



## REHABILITATION OF A PATIENT WITH CONGENITAL CLEFT LIP AND PALATE BY FIXED AND PRECISION ATTACHMENTS PROSTHESIS

### KONJENİTAL DUDAK VE DAMAK YARIKLI BİR HASTANIN SABİT VE HASSAS TUTUCULU PROTEZLERLE REHABİLİTASYONU

Arş. Gör. Dt. Hatice ÖZDEMİR\*

Prof. Dr. Lütfü İhsan ALADAĞ\*

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#### ABSTRACT

Cleft lip and palate (CLP) is the most common craniofacial birth defect and its etiology has been the focus of many reports in the literature. The cause of CLP is unknown, but possible causes are malnutrition and irradiation during pregnancy, psychological stress, teratogenic agents, infectious agents (viruses), and inheritance. Most clefts are likely caused by multiple genetic and nongenetic factors. Prosthetic reconstruction of the anterior maxilla is important for these patients. This paper describes the prosthetic rehabilitation of a patient with CLP, 27 years-old man. The patient was treated with fixed and precision attachments prosthesis because of his aesthetic and psychological problems.

**Key words:** Congenital, Cleft lip and palate, Prosthesis, Precision attachment

#### ÖZET

Yarık dudak ve damak (YDD) en yaygın kafa-yüz doğum defektidir ve etiolojisi literatürde çoğu çalışmanın odağı olmuştur. YDD ' nin sebebi bilinmemektedir, fakat muhtemel sebepler; hamilelik süresince kötü beslenme ve ışın tedavisi, psikolojik stres, teratojenik ajanlar, enfeksiyon ajanları (virüsler) ve kalıttır. Çoğu yarıklar muhtemelen genetik ve genetik olmayan birçok faktör tarafından oluşturulur. Anterior maksillanın protetik rehabilitasyonu bu hastalar için önemlidir. Bu makale, 27 yaşındaki YDD ' li bir erkek hastanın protetik rehabilitasyonunu anlatmaktadır. Hasta estetik ve psikolojik problemlerinden dolayı sabit ve hassas tutuculu protezlerle tedavi edilmiştir.

**Anahtar Kelimeler:** Konjenital, Yarık dudak ve damak, Protez, Hassas tutucu

#### INTRODUCTION

The cleft lip and palates are the most common congenital anomalies.<sup>1,2</sup> The number of cases of cleft lip and palate in society are too numerous to be ignored. The incidence of cases depends on geographical region and the socio-economic situation and frequency of incidence in the world is defined as 1/700.<sup>3-5</sup>

It is thought that both genetic and environmental factors have roles in the etiology of cleft lip and palate, but among the majority of these cases, multifactorial inheritance is valid.<sup>6</sup> The etiology

of cleft lip and palate is still unknown, but possible causes are malnutrition and exposure to x-rays during pregnancy or radioactive radiation, physical and psychological stress, teratogenic agents, infectious agents (viruses), and as it is understood from the speech of the individuals who have this anomaly in one-third or half of the cases and tell about the previous incidence of case in their family, it is suggested to be hereditary.<sup>7-9</sup>

The basic characteristic of the dentofacial deformity that occurs in cleft lip and palate is the three-dimensional deficiency of maxillary development.

\* Department of Prosthodontics, Faculty of Dentistry, Atatürk University, Erzurum



Development retardation of maxilla in the sagittal direction causes lack of mid-face and concave facial profile. Defficiency in the direction of transverse causes the collapse of maxillary segments and consequent posterior cross shutdowns.<sup>10</sup>

