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Case Report
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Treatment of a Patient with a Congenital Tooth Anomaly by an Implant-Supported Fixed Hybrid Prosthesis: A Case Presentation

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Abstract

Objective: Tooth agenesis, or hypodontia, refers to situations in which one or more teeth have not developed. However, oligodontia is used to describe six or more permanent teeth deficiencies. Severe hypodontia influences a person's appearance, chewing, speech functions, and psychology. This case report presents a prosthetic treatment approach that combined a conventional fixed prosthesis and an implant supported fixed hybrid prosthesis using ankylosed primary teeth, permanent teeth, and an implant for a patient with a congenital tooth anomaly.

Case: An 18-year-old male patient attended our clinic for a prosthodontic rehabilitation with a diagnosis of oligodontia. There were several primary teeth and a class IV molar relationship in the patient's mouth, with an open bite on the posterior teeth on the right side. Some of the primary teeth were ankylosed. The ankylosed primary teeth were retained in the mouth, while the other primary teeth were extracted. Two implants were placed in the area where the lateral teeth were located. The fixed prosthetic rehabilitation of the patient was performed with a combination of a conventional fixed prosthesis and an implant-supported fixed hybrid prosthesis using the ankylosed primary teeth, permanent teeth, and implants. The posterior open bite on the right side was closed via a prosthetic restoration.

Conclusion: In cases where severe hypodontia affects the amount of alveolar bone negatively, an implant supported fixed hybrid prosthesis can be applied and, if necessary, ankylosed primary teeth can be used as an abutment for the fixed prosthetic restoration.

Keywords: Prosthesis; Implant; Congenital tooth anomaly

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Introduction

Dental agenesis, or hypodontia, with a reduction in the number of primary or permanent teeth, excluding third molars, is a common developmental abnormality seen in approximately 20% of the population [1,2]. Furthermore, the congenital absence of six or more permanent teeth has a prevalence of 0.14% in the worldwide Caucasian population and is termed oligodontia [3]. There are many causes of tooth agenesis that can be the result of genetic and/or environmental factors. It can also form from an isolated syndrome or from features of several syndromes, such as ectodermal dysplasia [3].

The other rare but important occlusal discrepancy is due to ankylosed primary molars [4]. In this situation, especially in cases with an absence of permanent premolar teeth, the advised treatment options include the extraction of the ankylosed primary molar to place a dental implant in its region if the patients are older than 18, orthodontics and surgical eruption of these teeth, and finally, prosthodontics or restorative rehabilitation of infra-occluded teeth [5].

In this study, we present a case with a congenital tooth anomaly including ankylosed primary teeth, persistent primary teeth, and an absence of permanent teeth (oligodontia), that had been treated with a fixed prosthesis and dental implant replacement procedures.

Case Presentation

An 18-year-old male patient was referred to Gaziosmanpaşa University, Faculty of Dentistry, and Prosthodontics Clinic for a prosthodontic rehabilitation with the diagnosis of oligodontia. No

Figure 1A-E: Pretreatment view of the patient.

Figure 2A-D: Perioperative or treatment time view of the prosthetic procedures.

relevant systemic illness was found. In addition, an informed consent form was completed regarding the patient's treatment steps and the free use of patient data for scientific or academic activities. Clinical and radiological examinations revealed there were several persistent primary teeth and a class IV molar relationship that means one side is Angle Class II the other side is Angle Class III malocclusion relationship with an open bite on the posterior teeth on the right side. Some of these primary teeth were ankylosed (Figure 1). The ankylosed primary teeth were retained, and the other primary teeth were extracted, including the mandibular incisors. Two implants were placed in the area where the lateral teeth were located. The fixed prosthetic rehabilitation of the patient was performed with a combination of a conventional fixed prosthesis and an implant-supported fixed hybrid prosthesis using the ankylosed primary teeth, permanent teeth, and implants. A posterior open bite on the right side was closed *via* a prosthetic restoration. Finally, the full mouth arch fixed prosthesis in both jaws was reconstructed and placed (Figures 2 and 3). The patient is now under regular follow-up care with uneventful health conditions.

Discussion

The etiology of tooth agenesis, persistent teeth, and other similar tooth anomalies is related to environmental conditions such as viral infections, direct or indirect trauma to alveolar bones,

Figure 3A-D: Post treatment view of the patient.

the use of chemical agents or drugs like thalidomide, radiotherapy, chemotherapy, and blood supply disorders of the jaw. In addition, genes and transcription factors can cause general tooth and jaw anomalies [2]. In our case, we did not find any genetic or developmental disorders according to the patient's history and examinations. The best choice to determine the cause of the anomaly in our case was to use advanced tests and research. However, we felt there was no need to further investigate as genetic or developmental relationships.

Persistence of primary teeth is a somewhat rare condition. This entity is compatible with the previous literature. For instance, Aktan et al. [6] confirmed previous findings that the relationship between agenesis of permanent teeth and the persistence of the primary teeth is the most likely cause of these anomalies. The remaining causes include impaction, abnormal position, and late eruption of the permanent teeth [6]. We thought, in our case, the main cause of the persistent primary teeth was the absence of permanent teeth. Thus, we did not need to perform further genetic investigations, which would not have contributed any benefit to the patient's health.

Oligodontia patients, like our case, usually suffer from functional and aesthetic difficulties due to the high number of missing teeth, and these patients typically require rather complex oral rehabilitation [7]. Prosthodontics and dental rehabilitation for these patients are very important and frequently involve an implant-retained fixed or removable prosthesis (with or without implant retention) as the most useful treatment choices [3,7]. The following treatment options, as orthodontic tractions, may be preferred with a combination of dental implant therapy [3]. In addition, a multidisciplinary approach with an oral surgeon placing dental implants, a restorative dentist making adhesive restorations, an orthodontist to tract the teeth, and a prosthodontist to make a fixed or removable prosthesis is sometimes essential for these patients [1,3]. In our case, the prosthodontics and oral surgeon treated the patient, while the orthodontist provided suggestions concerning the treatment process.

Conclusion

Based on the findings of this case study, the following conclusions may be presented:

1. There is no classic attempt or convenient dental treatment option to treat patients with oligodontia.

2. A multidisciplinary approach, such as orthodontics, oral

and maxillofacial surgery, implantology and prosthodontics are typically needed in the treatment of these patients.

3. In cases where severe hypodontia affects the amount of alveolar bone negatively, implant-supported fixed hybrid prosthesis can be applied and, if necessary, ankylosed primary teeth can be used as an abutment for a fixed prosthetic restoration.

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