



## Prosthetic Rehabilitation of Patient with Oligodontia: A Case Report

### KEYWORDS

Oligodontia, Conventional Prosthodontics, Overdenture

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**ABSTRACT** *Oligodontia is a developmental dental anomaly. It is either an isolated trait or part of a syndrome. Oligodontia is characterized by the congenital absence of more than six permanent teeth except the third molars. Patients suffering from oligodontia may have severe psychological, esthetic, and functional problems. Thus, early diagnosis and treatment of these patients are necessary. Treatment often calls for facilitated surgical techniques, but less severe cases can be treated conventionally in a normally equipped dental clinic. A case of oligodontia treated with conventional prosthodontic approach is presented in this article. It is emphasized that conventional prosthetic treatment can lead to a satisfactory result. The patient was treated with overdenture prostheses. The patient's speech and masticatory function improved greatly. He was also satisfied with better facial esthetics. Thus, it should be kept in mind that there are good possibilities with conventional Prosthodontic techniques to help patients with dental anomalies.*

### Introduction

Clinically, anodontia is defined by the congenital absence of all teeth; hypodontia and oligodontia are, respectively, characterized by missing tooth or diminished tooth size and by the congenital lack of more than six permanent teeth excluding the third molars, of which hypodontia is the mildest and the most common phenotype without any systemic disorder<sup>1</sup>. Oligodontia, like hypodontia, but more severe in phenotype, is seen as an isolated trait or as a part of a syndrome. Hence, an alternative name "severe partial anodontia" has been mentioned<sup>2</sup>.

In the majority of cases, isolated oligodontia and hypodontia are genetic and these anomalies may arise as hereditary conditions that may appear in two or three generations with autosomal dominant incomplete penetrance,<sup>3-5</sup> of which the X-linked hypohydrotic ectodermal dysplasia is the most common form.<sup>6,7</sup> Both oligodontia and hypodontia may result in several anomalies such as delayed tooth formation, reduced size of teeth, and taurodontism. Patients suffering from oligodontia may have psychological, esthetic, and functional problems<sup>8</sup>. Thus, early diagnosis and treatment of these patients is important. Prosthetic treatment has been proved effective in the management of these patients<sup>9</sup>. The prosthetic treatments include implants, removable prostheses, fixed dentures, and adhesive techniques<sup>10,11</sup>. Removable partial denture (RPD) and overdenture are relatively simple and rapid methods and can also be used in severe cases where oral and maxillofacial surgery is not feasible<sup>12-14</sup>. An overdenture that covers the alveolar ridges and is partly supported by natural teeth, roots, or implants is a satisfactory method in treating patients with oligodontia<sup>14</sup>.

Advanced oral and maxillofacial surgical techniques such as bone augmentation, orthognathic surgery, and implant technology have revolutionized the treatment of dentofacial deformities and developmental anomalies. These techniques, however, call for modern hospital facilities with

postsurgical intensive care units. They are demanding and expensive. In most rural areas, such facilities and surgical skills are not available and/or most patients are unable to meet the costs of treatment. Therefore, in the majority of the cases, patients with dentofacial anomalies must be helped using conventional prosthodontics. We report here a case of oligodontia treated successfully by conventional prosthetic rehabilitation using overdentures.

### Case Report

A 24-year-old male patient was referred to department of Prosthodontics. The patient complained of poor masticatory function and esthetic and psychological distress. He was in healthy condition, with a normal physical body appearance, normal hair, eyebrows, fingers, nails, skin, and sweat glands, ruling out ectodermal dysplasia as the etiology. He had no history of trauma and tooth extractions, and his parents and siblings were dentally and medically normal. He had an evident reduced vertical dimension and had maxillary hypotrophy and retrusion. Mandibular protrusion was also obvious. In the dental examination, two central incisors were present in the anterior maxilla, along with five malformed, over retained deciduous teeth in posterior maxilla. Crown of the over retained deciduous molar in left maxillary posterior region was worn out. In the mandibular dentition, first permanent molars were seen on the right and left sides along with over retained deciduous molars. All other teeth in the maxilla and mandible were congenitally missing. The residual ridges in the edentulous spaces were thin and underdeveloped (Fig. 1 and 2). Occlusion of the maxilla and mandible showed infraocclusion, especially marked in the anterior region (Fig. 4). OPG & periapical radiographs were taken. No root tips, unerupted teeth, or impacted third molars were detected (Fig. 3). A moderate clicking in the temporomandibular joint (TMJ) was observed. The patient was diagnosed to have nonsyndromic oligodontia. Facebow transfer (Quick mount facebow, Whipmix Corp.) was done & diagnos-

