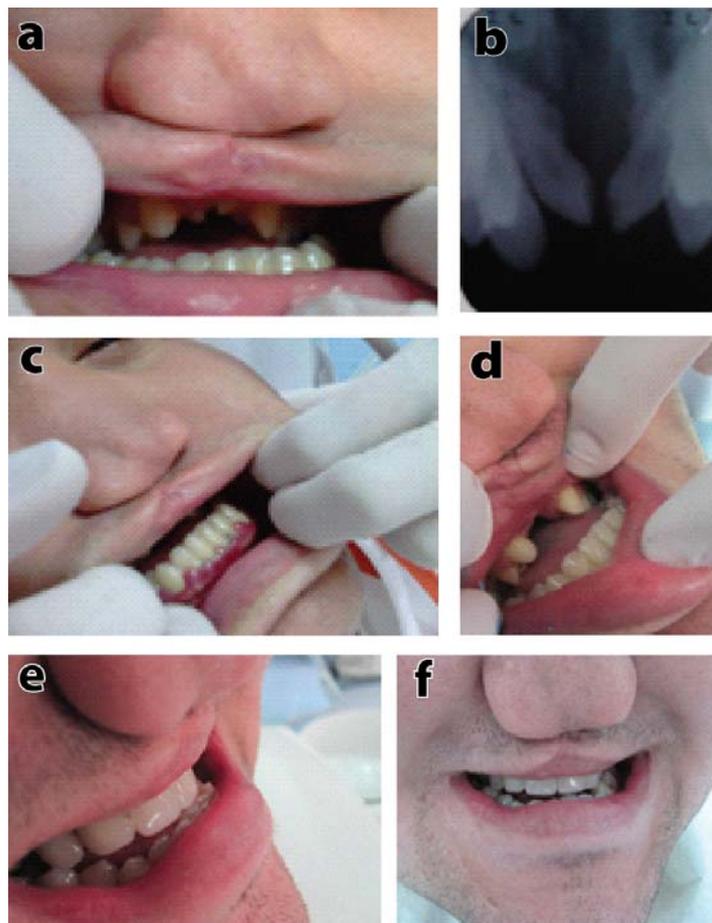
## Discussion

In the treatment of patients with cleft lip and palate significant attention is given to the analysis of success of so far used protocols of treatment which cover several treatment stages: pre-surgical orthodontic therapy, plastic surgery of the cleft lip and palate followed with orthodontic therapy and plastic surgery on the nose and scar tissue after completed growth<sup>3</sup>.

Restoring the teeth in such cases is demanding and complex task having the pseudoprogenia, crossed bite, hypodontia or hyperdontia in the cleft area with ectopical placement of the teeth, open bite, crowded teeth or teeth with diastemas and lost middle line, and normal or reduced vertical dimension<sup>4</sup>.

Several authors presented prosthetic treatment of such cases<sup>2, 5-7</sup>. According to the oral health of each individual and the circumstances, the type of prosthetic appliance is determined<sup>8</sup>. Fixed partial dentures provide comfort, improve speech, mastication and aesthetics influencing positively the overall psychological state of the patient<sup>2</sup>.

The literature shows that combined prosthetic modalities are the most frequently used type of prosthetic constructions<sup>9</sup>. Several authors presented treatment approaches in their



**Fig. 3 –a) Micromaxilla; b) X-ray showing the malpositioned teeth; c) Gingival inflammation; d) Abutment teeth after preparation; e) Metal-ceramic fixed partial denture seated in the patient mouth; f) Appearance after prosthodontic rehabilitation.**

case reports on cleft lip and palate patients using root copings, modified Dolder bar attachment, conus crown system, modified crowns and removable partial dentures<sup>5</sup>, overlay dentures retained with microextracoronar resilient attachments<sup>10</sup> and after obtaining stabile occlusion with orthodontic treatment a fixed partial dentures veneered with composite<sup>11</sup>.

Patients with no bone grafting and orthodontic treatment present greatest challenge<sup>12</sup>. Since patients with cleft palate require long time follow-up and maintenance, in case of failure of restoration review of the treatment is still needed

and incorporation of superior materials and methods in order to minimize further complications<sup>11</sup>.

### Conclusion

We presented solutions with fixed prosthetic treatment in patients with cleft lip and palate. With the fixed partial dentures a proper relation between the teeth was reached, function enabled, phonetics significantly improved and satisfying aesthetic overall appearance of the patient accomplished.

### R E F E R E N C E S

1. *Meštrović MM, Bagatin M, Poje Z.* The incidence of orofacial clefts in Croatia in 1988–1998. *Acta Stomatol Croat* 2005; 39(1): 53–60. (Croatian)
2. *Lopes JF, Pinto JH, de Almeida AL, Lopes MM, da Silva Dalben G.* Cleft palate obturation with Brånemark protocol implant-supported fixed denture and removable obturator. *Cleft Palate Craniofac J* 2010; 47(2): 211–5.
3. *Vukić-Čulafić B, Vučinić P, Ivić S, Petrović Đ.* The relationship of the parameters of jaw and cranial bases in cheilognathopalatoschisis. *Proceedings of the XLVI International Congress of Anthropological Society of Yugoslavia*; 2007 May 29 – June 2; Apatin, Serbia. Novi Sad: Glasnik Antropološkog društva Srbije 2008; 43: 140–7. (Serbian)
4. *Savin M, Kosovel Z.* Fixed prosthodontics. Zagreb: Školska knjiga; 1975. (Croatian)
5. *Vojvodić D, Jerolimov V, Jokić DV, Lončar A.* Oral Rehabilitation of the Patient with Cheilognathopalatoschisis. *Acta Stomatol Croat* 2000; 34(3): 329–30. (Croatian)
6. *Ayna E, Başaran EG, Beydemir K.* Prosthodontic Rehabilitation Alternative of Patients with Cleft Lip and Palate (CLP): Two Cases Report. *Int J Dent* 2009; 2009: 515790.
7. *Watanabe I, Kurtz KS, Watanabe E, Yamada M, Yoshida N, Miller AW.* Multi-unit fixed partial denture for a bilateral cleft palate patient: a clinical report. *J Oral Rehabil* 2005; 32(8): 620–2.
8. *Freitas JA, Almeida AL, Soares S, Neves LT, Garib DG, Trindade-Suedam IK, et al.* Rehabilitative treatment of cleft lip and palate: experience of the Hospital for Rehabilitation of Craniofacial Anomalies/USP (HRAC/USP) - Part 4: oral rehabilitation. *J Appl Oral Sci* 2013; 21(3): 284–92.
9. *Kranjčić J, Žabarović D, Čelebić A, Mehulić K, Komar D, Vojvodić D.* Prosthetic Modalities Used to Treat Cleft Palate Patients in a University Clinic. *Year Review. Coll Antropol* 2013; 37(2): 423–9.
10. *Acharya V, Brecht LE.* Conventional prosthodontic management of partial edentulism with a resilient attachment-retained overdenture in a patient with a cleft lip and palate: a clinical report. *J Prosthet Dent* 2014; 112(2): 117–21.
11. *Bidra AS.* Esthetic and functional rehabilitation of a bilateral cleft palate patient with fixed prosthodontic therapy. *J Esthet Restor Dent* 2012; 24(4): 236–44.
12. *Moore D, McCord JF.* Prosthetic dentistry and the unilateral cleft lip and palate patient. The last 30 years. A review of the prosthodontic literature in respect of treatment options. *Eur J Prosthodont Restor Dent* 2004; 12(2): 70–4.

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