University Journal of Dental Sciences

POST ENDODONTIC RESTORATION OF MUTILATED DECIDUOUS ANTERIOR TEETH : A CASE REPORT

Case Report

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ABSTRACT : Restoration of severely decayed deciduous anterior teeth is often considered as a challenge by pedodontists. This case report presents a 4-year-old boy with severely damaged deciduous primary anterior Teeth. Subsequent to pulpectomy, a wire post was placed in the canal and strip crown was given. This method offers a simple, practical effective and economical procedure for reconstruction of severely decayed primary anterior teeth, which re-establishes function and esthetics for time the tooth should be present and functional in the child's mouth.

Keywords:
strip crowns,
early childhood caries,
wire post

Source of support: Nil
Conflict of interest: None

INTRODUCTION : According to American Academy of Pediatric Dentistry Early childhood caries (ECC) is the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger[1]. In children younger than 3 years of age, any sign of smooth-surface caries is indicative of severe ECC (S-ECC). From ages 3 through 5, one or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth or a decayed, missing, or filled score $\geq$4 (age 3), $\geq$5 (age 4), or 6 (age 5) surfaces constitutes S-ECC.1 The teeth most often involved are maxillary central incisor, lateral incisor, maxillary and mandibular first molars, while the mandibular primary incisors are relatively unaffected.[2,3] In extreme cases, ECC can even lead to total loss of the crown structure.[4,5

Earlier, the most common treatment that was provided was to extract the involved teeth. However, the importance of preserving the deciduous anterior teeth can be realized from the fact that loss of these teeth can lead to space loss, masticatory deficiency, phoenetic challenges, lack of pre-maxilla development and resulting malocclusion, development of para- functional habits and mainly psychological problems that interfere with the personality and behavior of the child.[2,3,4,5,6,7,8,9.]

Restoring the deciduous anterior teeth to its earlier form, function and esthetics presents a challenge to the Pediatric Dentist. The children who require this treatment are usually the youngest and least manageable group of patients.

A restorative technique that is able to provide dynamic, lasting and useful restorations that is

simple to perform would augment the management of patients presenting with carious maxillary deciduous incisors. Such a technique could help to assure the child's cooperation and reduce the anxiety associated with restorative treatment. Various studies have shown that post and cores can be used to overcome this problem.10

This case report describes the challenging task of treating a 4-year aged child with early childhood caries with decayed maxillary incisors with composite resin using a custom made post, made with 19 gauge wire to increase the potential surface area for attachment of the restorative material and consequently increase the long-term stability of an esthetic restoration as well as other restorative procedures in the needful teeth.

CASE REPORT : A 4 year aged, female patient reported to the Department of Paedodontics and Preventive Dentistry, Rama Dental College, Hospital and Research Centre, Kanpur with a chief complaint of decayed upper front and right and left upper and lower back teeth. Patient's medical history was not significant. The child was shy, withdrawn and uncooperative.

Patient's mother gave a history of breast feeding during night time for 1 year. After 1 year the child was bottle fed for 2 years. The milk contained sugar and the mother confirmed that child slept with the bottle in his mouth during night time.

Intraoral examination revealed a complete set of deciduous dentition and caries involving with 55, 54, 52, 51, 61, 62, 64, 65, 75 and 85.64 was grossly carious and on intraoral periapical radiograph, there was pulpal involvement of 51, 52, 61, 62 and 54.64 was indicated for extraction followed by band and loop space maintainer.

Diet analysis, counseling and oral prophylaxis were done. GIC restoration was indicated for 55, 65, 75 and 85.Pulpectomy was indicated for 54 followed by Stainless steel crown. Pulpectomy was indicated for 51, 52, 61, and 62, followed by strip crowns for 51, 52, and 61. Custom-made post made with 19 gauge wire with serrations to increase the potential surface area for attachment of the restorative material and consequently increase the long-term stability of an esthetic restoration was indicated irt 62.

Pulpectomy of anterior teeth 51,61,52,62 followed by root canal filling with zinc oxide eugenol was done. Strip crowns were given directly for 51, 52 and 61. 62 was indicated for post and core followed by strip crown.3 mm of the cement was removed from the coronal end of the root canal in relation to 62.

A 19 gauge stainless steel orthodontic wire was bent using universal pliers into U shape, and compressed, the other end of the wire was cut and again bent into U and compressed again like two pin heads facing each other like a stapler pin. This was done to hold the restorative material for core build up.

FIGURE 1: PREOPERATIVE CLINICAL PICTURE SHOWING GROSSLY DECAYED TEETH 51, 52, 61, AND 62.

FIGURE 2: PREOPERATIVE RADIOGRAPH SHOWING TEETH 51, 52, 61, AND 62.

FIGURE 3: WORKING LENGTH RADIOGRAPH

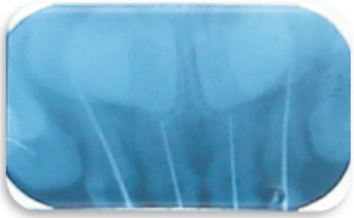

FIGURE 4 : POSTOBTURATION RADIOGRAPH IN RELATION TO 51, 52, 61, AND 62.