Variety of problem in cleft lip and palate makes treatment difficult. A multidisciplinary approach is important in order to achieve optimum results.<sup>11</sup> The rehabilitation of patients with cleft lip and palate is especially important about functional and aesthetical aspects and requires careful and attentive treatment. In the treatment process, starting from birth and continuing until the end of the patient's growth, acquirement of a proper functional structure as well as satisfactory aesthetic result are very important in terms of improving the patient's quality of life measures.<sup>12</sup> Successful treatment of cleft lip and palate is just possible with the work of a team that is called cleft lip and palate and covers the different branches of medicine and dental medicine (genetics specialist, pediatrician, plastic surgeon, audiologist, orthodontists, otolaryngologists, paedodontist, speech and language therapist, child psychologist, prosthetics specialist )in harmony.<sup>13,14</sup> Individuals with cleft lip and palate undergo a long treatment process that starts immediately after birth and lasts, most of the time until the end of the period of growth and development and often includes serious operations. Obtaining of acceptable aesthetic appearance of these patients is realized after the formation of ideal self. During this period, problems seen especially in aesthetic appearance and speech entail various problems on participation of self to the society.<sup>15-18</sup>

Congenital or acquired defects such as cleft lip and palate may lead to significant problems during design or construction of full or partial prosthesis. In some cases, the defect may be quite comprehensive or tissue morphology may be so inconvenient that it may not be possible to prepare a satisfactory prosthesis with conventional methods.<sup>19</sup> In these cases, it is able to make use of overdenture prostheses. In these cases, it is very important to determine and protect the appropriate tooth or teeth to be used as a support. In applied overdenture prosthesis, it is reported to necessity of making use of responsive catchers so in order that catching will not create a problem during the use of prosthesis.<sup>20</sup> With responsive links, clasp arms that are used in

conventional removable partial prosthesis and causes problem when they are used aesthetic parts are eliminated and a high level of conservation and stability is improved.<sup>21</sup>

In this paper, we present prosthetic rehabilitation of a young patient who had congenital cleft lip and palate.

## CASE REPORT

27-year-old male patient who had applied Atatürk University, Faculty of Dentistry, Prosthodontics clinic had congenital cleft lip and palate. Patient reported that he had undergone a series of operations in childhood and consequently psychological problems in his medical history. It was learned that his sister had cleft lip and palate as well. Patient's main reason to apply our clinic was to express the dissatisfaction due to continuous fracturing of classic partial prosthesis made two years ago and ask if it was possible to make a stable prosthesis done. Finally, we decided to make fixed prosthesis taking age of the patient, psychological status and aesthetic expectations into consideration.

In the intraoral exam of the patient, 11, 12, 13, 16, 25,26, 35, 37, 43, 46, 47 teeth were missing and there were discoloration on the existing teeth. There was a wide bone loss in the alveolar crest between left central tooth and right 1st premolar tooth on upper jaw; and a hole at the level of lateral teeth combined with nasal cavity on palate. There were traces remaining from congenital cleft and the operations patient had undergone on hard and soft palate; and the soft palate was not being seen as normal. Teeth on the right side had cross closing and teeth on the left side had a normal closing.(Figure 1)

In the extraoral examination, there were suture traces formed by the closure of the cleft on the right side of upper lip and between upper lip and nose. . The right side of his nose was collapsed and philtrum was not being seen. (Figure 2) That patient with partial tooth loss had resonance disorder in speech, chewing and swallowing difficulties and aesthetic expectations at upper degree.



Figure 1. Intra-oral appearance of the patient



Figure 2. Extra-oral appearance of the patient

First of all, patient was done scaling and polishing and then prosthetic procedures was started. First, all the teeth on the lower jaw were prepared and full mouth bridge consisting of 3 parts was made. A2-coloured shaded Vita brand porcelain was used. To maintain the existing vertical dimension firstly bridge on the left- side and then the bridges on the front and right-side were made. After the operations on the lower jaw had finished, it was began on the upper jaw. Upper left 1st premolar and 2nd molar teeth were prepared and four-membered bridge was made. After the other teeth on upper jaw were prepared and the preparations was controlled.(Figure 3)



Figure 3. Preparations of teeth

In order not to impede the flow that occurred from interval combining the mouth on the right side of palate and nasal cavity; and in order to compensate the bone loss in alveolar crest and to ensure hygiene in that area, construction of removable prosthesis was approved and extracoronar precision attachment' male parts (Vertical sliding bar, Bredent, America) were planned to be placed on left central and right 1st premolar teeth.(Figure 4)

