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Case report

Pre-prosthetic Treatment of a 35-Year-Old Patient with Poor Oral Health: A Case Report

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ABSTRACT

This is a case of a 35-year-old patient who was selected to participate in the humanitarian project of a complete oral rehabilitation and quality of life improvement. The project was carried out by the dean, professors, teaching assistants and students at the Faculty of Dental Medicine and Health in Osijek. Patient's oral cavity status was incongruent with his age due to the extensive inflammatory disease and active caries on multiple teeth. Further progression of dental disease in this patient would have led to a complete loss of function, alveolar ridge resorption and edentulousness of the both jaws. Clinical examination revealed the following: decay of the teeth 18, 13, 12, 23, 33, 43 (FDI system), dental attrition of teeth 32, 31, 41, 42, root remnants 15, 14, 11, 24, 26, 27, 38, 37, 36, 35 and 34, periodontitis and periapical periodontitis. Extensive dental reparative work has been done in this patient and he was prepared for the upcoming prosthetic work.

Key words: *dental caries, periodontitis, oral hygiene neglect, dental attrition, root remnants*

Introduction

Dental caries is a dynamic, multifactorial, chronic disease dependent on a biofilm formation, which eventually results in the loss of an inorganic matter of the hard tooth tissue. Different environmental, biological and psychosocial factors, in addition to individual's habits, play a role in its pathogenesis[1]. Clinical detection of the caries can be determined by examination of the patient, both visually and by palpation in a dry working field on a clean tooth. Radiography and other methods of caries detection are used in cases when caries cannot be accurately determined during the clinical examination[2]. Dental attrition is a condition in which there is a loss of the hard tooth tissue as a consequence of a chronic repetitive contact between the agonist tooth and the antagonist tooth. It usually occurs during the certain parafunctions or even functional movements[3]. Attrition is particularly pronounced in bruxism and it is characterized by the loss of an enamel and dentin caused by the friction of the antagonistic teeth[4]. Periodontitis is a progressive inflammatory disease of the supporting apparatus of the tooth that results from an infection and causes alveolar bone loss, formation of a periodontal pocket and destruction of a periodontal ligament[5]. In addition, like caries, it is caused by various factors such as human habits, genetic predisposition and environmental factors[6]. The stomatognathic system is a part of the organism as a whole and as such, its function affects all other parts of the organism[7,8]. In this patient, oral cavity condition was not in accordance to his age and further progression of the disease would have led to a complete loss of teeth in the upper and the lower jaw, resorption of the alveolar ridge and thus to a complete loss of stomatognathic system function. In addition to therapy, it is important to change patient's behavioral habits related to the proper maintenance of oral hygiene, such as proper brushing, flossing, interdental brushes use and the use of oral antiseptics[9]. Therefore, the purpose of this work was to establish normal function of the stomatognathic system by repairing the existing teeth, replacing lost teeth using fixed and mobile works and prevention of the further disruptions.

Oral rehabilitation is mandatory for the proper function of the stomatognathic system, as well as the for overall health of a patient since it can reflect on the overall health and patient's self-confidence in terms of improving speech, aesthetics and mastication[10].

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Case Report

This is the case of a 35-year-old male patient with particularly poor oral health due to the long-term negligence of his oral hygiene and irregular visits to the dentist. He also suffers from hypertension and had a stroke 5 months ago, which left no permanent disability. The poor condition of his oral cavity was identified during the first intraoral clinical examination on his first visit to the dental surgery and can be seen in Figure 1.

A number of different etiological factors that can contribute to the oral disease in this patient, such as hypertension, cigarette smoking, inadequate diet, psychological distress and male gender were identified during the initial conversation with the patient. On inspection of his oral cavity, soft and hard dental plaque on the teeth were observed. There was inflammation of the gingiva and periodontium. Furthermore, clinical and X-ray (orthopantomogram) examination revealed the following conditions: residual roots present at tooth sites 15, 14, 24, 26, 27, 38, 37, 36, 35 and 34 (FDI System), dental caries present at teeth 18, 16, 13, 12, 23, 31, 41, incomplete treatment of the root canal on tooth 15. In addition, loss of teeth 17, 11, 21, 22, 25, 28, 44, 45, 46, 47, 48 were identified, which can also be seen in Figure 2. X-rays showed periapical processes on the remaining roots and on the tooth 12. (Figure 2)

Therapy in this patient was started by removing the hard and the soft dental plaque and caries-affected tooth surfaces, as listed above. Self-cleaning areas were not affected by soft nor hard dental plaque. Most hard deposits were located subgingivally in the anterior mandibular region. On the tooth 18, the occlusal caries was repaired, which was replaced by a composite material with a bulk fill technique in layers of 4 to 5 mm due to the difficult access to the cavity.

The teeth that were affected by the caries were repaired with glass ionomer filling material due to the bioactivity of the material and the protection against secondary caries[11].

Amalgam filling and secondary caries were present on the tooth 16. A more detailed examination of the teeth revealed the recession of the alveolar bone and exposed bifurcation of the root with extensive circular caries. The same tooth was originally planned to be one of the supports in future combined prosthetic work, but due to reasons mentioned above, it needed to be extracted, shown on Figure 3.

