

An Innovative Interim Treatment Modality for the Management of Congenitally Missing Permanent Mandibular Incisors

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ABSTRACT

A psychological impact is created as the esthetic appearance of the child is hampered due to missing anterior teeth. Primary teeth if retained needs to be preserved for the purpose of space maintenance until the period of growth termination, the ideal time for fixed prosthesis and implant placement. In such situations, an interim restoration may be provided. So the present paper reports a case with bilateral agenesis of permanent mandibular incisors and retained primary incisors treated by performing MTA pulpectomy followed by interim restoration with polycarbonate crowns.

KEYWORDS: Hypodontia, MTA Pulpectomy, Polycarbonate Crowns.

INTRODUCTION

Developmental disturbances in the number of teeth accounts for one of the commonest dental anomalies. It is categorized based on the number of congenitally missing permanent teeth excluding the third molars and is termed as hypodontia when there is a congenital absence of less than six teeth and oligodontia when more than six teeth.¹ The most frequently congenitally missing permanent teeth, excluding third molars, are the mandibular second premolars and the maxillary lateral incisors. Hypodontia is commonly encountered in association with Down syndrome, cleft lip/palate, Ellis-van Creveld syndrome and ectodermal dysplasia. In the absence of any systemic conditions, both genetic component and environmental factors have to be considered.² Factors responsible in cases of acquired hypodontia, includes trauma, irradiation of tooth germs, hormonal influences and unintended removal of a tooth germ during the extraction of a primary tooth.³ Absences of a permanent successor leads to infra occlusion of the retained deciduous tooth, retardation of alveolar segment development in the involved area resulting in the development of drastic psychosocial and aesthetic impact on the individual.

The present paper is aimed to report management of a case of nonsyndromic hypodontia.

CASE REPORT

A 9 year old female reported to the Department of Pedodontics and Preventive Dentistry with the chief complaint of small teeth in the lower front region of the

jaw. The patient's parents were concerned about the unsightly appearance of the milky front teeth in the lower jaw. It was reported by the mother that child had neither suffered any kind of trauma to the anterior region of jaw nor had history of any infection or systemic condition. None of the family members had reported with similar findings. On intraoral examination it was found that the child had mixed dentition with retained deciduous mandibular central incisors with grade I mobility. Radiographic evaluation was carried out. The intraoral periapical radiograph with mandibular anterior region revealed the absence of both permanent mandibular central incisors tooth buds suggestive of Nonsyndromic Hypodontia. Based on the investigations treatment plan was formulated which included pulpectomy for retained deciduous mandibular central incisors followed by restoration with polycarbonate crowns.



Figure 1- Over retained primary mandibular central incisors - Intraoral view

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Figure 2- IOPA with mandibular anterior region demonstrating absence of permanent tooth buds of central incisors



Figure 3- IOPA with mandibular anterior region demonstrating MTA Pulpectomy with over retained primary mandibular central incisors

Single sitting pulpectomy was performed on retained deciduous mandibular central incisors under local anesthesia (1:80,000). Pulp tissue was extirpated, and the canals were prepared till size #50 H file using physiologic saline for irrigation following which canals were dried using paper points, and canals were filled with white mineral trioxide cement (MTA-Angelus®) followed by placement of moist cotton pellet and sealing of entrance cavity with temporary restoration. After 48 hours, the temporary restoration along with cotton pellet was removed. After confirming the setting of MTA the entrance cavity (2 mm) was sealed with glass ionomer cement. Ideal sizes of polycarbonate crowns were selected. A1 shade of composite was selected using manufacturers shade guide [Tetric -N- Ceram, Ivoclar Vivadent] for cementation of crowns. The cervical border of the crowns was trimmed to obtained adequate crown height and proper gingival adaptation.

The internal surface of polycarbonate crown was roughened for better bonding. The selected composite shade was filled in to the polycarbonate crowns. Etching with 37% phosphoric acid was carried out for 1 minute followed by washing and drying. Following this, bonding agent [Tetric-N-Bond, Ivoclar Vivadent] was applied to the tooth structure, and internal surface of polycarbonate crowns according to manufacturer's instructions and cured for 20 sec using LED light. The crowns were loaded with selected shade of composite and gently seated over the prepared tooth surfaces allowing excess composite to flow. The excess was removed with explorer following which composites were polymerized from both facial and lingual surfaces for 60 seconds.



Figure 4- Restoring over retained primary mandibular central incisors using polycarbonate crowns - Intraoral view

DISCUSSION

The absence of permanent teeth had a serious physical and emotional impact on children, especially during the years of transition into adolescence. Most of the patients with hypodontia are encountered in the age group of 6-12 years as noticed by the dentist as over retained teeth or by the conscious parents in relation to ugly appearance in relation to newly erupted adjacent teeth.⁴

It is uncertain to define the longevity of the retained primary teeth with no permanent successors is uncertain. Also, nothing better can act like an ideal space maintainer except the primary tooth itself up to the period of skeletal growth completion, the time best assigned for implant placement and fixed prosthesis.⁵ Till the period of completion of skeletal growth of the jaws, it is mandatory to place interim restorations like removable functional space maintainer, resin-retained bridge work or interim

composite restorations for space maintenance.

Although the removable partial dentures had been used as interim restorations, it had poor compliance in young age group due to the unaesthetic appearance, bulk of the prosthesis and potential movement of the removable partial denture.⁶ Also, composite restorations had chances of discoloration over a period of time. In the present case as the patient presented with grade I mobility with over-retained mandibular primary incisors, it was planned to first perform MTA pulpectomy followed by interim restoration with polycarbonate crowns. MTA was used as an obturating material as it had been recognized as a bioactive material having excellent biocompatibility as well as hard tissue conductive and inductive property.⁷ Following the MTA pulpectomy the teeth were restored with polycarbonate crowns as they are ideal esthetic interim restorations for anterior teeth requiring less chair side time and have better adaptability.⁸

CONCLUSION

In the present case, treatment of congenital missing mandibular permanent incisors with retained primary incisors using MTA pulpectomy followed by restoration with polycarbonate crowns suggests a new aesthetically pleasing treatment option for space maintenance in young patients as it is preferable when compared with removable prosthesis and composite crown built-up.

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