

Satisfaction After Restoring Aesthetics and Function in a Child with Amelogenesis Imperfecta: A Case Report

Amelogenesis İmperfektalı Çocuk Hastada Estetik ve Fonksiyonun Sağlanması ile Elde Edilen Memnuniyet: Olgu Sunumu

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Abstract

Amelogenesis imperfecta (AI) is a hereditary disorder that disrupts the formation of enamel in both primary and permanent dentition. Management of AI is a challenge for the patient and the clinician. This case report presents the management of AI in a six-year-old female patient. Considering the patient's age, we decided to make removable dentures in order to avoid growth and development problems. Conventional complete dentures were made, vertical dimension was increased, and the desired aesthetics and function were gained. Additionally, satisfaction with prosthodontic rehabilitation was evaluated using a questionnaire. A high level of patient and parent satisfaction was obtained. Treatment planning for patients with AI is related to many factors including the age and socioeconomic status of the patient, the type and severity of the disorder, the intraoral situation at the time the treatment is planned and most importantly, cooperation of the patient plays a major role.

Öz

Amelogenesis imperfekta (AI) süt ve daimi dentisyonda diş minesinin formasyonunu tahrip eden kalıtsal bir hastalıktır. AI'li hastaların tedavisi hem hekim hem de hasta açısından zorlu bir süreçtir. Bu olgu sunumunda AI tanısı konulan altı yaşında bir kız hastanın tedavi süreci sunulmaktadır. Tedavi planlamasında, hastanın yaşı göz önüne alınarak ve büyüme ve gelişimi etkilemekten kaçınmak amacıyla hastaya hareketli protezler yapılmasına karar verilmiştir. Konvansiyonel tam protezler yapılarak, vertikal boyut artırılmış, istenilen estetik ve fonksiyon kazanılmıştır. Ayrıca protetik tedaviden memnuniyet, bir anket yardımıyla değerlendirilmiştir. Hasta ve ebeveyn memnuniyetinin yüksek düzeyde olduğu tespit edilmiştir. AI'li hastalarda tedavi planlamasında; hastanın yaşı, sosyo-ekonomik durumu, hastalığın şiddeti ve tipi, planlama yapıldığı süreçteki intraoral durum ve en önemlisi hasta kooperasyonu gibi pek çok faktör rol oynamaktadır.

Introduction

Amelogenesis imperfecta (AI) has been described as a hereditary disorder disrupting the formation of the enamel structure in both the primary and permanent dentition (1,2). Depending on the epidemiologic studies, the incidence of AI has been reported to vary between approximately 1:700 and 1:16.000 (1-3). AI has been classified

into 4 main groups based on phenotype; hypoplastic, hypocalcified, hypomaturational, and hypomaturational-hypoplastic, also considering phenotype and inheritance, at least 15 subtypes of AI exist (4).

According to the previous studies, AI patients, regardless of subtype, have similar oral complications, such as poor dental aesthetics, decreased occlusal vertical dimension and teeth sensitivity (4). In addition, multiple impacted teeth, congenitally missing teeth, open occlusal relationship, and taurodontism are the other dental anomalies associated with AI (4-6).

For rehabilitation of AI, several treatments have been described in adults and children (7-9). Restoration is important not only for aesthetic and functional concerns, but also for preventing psychological implications for the patient (1-9). This clinical report describes treatment of a six-year-old girl diagnosed with hypoplastic type AI.

Case Report

A 6-year-old female patient was referred to Kırıkkale University Faculty of Dentistry, Department of Pediatric Dentistry with the complaints of discolored teeth and difficulty in chewing. The medical history was non-contributory. The family history revealed that her uncle had a similar discoloration of the teeth, but he could not be examined because he already had prosthetic rehabilitation.

The occlusal review revealed a skeletal class 3 pattern with increased overjet and overbite. All the teeth were dark yellow in color and the crowns were clinically short (Figure 1). Both the primary and permanent teeth were affected (Figure 2). The enamel layers of the teeth were absent with an appearance similar to the prepared teeth. Clinical and radiographic examination revealed that the permanent maxillary central teeth were immature and chronic periapical abscess was present. Apexification treatment with calcium hydroxide was performed. The primary right mandibular central was extracted because of the exfoliation time; the primary left maxillary canine and permanent right first mandibular molar tooth were extracted because of periapical problems. The teeth were sent for pathologic examination and the diagnosis of AI was established. According to the clinical and radiographic findings of the teeth, the patient was diagnosed as having hypoplastic type of AI.

Considering the patient’s age, we decided to make removable dentures in order to avoid growth and development problems. For prosthetic rehabilitation, telescopic crowns and overdentures were indicated. All treatment steps carefully began to be fulfilled, but due to poor patient/parent cooperation and short crown lengths, changes in the treatment plan have become mandatory. Telescopic crowns were cancelled and conventional complete dentures were made. Vertical dimension was increased; the desired aesthetics and function were gained (Figure 3). In addition satisfaction with prosthodontic rehabilitation was evaluated with a questionnaire (10) (including questions related to comfort, speech, appearance and chewing) completed by the mother 1 month after treatment (Table 1). Answers were as follows; excellent/good/satisfactory/needs improvement or unsatisfactory. A high level of patient and parent satisfaction was obtained (Figure 4).



