Conservative root canal treatment and restoration of severely affected anterior two teeth of cleft lip and palate patients: A case report

Dudak Damak Yarıklı Hastanın Yarık Hattına Komşu İki Dişin Konservatif Yaklaşımla Tedavisi: Olgu Tanımlaması

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Özet

Bu vaka raporunun amacı; dudak damak yarığı hattının iki tarafında bulunan dişlerin endodontik tedavisi sonrası kuronal kısmın tek diş şeklinde restore edilip, hastada estetik görüntünün sağlanmasıdır. 27 yaşında sistemik olarak sağlıklı erkek hastanın hikayesinde 3 yaşında dudak damak yarığı operasyonu bulunmaktadır. Hastanın klinik muayenesinde 11 numaralı dişin diş arkına göre bukkalde konumlandığı ve 12 numaralı dişin ise palatalde yer alması nedeniyle, hastada belirgin çapraşık görüntü bulunmaktadır. 11 ve 12 numaralı dişler elektrikli pulpa ve soğuk vitalite testlerine pozitif yanıt vermiştir. Perküsyon ve palpasyonda duyarlılık bulunmamaktadır. Radyografik değerlendirmede 11 ve 12 numaralı dişlerin kökleri arasında bulunan dudak damak yarığı hattı, geniş radyolusensi olarak görülmektedir. Çürüklerin uzaklaştırılmasından sonra kök kanallarına giriş sağlandı. Çalışma boyu 15-K eğesi ve radyografik yöntemler ile belirlendi. Kök kanal preparasyonu %5,25 sodyum hipoklorit irrigasyonu altında Reciproc R40 eğesi ile tamamlandı. Kök kanal tedavisi uygulandıktan sonra 11 ve 12 numaralı dişler tek bir diş görünümü kazandırılacak şekilde kompozit rezin ile restore edildi. Metal alt yapılı porselen kron uygulaması ile restorasyon tamamlandı. Dişeti bölgesindeki daha iyi estetik görünüm sağlanması amacıyla pembe porselen tercih edilmiştir. Birinci ve altıncı aylarda yapılan kontrollerde dişler semptomsuzdur. İlgili bölgede sağlıklı dişeti varlığı gözlemlenmiştir. Radyografik muayenede herhangi bir patolojik görüntü varlığı gözlenmemiştir.

Anahtar Kelimeler

Dudak-damak yarığı, Estetik, Konservatif tedavi

Abstract

The purpose of this case report; to present a case of endodontic treatment of the teeth adjacent to cleft lift and palate then restored coronal part of teeth as a single tooth to achieve satisfactory esthetic appearance. A 27-years old systematically healthy male patient referred to endodontic clinic with complaints of severe caries in the incisors adjacent to the cleft lip and palate. Patient history revealed that cleft lip and palate surgery in 3 years old. Clinical assessment revealed that tooth 11 was located in the buccal according to teeth arch and tooth 12 was located in the palatal according to teeth arch. Vitality and cold test were positive for tooth 11, 12. Tenderness to percussion and palpation were negative either. The radiographic assessment revealed that cleft lip and palate was located between the tooth 11 and 12 as a radiolucency. After infiltration anethesia, root canal preparation of tooth 11 and 12. was completed at Reciproc R40 file. The teeth were restored as a single tooth with composite resin after root canal treatment. Then metal supported fixed partial denture was performed and pink porcelain was also used for gingival part of the denture to achieve more esthetic appearance. The teeth were asymptomatic and gingiva was healthy at first and sixth-month follow-up visits. No pathological finding was also seen on radiographic assessment.

Key Words

Cleft lift and palate, Esthetic, Conservative treatment

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Introduction

Cleft lip and/or palate (CLP) is the most common congenital disorders that involves genetic and multi-environmental factors (1). Prevelance of CLP is 1/770 to 1/2500 in Asians

(2). Japanese population has the highest prevalence (19.05/10000) whereas the lowest rate has been seen in South Africa (3.13/10000) in the world (3). Besides prevelance of CLP in Turkey reported as 0.95/1000 by Tuncbilek at 1996 (4).

Severe maxillary transverse deficiency, hypodontia, alveolar cleft are foremost seen symptoms for CLP patients (5). Cosmetic deformities, oral abnormalities and as well as speech, chewing and growth difficulties, which are common problems for CLP patients, cause them suffer lack of self-confidence and social difficulties (6, 7). Therefore treatment planning should also aim to improve patient psychologically as well as esthetically and functionally.

Treatment of CLP patients frequently includes; nasoalveolar molding, lip closure (3-6 months of age), soft palate closure (10-12 months of age), orthodontic expansion, primary or secondary alveolar bone graft surgery (8-12 years of age) and comprehensive orthodontic treatment to reestablish facial esthetics and proper function (8).