The next step in the therapy process was to repair the root remnants that were found in the both maxilla and mandible. Root remnant (lat. *radix relicta*) represents the root of a tooth within its alveoli without the presence of

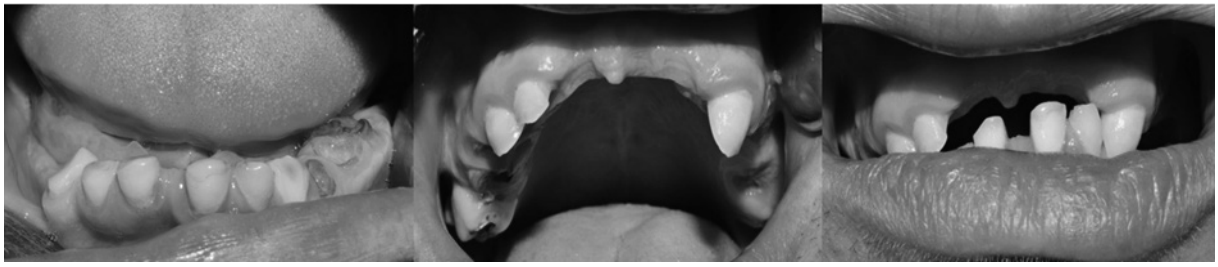

Fig. 1. Left and middle images show condition of the mandible and maxilla before the therapy; respectively. Image on the right shows intermaxillary relations.

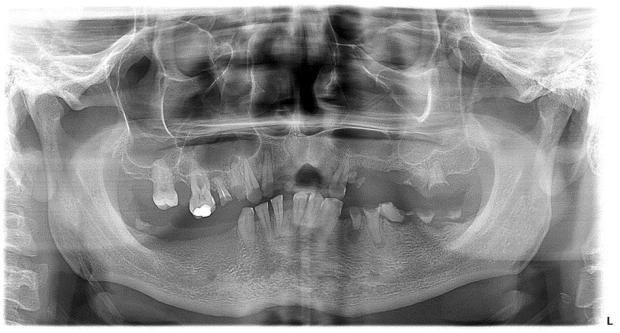

Fig. 2. Orthopantomogram image. White arrow points to the periapical process on tooth 12.

Fig. 3. Extracted tooth 16.

the clinical crown, which has been destroyed by the extensive caries due lthe ong-term oral hygiene neglect. Root remnants were extracted by lever luxation according to Bein and rotational movements of root forceps[12]. Figure 4 shows root remnant with periapical process (Figure 4).

Fig. 4. Radix relicta with periapical process.

On the upper front teeth, we initially planned to reconstruct the crowns. However, due to the lack of the clinical crown which resulted from the effects of the longstanding attrition and abrasion, vital extirpation and formation of the ready-made glass-reinforced composite posts were indicated.

Vital pulp extirpation is a procedure of a simple removal of a dental pulp and separation of tissues close to the apical foramen[13]. After mechanical and chemical treatment of the root canals, the filling was performed using the gutta-percha sticks and paste[14].

To ensure that successful endodontic filling was performed, the patient was referred for an intraoral retroalveolar radiovisiography (RVG). RVG is a radiological imaging technique often used in dentistry to visualize intraoral periapical areas (Figure 5)[15].

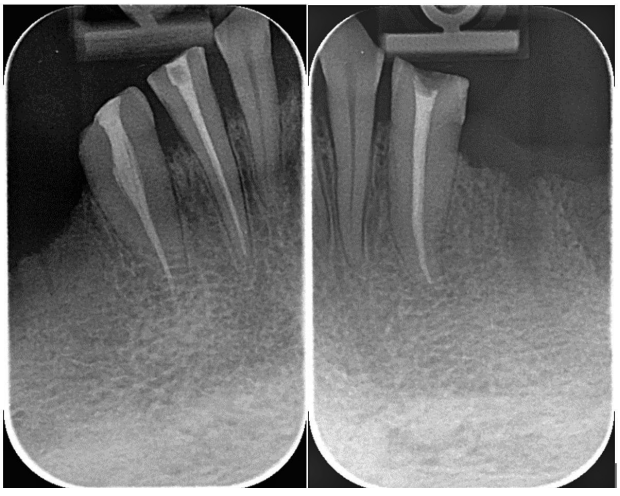

Fig. 5. Retroalveolar radiovisiography (RVG) showing the successful endodontic filling.

Considering the circumferences of the clinical crowns of the teeth 13, 23, 32, 31, 41, they have met the prerequisite for making a fixed prosthetic replacement, which in this case was a metal-ceramic crown. On the teeth 12, 33, 42, 43, ready-made glass fiber-reinforced composite posts were set. The main advantages of these ready-made posts are that they can be installed in one visit, in addition to their biocompatibility and excellent aesthetics. Moreover, their strong retention resulting from the adhesive cementation and creation of the monoblocks with the root dentin reduces the risk of a breaking and increases the root durability[16].