Figure 1. Frontal view of teeth



Figure 2. Panoramic radiograph of the patient



Figure 3. Frontal view of dentures

Follow-up appointments were scheduled every 3 months and the dentures were considered to be renewed every 6 months.

Discussion

In AI patients, oral complications, such as teeth sensitivity, poor dental aesthetics, decreased occlusal vertical dimension necessitate early diagnosis and immediate treatment even in youngest patients (4,7,11). Rehabilitation of these patients is very important in providing function and aesthetics, thus, preventing the development of psychological problems arising from the appearance of the teeth (12).

Management of AI is a challenge for the patient and the clinician. Fixed prosthodontic treatment has been reported to be more conservative approach than other treatment alternatives (1). Several authors have



Figure 4. Satisfaction of the patient

preferred full porcelain restorations for the treatment of AI in their patients. Recently, the advances in the field of esthetic dentistry help practitioners restoring function and esthetics to an acceptable level (13,14). Nevertheless, laminate veneers have some disadvantages which have been reported as marginal adaptation and bonding problems (13,15).

The majority of the cases of AI in children have been treated using fixed appliances (4,16-18). In the treatment planning, considering the patient's age and to avoid to affecting growth and development; it was decided to make removable dentures. In order to improve retention and to provide a comfortable use for the patient, telescopic crowns and overdentures were planned. However, the teeth considered to be abutment for the telescopic crowns had short crown lengths. Also the permanent maxillary central teeth were considered to be abutment, but those teeth were having apexification treatment. Furthermore, due to poor patient/parent cooperation, changes in treatment plan have become mandatory and conventional complete dentures were made. Depending on the age of the patient and eruption of the permanent teeth, fixed prosthetic restorations and composite restorations were considered for the future.

According to the result of the questionnaire, after four weeks at the control session, the patient was happy and a high level of patient and parent satisfaction was obtained. Also the patient's weight gain was observed

Table 1. Questions and answers of the mother related to the satisfaction of before and after treatment. Questions 1 through 5 were answered only before treatment; all questions (1 through 9) were answered 1 month after treatment (10)

Question	Before treatment	After treatment
1. Have you noticed any difficulties of your child during mastication?	Unsatisfactory	Good
2. Did your child have to avoid certain kinds of food?	Unsatisfactory	Good
3. Had your child experienced any difficulties in speech and articulation of certain sounds?	Satisfactory	Good
4. Did you and your child have any problem in social functioning?	Needs improvement	Excellent
5. Did you or your child have any problem in maintaining oral hygiene?	Needs improvement	Good
6. Are you satisfied with the results of prosthodontic rehabilitation of your child?	-	Excellent
7. Are your friends, neighbors, and relatives satisfied with prosthodontic rehabilitation of your child?	-	Excellent
8. Do you think other parents would be satisfied with prosthodontic rehabilitation of their children and would you recommend similar therapy to other parents?	-	Excellent
9. Do you think your child is satisfied with prosthodontic rehabilitation and would you repeat the same procedure if necessary?	-	Excellent

due to improvement in eating habits in the 3-month follow-up appointment. Removable partial dentures are considered to be a good treatment option because they have many advantages compared to fixed prosthetic options: they are simpler, less traumatic and less expensive (19). With overlay removable partial dentures, successful functional and esthetic results have been reported (19,20). Zarati et al. (20) have stated that removable prosthesis can be used as a temporary measure for young patients until the patient has fully complete maturation.

This clinical report describes oral rehabilitation of a 6-year-old girl affected by hypoplastic AI. For patients with AI, treatment planning is determined by many factors, such as age and socioeconomic status of the patient, the intraoral situation, the type and severity of the disorder, and accompanying dental anomalies. Most importantly, cooperation of the patient plays a major role (9).

Ethics

Informed Consent: Consent form was filled out by the mother of the patient.

Peer-review: Internal peer-reviewed.

Authorship Contributions

Clinical Practices: Nihal Özcan, Merve Erkmen Almaz, **Concept:** Nihal Özcan, Merve Erkmen Almaz, **Işıl Şaroğlu Sönmez,** **Design:** Nihal Özcan, Merve Erkmen Almaz, **Işıl Şaroğlu Sönmez,** **Data Collection or Processing:** Nihal Özcan, Merve Erkmen Almaz, **Analysis or Interpretation:** Merve Erkmen Almaz, **Işıl Şaroğlu Sönmez,** **Emre Barış,** **Literature Search:** Merve Erkmen Almaz, **Writing:** Merve Erkmen Almaz, **Işıl Şaroğlu Sönmez.**

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