The prosthodontic approach has a significant role for the oral rehabilitation of older patients (9). Prosthodontic treatment could provide major improvements on chewing, esthetic and wellness to patients with congenital and craniofacial anomalies (10). Incisors are dominantly affected teeth. Central incisors are usually in rotation while missing lateral incisors are frequently seen (11, 12). The best of our knowledge, one of the teeth that neighboring to the cleft usually extracted for the prosthodontic reasons. However, extraction wound would increase the risk of infection and dehiscence (13).

The aim of this paper was to report a case of endodontic and prosthodontic rehabilitation of rotated central and lateral incisor teeth, which were close to cleft side, as a single tooth to achieve more satisfactory appearance.

Case report

A 27-years old systematically healthy male patient was referred to Ordu University faculty of Dentistry, department of endodontics with the chief complaint of severe caries in the incisors adjacent to the cleft lip and palate (Figure 1). The history of patient was involved surgery for cleft lip and palate when he was 3 years old.

Figure 1: Preoperative panoramic radiograph

Intraoral examination revealed extensive decay of 11 and 12. Significant crowded view was observed due to buccally located tooth 11 and palatinally located tooth 12 (Figure 2 and 3). Additionally the teeth were closed to defect area. Teeth 11 and 12 were not tender to percussion and palpation. Neither swelling nor sinus tract were observed. The gingival probing

depths were within normal degree and no abnormal mobility was noted. Prolonged response (> 10 seconds) to a cold test (Roeko Endo-Frost; Roeko, Langenau, Germany) after the stimulus had been removed. A wide radiolucent area was seen in radiographic examination, at the right side of maxillary jaw due to previous CLP surgery (between teeth 11, 12). The clinical diagnosis was chronic irreversible pulpitis. Extraction of the teeth might increase the risk of infection and dehiscence of the cleft area therefore root canal treatment and prosthodontic rehabilitation were considered as treatment option.

Figure 2: Preoperative intraoral examination

Figure 3: Occlusal view of teeth of 11 and 12

Single visit endodontic treatment and prosthodontics approach was planned. After infiltration anesthesia with 2 mL of 4% articaine with 1 : 100.000 epinephrine (Ubistesin Forte/3M ESPE, Seefeld, Germany). Rubber dam was applied for isolation (Hygienic, Coltene/Whaledent AG, Alstatten, Switzerland). Caries was removed and entrance of root canal was main amount of tained. After reaching the pulp chamber, the bleeding pulp tissue was removed with 25# barbed broach and root canal was rinsed with 4 ml of 5,25% NaOCl (Coltene/Whaledent, Langenau, Germany). Working length was determined with 15-K file (Denstply Maillefer, Ballaigues, Switzerland) by using electronic apex locator (Root ZX, Morita Corporation, Kyoto, Japan) and then confirmed radiographically. The reciproc system (VDW GmbH, Munich, Germany) was performed during root canal preparation with the electric motor Gold Reciproc VDW handpiece (GmbH, Bensheim, Germany) and used with 6 : 1 reduction in the Reciproc ALL mode. The preparation was finished R40 file with 0.06 taper under copious 5,25% NaOCl irrigation. 4 ml of 5,25% NaOCl and 4 mL of 17% EDTA (Canal Pro, Coltene/Whaledent) solutions were used for smear removal. After irrigation, root canal system was dried with R40 absorbent paper points (VDW GmbH). The canals were obturated meticulously with AH plus (Dentsply DeTrey, Konstanz, Germany) root canal sealer, R40 and .02 tapered gutta-percha cones (VDW GmbH) by cold lateral condensation obturation technique. A sufficient amount of gutta-percha in tooth 11 was deducted by using Gates-

Glidden instrument (Dentsply Maillefer, Ballaigues, Switzerland). Afterward, the post cavity was created with a special drill of the post system at the same length. Fiber post (Exacto, Angelus, Londrina, PR,Brazil) was placed according to directions of manufacturer. The dentin of canals was cover with 37% phosphoric acid for 20 s and then walls of root canal system was rinsed and dried. All walls of the post cavity was treated with a light-cured bonding agent (Adper Single Bond 2, 3M ESPE, St. Paul, MN, USA). The post cavity was gently dried with air then light-cured was used for 40 seconds with the light-curing unit (Curing Light 2500, 3M ESPE, St. Paul, MN, USA) . A dual-cured resin luting agent (AllCem, FGM, Joinville, SC, Brazil) was mixed and placed in the post cavity using a lentulo spiral instrument (Dentsply Maillefer, Ballaigues, Switzerland). The silane (Angelus, Londrina, PR, Brazil) was applied slighltly brushed with an dental applicator (microbrush point) for 30 seconds. The posts were to cover with cement and placed to root canal. Overspilling of cement was send away immediately. Then, the cement was light-cured for 40 seconds. Then the teeth were restored as a single tooth with composite resin (3M/ESPE, St Paul, MN, USA) (Figure 4).