tic casts were mounted on Whipmix semiadjustable articulator(#8500,Whipmix Corp.).Mounted diagnostic casts were used for further analysis of the occlusion.A treatment plan was made to prosthetically restore the dentition and correct malformation of the upper and lower jaws. An overdenture was designed for the upper and the lower jaw to obtain a better alveolar height compensation and musculocutaneous profile. Posterior teeth in both arches were treated with endodontic therapy and reduced to achieve adequate crown root ratio. Exposed clinical crown portion of endodontically treated teeth were covered with 0.5 mm metallic copings. Primary impressions of both arches were made using alginate impression material (Tropicalgin,Zhermack, Italy). Final impressions were made using custom tray, after border molding using green stick compound.The normal vertical dimension of occlusion and centric relationship between the maxilla and the mandible were assessed and transferred to an articulator. The arrangement of artificial teeth in the maxilla was in the front of the alveolar crest in order to attain a normal overbite and overjet, and to support the lips. Any major discrepancies were adjusted at the try-in. Natural teeth helped to enhance the retention and stability of the prostheses. After 15 days recall visit, the final occlusal adjustments were made. The patient was instructed to regularly clean the prostheses. Follow- up examination was scheduled every 3 months. The facial photos with dentures in place showed improved harmony of facial appearance (Fig. 6, & 7). Speech and masticatory functions of the patient were also improved .The patient expressed his satisfaction in particular on his new facial appearance.

### Discussion

This case presentation showed how important it is to treat patients with developmental anomalies not only from the functional point of view but also with regard to the patient's appearance and the effect of the treatment on the psyche. Conventional prosthodontic rehabilitation is well suited in cases not too severe and in places where advanced oral and maxillofacial deformity surgery is not available. Anodontia is one of the most frequent phenotypes of congenital ectodermal dysplasia, often associated with manifestations such as sparse hair and eyebrows, nasal bridge depression, and protuberant lips. Some of the patients may have sweat glands<sup>15</sup>. Other syndromes, e.g., Down syndrome, facial clefting, etc., can also be associated with missing teeth. Patients with no hereditary history have been described<sup>9</sup>, and this is demonstrated by the case report presented here. Anodontia is a multifactorial result of genetic inheritance and environmental factors<sup>3</sup>. The environmental factors are, for instance, trauma, surgical procedures on the jaws, multivalent chemotherapy, radiation therapy, infection during early childhood, and the use of thalidomide during pregnancy. Although little is known about the genetic defects responsible for this condition, researchers have found that the specific genes associated with hypodontia are MSX1, PAX9, and AXIN2, which encode transcription factors that play an important role during tooth development<sup>16,17</sup>. Lack of teeth, conical teeth, and underdeveloped alveolar ridges are the common findings in oligodontia. This may result in dental malpositioning, periodontal damage, and lack of development in maxillary and mandibular bone height. The condition may also have significant psychological, esthetic, and functional consequences. The patient reported here had a strong wish of improving his physical and mental discomfort and, subsequently, had high expectations for

the prosthetic rehabilitation. Earlier studies have shown that oligodontia could cause difficulties to the clinical prosthetic treatment<sup>18,19</sup>. Treatment of patients with oligodontia may be more difficult than that of those with hypodontia. Early prosthetic treatment is encouraged to improve appearance, masticatory function, speech, and psychosocial impact<sup>20</sup>. In spite of good results with traditional dentures, dental implants may be chosen for cases with oligodontia. However, uncertainties about osseous quality or technical difficulties in case of crest atrophy lead us to be cautious in this respect with. Furthermore, the use of dental implants was not possible because of the poor economic situation. In this case, the patient unfortunately had not received treatment until he was 24 years old and was first then able to afford the treatment. Earlier treatment might have given a better result but, as noted, the patient seemed happy with his improved masticatory function and appearance, which seemingly improved his self-confidence.

### Conclusion

In conclusion, it should be kept in mind that conventional prosthetic treatment may often be all that is needed for cases with oligodontia or other dental developmental anomalies. Such treatment can easily be given in a normally equipped dental clinic.



Fig.1 – Maxillary dentition at presentation.



Fig.2 – Mandibular dentition at presentation.



Fig.3 – OPG radiograph.



Fig.4 – Mounted diagnostic casts.



Fig.5 – Final prostheses intraoral view.



Fig.6 – Extraoral view without prostheses.



Fig.7 – Extraoral view with prostheses.

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