



Research Paper

A Novel Approach to Groper's Appliance: A Case Report

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Non funded

This article has not been submitted to/ published in any other journal.

Received 01 June, 2024; Revised 08 June, 2024; Accepted 10 June, 2024 © The author(s) 2024.

Published with open access at www.questjournals.org

ABSTRACT: Preserving primary dentition is important for the good health and well-being of children. Dental esthetics impact children both psychologically and socially. Missing primary anterior is of utmost concern for a pleasing smile. In the presented case report, Groper's appliance was modified keeping in mind the high caries risk in these children. The wire framework bearing the artificial teeth was soldered on the stainless-steel crown given on the pulpectomized primary maxillary first molar. Later, the complete wire framework was removed following the eruption of maxillary permanent incisors. Therefore, this modification was termed the *Interim Groper's Appliance*.

KEYWORDS: Esthetics, Groper's Appliance, Modification, Missing anterior, Space maintainer, Stainless steel crown.

INTRODUCTION

Early childhood caries is a country wide concern in both developing and developed countries, which results in malnourishment. Preservation of primary anterior teeth is consequential for the good health and well-being of children with respect to their phonetics, proper mastication, esthetics, space maintenance, and safeguarding from abnormal oral habits. Dental esthetics impact children both psychologically and socially¹. Nowadays, a child as young as 6 years

old is concerned about their smile². Therefore, functional and aesthetic rehabilitation should always be considered as the treatment objective. Documented literature enumerates various treatment modalities such as strip crowns with composite, intracoronal, and extracoronal restorations, depending upon the extent of the carious lesion in enamel, dentin, and pulp³. In the presented case, there was complete mutilation of anterior teeth for which the authors did the replacement by modifying the Groper's appliance by soldering the wire component containing acrylic teeth on a stainless steel crown (SSC) on pulpextomized maxillary primary first molars. Later on, after regular follow-up, the complete wire component was removed from SSC. For this reason, the modified Groper's appliance was termed the *Interim Groper's Appliance*.

CASE PRESENTATIONS: A 5-year-old male child reported to the Department of Pediatric and Preventive Dentistry with a chief complaint of tooth decay in the upper front teeth region for the past 1-2 months. His parents were also concerned about his unpleasant smile.

Intraoral examination revealed missing 61, root stump 51, caries with pulp exposure 54, 64, and dentin caries 52, 62, and 74, therefore diagnosed as severe early childhood caries, stage IV. Treatment was planned as follows: Extraction of root stump 51, strip crown in relation to (irt) 52, 62. Pulpextomy followed by stainless steel crown (SSC) (irt 54, 64) GIC restoration irt 74 (figure 1). Considering the high caries risk, *Interim Groper's appliance* was designed for missing 51, 61 with wire framework extending on to the SSC on 54, 65 (figure 2) and topical fluoride application was done at intervals of 3 months. After obtaining parental consent, treatment was initiated.

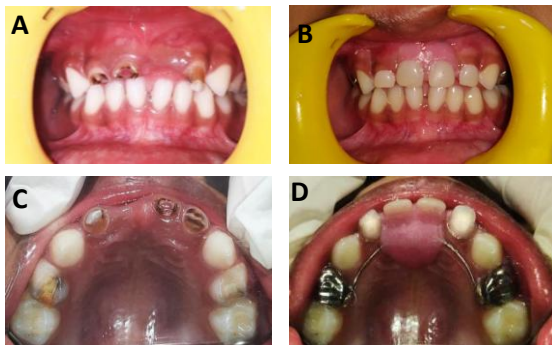


Figure 1: Pre (A,C) and Post insertion of appliance (B,D).



Figure 2: Fabrication of Modified Groper's Appliance

Radiological Examination: Regular follow-up was done to check for the eruption of permanent central incisors. Once the root formation of the permanent central incisors reached 2/3rd in length, the wire frame was removed from the SCC irt 54, 64 (figure 3).

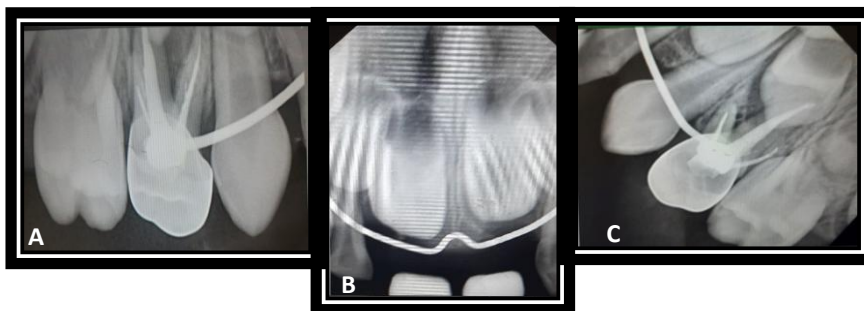


Figure 3: 12 months follow up.

DISCUSSION

Parental wish for esthetics is the primary factor responsible for such cases being reported in clinics. However, there is no significant impact of early loss of maxillary primary anterior teeth on the growth and development of jaws⁴. Although there is concern about phonation associated with an early loss. Riekman and Badrawy showed in their study that the loss of primary anterior teeth before the age of 3 years resulted in speech problems⁵. Therefore, the most substantial and rational goal of replacing a missing maxillary primary anterior is to restore a beautiful smile and give psychological benefit to the child and his parents. In the presented case, the SSC on pulpectomized maxillary primary first molars was considered for this modification in Groper's appliance. After the 2/3rd of root completion of the maxillary permanent central incisors, the wire frame was carefully removed from the SSC. So, this modification served both the functions of a space maintainer as well as of a prosthetic rehabilitation. The rationale behind this modification is to avoid additional banding in high-caries-risk individuals, which leads to a shift in the balance of the oral ecosystem towards demineralization or white spot lesions^{6,7}.

CLINICAL SIGNIFICANCE

- *Interim Groper's Appliance* is beneficial for children with high caries risk, with no added burden on their caries activity.
- Pediatric dentists can save time by using existing crowns, which are economical for patients.

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