The teeth were prepared and impression was taken with polyvinyl siloxane impression material (Elite P&P, Zhermack company, Badia polesine, Rovigo, Italy). Porcelain fused metal restoration was performed and cemented with an adhesive resin cement (RelyX Unicem, 3M ESPE, Seefeld, Germany) after clinical trials. Pink porcelain was also used for gingival part of the crown to achieve a more natural look (Figure 5).

The teeth were asymptomatic and gingiva was healthy at first and sixth-month follow-up visits. Tenderness to percussion and palpation were negative. No pathological finding was also seen on radiographic assessment. The patient was satisfied and reported no functional or esthetic problems (Figure 6).

Figure 4: Restoration of teeth as a single tooth with composite resin

Figure 5: Porcelain fused metal restoration was performed and pink porcelain was also used for gingival part (after prosthetic treatment)

Figure 6: Periapical radiograph of teeth (Postoperative)

DISCUSSION

CLP is one of the most common congenital anomalies. The prevalence of CLP is 1:600 live births, and recognized by the World Health Organization as a significant public health problem (14). The authors said that there are higher frequency of boys than girls (1.3:1) and a higher frequency of lip and palate clefts than isolated lip clefts and isolated palate clefts in both sexes and findings that are consistent with the literature on CL/P (1, 15).

Asymmetries generally affect the visual of person and the function of dentition. This asymmetry in UCLP is a result of so many etiological factors of disease. Dental alterations are dramatically more frequent in subjects born with oral clefts if compared to the general population (16, 17). Incisors are significantly affected teeth because of adjacent to the cleft, lack of soft and bone tissues, development deficiency of maxilla. The most frequently seen anomaly for lateral incisors whereas tooth rotation most prevalent anomaly for central incisors (11, 12). The rotation ratio of central incisors in UCLP area was shown as 42.7% in cleft area whereas lateral incisors rotation rate was shown as 6.1% in the same study (12).

In this case tooth 11 was located in the buccally while tooth 12 was located in the palatally. The patient had significant crowded arch. Therefore root canal treatment and then prosthodontic restoration without extraction of teeth 11 and 12 were planned because the defected gingival tissue would increase risk of postextraction wound dehiscence and infection (13). On the other hand, greater impaired healing, resorption of grefted bone, closure deficiency of the cleft width risk would seen in older patients (18, 19).

Patient with CLP have many problems as biting, to smile and social relation and for this reason, patients might have low self-confidence (5). These individulas are dramatically having more social anxiety and disadvantage of social adaptability than unaffected people (20). These problems such like, require a multiplanning and multi-treatment as speech and dental treatment and psychosocial practice (21, 22). In this case report, the patient was evaluated by oral radiologist, maxillofacial surgeon, endodontist

and prosthodontist, following the protocol of the Ordu University faculty of Dentistry.

Patients with CLP treatment often require dental with medical specialists to further improve functional and esthetic problems. The investigators have observed that Patients with CLP often feel more confident and happier about themselves after multidisciplinary treatment (10). Well-planned multidisciplinary treatment may result in better function and esthetics with this decrease the deformities. Metal supported fixed partial denture should ameliorate position and good apparence of the dentition and ameliorate health of surrounding oral tissue. With meticulously planned prosthetic treatment, good education and adequate oral and denture hygiene, successful results would be achieved with good condition of the teeth and periodontal tissues (23).

In this case, teeth were restored as a single tooth and porcelain fused metal crown was performed. The margins of the restoration were extended to region of gingival recession and cleanable area obtained. so food impaction was prevented. Pink porcelain was also used for gingival part of the crown to attain more natural look.

At the end of all treatment, routine examination was carried out during two recalls over the next year. The gingival probing depths were 1.5 mm however there was no gingival inflammation surrounding area of the prosthesis. During examination, the patient was complacent and we observed no functional and esthetic problems.

Conclusion

In spite of many obstacles to encounter for esthetic and functional attainment in cleft lip and palate patients, a satisfying result could be achieved with well-planned interdisciplinary treatment. Saving teeth by applying root canal treatment and prosthodontics restoration promise more esthetic and functional and safe results when compared to extraction as a treatment option of CPL case.

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The authors deny any conflict of interests related to this study.

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