The process of the tooth upgrading began with the drilling of the tooth, followed by the removal of the two-thirds of gutta-percha and the root canal preparation with the standardized drills.

After the preparation was completed, the length of the superstructure was determined and immediately prepared for the cementation (Figure 6).

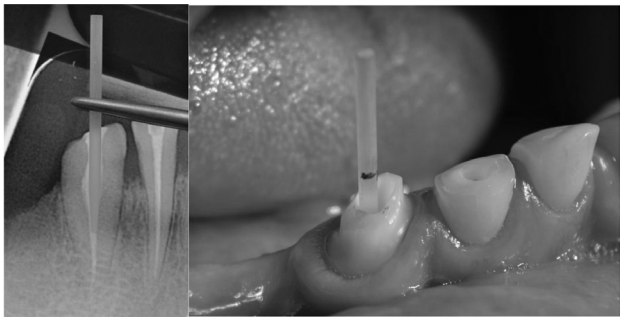

Fig. 6. Ready-made glass fiber-reinforced composite upgrade length measurement.

Prior to the cementation phase, the tooth had been prepared with an alcohol and a selective bonding system, after which the cementation of the superstructure with composite cement began. The coronary part of the tooth was also shaped using the composite cement and with the rest of the clinical crown it formed a stump that metal-ceramic crown would be attached to (Figure 7). At the end of this phase, the pre-prosthetic dental preparation was completed and this is planned to be followed up by making the casts and further planning of the prosthetic therapy.

Fig. 7. Tooth stumps made by composite cement.

Discussion

The condition such as was found in this patient's oral cavity can be caused by the trauma, amelogenesis imperfecta, dentinogenesis imperfecta, motor dysfunction (due to a stroke, motor neuron disease, amyotrophic lateral sclerosis, spinocerebral ataxia, etc.) and poor oral hygiene[17]. In this case, the cause was the long-term neglect of a proper oral hygiene and irregular visits to the dentist, which have led to a complete destruction of the stomatognathic system. An ideal therapy for this patient would have been an implant-prosthetic therapy, however, due to the patient's young age and harmful habits like poor oral hygiene maintenance, it was decided to preserve as many natural teeth as possible. Namely, poor oral hygiene and cigarette smoking are associated with the failure of prosthetic therapy[18]. This was ensured by the prosthetic replacement of the missing teeth, which we expect would prevent further bone resorption. Furthermore, the therapy will include the production of the combined prosthetics of the several variants. Given that the patient had a history of a long-term edentulousness, the most optimal therapy were the metal-ceramic crowns with anchors and partial wironit dentures for durability and good retention[19]. In the preparation for the fixed part of the work, we opted for the preparation with a rounded step due to the sufficient thickness of the material and in order to achieve a good fit on the stump and the distribution of masticatory forces in order to preserve periodontal health[20,21]. A rounded step is the most favourable shape for the most crowns, it ensures structural durability of the crowns, and its placement spares the dental tissues from extensive damage[22].

Conclusion

Here we presented one of the common cases of neglect of oral hygiene in the young people. Remediation of such an extensive disease of the stomatognathic system is a very time-consuming and financially demanding procedure. Bringing the stomatognathic system to a state free of an acute inflammation and active caries is beneficial to a patient, but that does not complete the therapy and rehabilitation. Pre-prosthetic preparation is described in this paper. Prosthetic repair is to follow up and only after that the stomatognathic system will be fully rehabilitated and fully functional. Furthermore, very important part of this work is the patient education on the implementation of a proper oral hygiene and the consequences of its neglect.

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PREDPROTETIČKO LIJEČENJE KOMPLEKSNOG 35-GODIŠNJEG BOLESNIKA LOŠEG ORALNOG ZDRAVLJA: PRIKAZ SLUČAJA

S A Ž E T A K

Ovo je slučaj 35-godišnjega pacijenta koji je izabran za sudjelovanje u humanitarnom projektu s ciljem cjelovite oralne rehabilitacije i poboljšanja kvalitete života koja je pokrenuta od strane dekana, profesora, asistenata te studenata Fakulteta za dentalnu medicinu i zdravlje u Osijeku. Stanje pacijentove oralne šupljine nije bilo u skladu s njegovim godinama zbog opsežne upalne bolesti i aktivnoga zubnog karijesa na mnogima od preostalih zubi. Daljnja progresija dentalne bolesti dovela bi do potpunoga gubitka funkcije, resorpcije alveolarnoga grebena te kompletne anodoncije obje čeljusti. Kliničkim pregledom ustanovljeno je sljedeće: infektivna bolest karijes na zubima 18, 13, 12, 23, 33, 43, dentalna atricija zuba 32, 31, 41 42, zaostali korjenovi na mjestu zuba 15, 14, 11, 24, 26, 27, 38, 37, 36, 35 i 34 te parodontitis i periapikalni procesi. Na ovom pacijentu obavljeni su opsežni dentalni reparativni zahvati koji su ujedno činili pripremu za daljnji protetski rad, koji je također u planu kao dio ovoga projekta.