FIGURE 5 : FABRICATION OF A POST- 19 GAUGE WIRE IS BENT INTO A STAPLER PIN SHAPE

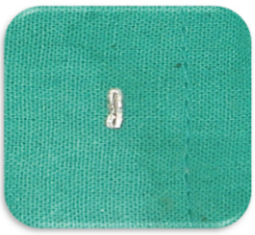

FIGURE 6 : CLINICAL PHOTOGRAPH WITH METAL POST INSERTION FOLLOWED BY CORE BUILDUP WITH GIC IN RELATION TO 62

FIGURE 7 : POSTOPERATIVE IOPAR SHOWING STAPLER PIN SHAPED POST

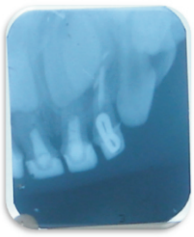

FIGURE 8 : POST OPERATIVE CLINICAL PHOTOGRAPH

Serrations were made on the stainless steel wire to get adequate mechanical retention. 3mm of the one side of the pin head was inside the root canal. The incisal pin head of the wire projected 2-3 mm above the remaining tooth structure which provided better mechanical retention and support for the restorative material. Shade selection of the composite was made in daylight. The canal was prepared to get a space of about 3mm. The canal was cleaned and dried and the metal post was inserted into the canal with GIC. Core build was done with GIC. The GIC core was then etched with the etchant for 20 seconds, rinsed with water & air dried followed by application of bonding agent – which was then light cured. An appropriate strip crown (3M ESPE, MN USA) was selected & trimmed (to the cingulum) to create an arched interproximal margin to accommodate the interdental papilla. Composite resin was filled in the strip crown & then it was placed on the tooth. The composite resin was cured for 60 seconds. The strip crown was then removed with a sharp explorer.

The occlusion was checked and after the removal of any interference, final finishing and polishing of the restoration was performed. This completed the treatment of the full mouth rehabilitation. For future treatment, the patient was advised to come for regular checkup.

In this case, custom made post was used in anterior tooth as Mortada and King10, Usha M et al11 have shown success with the use of direct composite restoration reinforced with mechanically retained orthodontic wire. Since there was a chance of loss of restoration due to trauma or biting on hard foods so post restoration instructions were given to the patient.

The child was very happy and satisfied regarding all functions of teeth, like speech, cosmetic function, etc. Patient did not turn up at the 1 month recall and further recall review is needed to check the strength of the post and resorption of roots.

DISCUSSION : Restoring deciduous anterior teeth that are grossly destructed due to caries is very challenging for the pediatric dentist.

There is a high rate of failure, not only

because of absence of tooth structure or poor adhesion of bonding agent to primary teeth or limited availability of materials and techniques, but also because the children who need such restorations are among the youngest and least manageable group of patients.

Intracanal retainers are required to provide shape, function and esthetics in such teeth. In addition, the length of the post system which is placed intracanally is equal to the recommended length for deciduous teeth; 3 mm occupies only the cervical one-third of the canal to prevent interrupting the process of primary tooth root resorption and permanent tooth eruption. Mortada and King11 have shown success with the use of direct composite restoration reinforced with mechanically retained orthodontic wire. This encouraged us to use a custom-made post of an orthodontic wire and composite resin to restore mutilated lateral incisors. The presented technique is simple, cost-effective and easy to execute and practical for all dentists.12 However, it was technique sensitive and required patient cooperation.

Serrations and shape of the intracanal retainer used in the present case provided the mechanical retention. The wire adaptation to the internal walls is inadequate, leading to dislodgement of the wire, and radicular fracture due to excessive masticatory forces.13 Hence retention of stapler pin retainer is less compared to GFRC. 14, 15. GFRC provides better bonding, good strength, low risk of root fracture, good adaptation to the root canal, but the disadvantage is that it is expensive.16 Biological posts and crowns may also be tried but have a disadvantage of lack of availability from tooth bank, donor and recipient acceptance and strict cross control infection policies make this treatment option impractical.16,17 Rodrigues et al.18 have described the use of nickel- chromium cast posts with macro-elements that improved the durability of restorations. Preformed and cast metal posts have been utilized; however, they are expensive and require an additional lab stage. The use of metal posts need the use of an opaque resin to mask the post and could cause further problems during the course of natural exfoliation.16 Threaded posts used in permanent teeth represent an excessive cost for pediatric dentist because it is bought as a kit, which is never totally utilized. In addition apical tensions may be created, which may lead to root fracture during installation.10

Motisuki et al. 16 have restored severely decayed primary teeth using an indirect composite resin restoration along with fiberglass post. This technique was costly and required lab work.

After endodontic treatment and placement of intracanal retainers, the remaining coronal structure can be restored with direct or indirect technique or with single tooth prostheses, such as celluloid strip crowns, stainless steel crowns, metal plastic crowns, porcelain crowns, porcelain veneers, polycarbonate crowns and acrylic resin crowns etc.10

Studies have shown that intracanal retention in primary teeth can be obtained by directly building resin composite posts or preparing an inverted mushroom shaped undercut in the root canal prior to the buildup of the resin.19

CONCLUSION : The stapler pin post core design presented in this case report is an easy-to-fabricate and inexpensive alternative. The long term success of this design compared to other designs has to be investigated further.

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