After the practice and was taken bite occlusion, the removable prosthesis was completed (Figure 5)

After the prosthesis was inserted into mouth and compliance was checked, patient was informed about the usage and maintenance of prosthesis. With the prosthetic rehabilitation, aesthetic expectations of the patient were provided in the best way and this satisfaction was reported by the patient and he decided to undergo nasoplasty operation (Figure.4)



Figure 4. Precisional attachments and metal frame-work



Figure 5. The removable prosthesis with precisional attachments



Figure 6. The final restorations

## DISCUSSION

Before the prosthetic rehabilitation of this case, patient was reported that surgical procedures might be considered and the possible gains of those treatment options. But, the patient didn't want the surgical procedure and then we decided to rehabilitation of the patient by using removable and fixed prosthesis. We thought that the prosthesis which we made was more aesthetic and functionally than the previous prosthesis.

Cleft lips and palates are the most commonly seen malformation in the region of head and neck among others. Their aetiologies are multifactorial. It shows several differences in terms of incidence rate among races.<sup>22</sup> In our country, this rate has been 0.95 per thousand.<sup>6</sup> Aesthetic and speech disorder are evident among the individuals with cleft lip and palate and this is known by everyone.<sup>23</sup> This situation may cause psycho-social disorders depending on stress among the individuals with cleft lip and palate.<sup>15</sup> The patient who had applied our clinic had psycho-social disorders because of appearance and the use of mobile prosthesis as well and patient's prior request was an aesthetic appearance.

In the studies, it was reported that the individuals with cleft lip and palate were exposed such evident problems as social isolation, difficulty in speaking, difficulty in learning, and insufficiency in self-confident because of non-aesthetic appearances on their faces.<sup>24-27</sup> However, in another study, even parents who had children with CLP were demonstrated to be more reserved and isolated than other families.

Researchers suggested that parents were less tolerant and more nervous against their children with CLP. Probably, all these negative developments have negative impacts on self-acceptance of children and therefore on enjoying the life.<sup>27</sup>

Implant-supported fixed and removable prostheses, overdentures, traditional fixed and removable prostheses can provide more normal facial contours, an improved smile line, improved arch relationships, and improved function for teens and young adults with facial defects. Implant-supported prostheses can enhance stability, retention, function, and bone preservation. The authors of this paper have observed that patients with congenital craniofacial defects often feel more positive about themselves after prosthetic treatment. Patients who are embarrassed by their teeth and facial appearance are frequently less motivated to maintain good oral hygiene or seek regular dental care, resulting in increased tooth loss and the destruction of oral tissues, which exacerbates the existing problem. Early intervention can be extremely beneficial for the patient's well-being.<sup>28</sup>

Maxillofacial prosthetic treatment, which is a combination of fixed, implant-supported, and removable prostheses in conjunction with other dental and medical treatments, may be necessary in order to obtain the maximum ideal outcome for the patient.<sup>29</sup>

The use of a fixed partial denture may create a number of problems, such as the removal of the sound tooth structure and difficulty over oral hygiene with reduced gingival and periodontal health. It has been recommended that two abutment teeth be used on each side of the cleft.<sup>30</sup> Removable partial dentures should improve the health of the remaining dentition and surrounding oral tissue.<sup>31</sup> With carefully planned prosthetic treatment and adequate checking of oral and denture hygiene, there will be little or no damage to the remaining teeth and periodontal tissue.<sup>32</sup> The type of retainer that is used influences the survival rate of the dentures.<sup>33</sup>

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#### **Yazışma Adresi**

Dr. Hatice ÖZDEMİR  
Atatürk Üniversitesi  
Diş Hekimliği Fakültesi  
Protetik Diş Tedavisi Anabilim Dalı  
25240, Erzurum, TURKEY.  
Tlf.: 0 442 231 1736  
Fax: 90.442.2360945  
e- mail: dentist\_hatice@hotmail.com

