Case Report

Restoration of Primary Anterior Teeth with Glass Fiber-Reinforced Post and Core: 3-Year Follow-Up Case Report

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1. Background

The restoration of primary anterior teeth represented a great challenge in dentistry [1]. Many factors affect the treatment outcome of the restoration of primary teeth incisors and laterals: teeth, small size, child behavior cooperation, child’s age, and cost of the treatment. Dental caries is the main causative factor in tooth structure destruction. The thin enamel and dentin layer enhance caries extension and tooth destruction with or without pulp involvement. Child behavior affects the selection of the treatment options and the treatment setting: either in a local environment or in treatment under general anesthesia [2]. The age factor will put the shadow of selecting the treatment with longevity rather than the option for the short term. With all the previously mentioned factors, the treatment cost will guide the parents to the treatment option, especially with the absence of dental insurance.

The maxillary primary incisors are the anterior primary teeth most affected by dental caries [1, 3, 4]. The caries pattern may affect all surfaces in a short time, leaving the tooth with the complete destruction of the tooth structure with or without pulp involvement. Esthetic satisfaction and the longevity of the restoration of anterior primary teeth were the main concerns for the parents and the dentist [5]. According to the American Academy of Pediatric Dentistry (AAPD), restoration techniques for the anterior primary teeth include the following: open-faced stainless steel crowns, full-coverage composite, strip crowns, and full white ceramic crowns [6].

The most conservative treatment (in primary and permanent dentition) is a direct restoration performed with resin-based composites. This treatment has always been preferred due to it being esthetically pleasing [7], reparable [8, 9], conservative [4], and economically affordable. Direct restorations can also be performed in an endotreated tooth with
success following basic principles [4]. In addition to the revised challenges, restorations could be very difficult when the crown structure is destroyed completely with pulp involvement as well as for younger ages. For conditions that represent poor retention and poor oral hygiene, there will be no benefit to proceeding with this challenge. The best treatment will be extraction and replacement with kiddie partial [2, 7]. However, some parents’ wish to keep the

Figure 1: Final coronal restoration.

Figure 2: Radiographic follow-up of treated teeth.
affected teeth may play a big role in going through this challenge. The main concern of anterior primary teeth restorations with root canal filling is the retention of the coronal restoration to the remaining tooth structure and the root canal filling [4]. This concern is the same for permanent dentition, and several classifications have been proposed for restoration according to the residual structure [10], and fiber posts appear to be the best build-up retention procedure [11].

The absence of primary anterior teeth for children in their young ages will affect their eating, smiling, pronunciation, and psychological interaction with others. Oral health neglect could be pronounced, but in many conditions, most of the parents prefer to keep the primary teeth instead of removing them and ask for alternative treatment rather than extraction of the anterior primary teeth. The present condition represents a special challenge where the dentist prepares four root canals with special retentive mean and coronal restoration for the maxillary incisors and laterals with a follow-up for 3 years until the eruption of the permanent incisor teeth [1, 4, 7].

2. Case Presentation

A 4-year-old female patient attended a pediatric dental clinic at the Dental College of Ajman University on September 2016. The patient was complaining of dental pain in the anterior maxillary teeth. The parents asked for a treatment to
relieve the dental pain and restore the esthetic appearance for the patient. A dental examination showed destructed anterior maxillary teeth and bad oral hygiene of the remaining teeth. The dental history explained the bad oral hygiene and destructed anterior teeth due to bottle-feeding for 3 years and parental neglect in addition to the expensive dental treatment, which the parents could not afford. The dental examination showed retained roots of 51, 52, 61, and 62. The 62nd root showed great mobility and a bad prognosis for any future restoration. The intraoral radiograph revealed pulp involvement of 51, 52, 61, and 62 and showed root resorption.

3. Treatment Plan

The dentist decided to do a root canal filling for 51, 52, and 61 with fiber post and strip composite crown and extraction of 62. Labial and palatal infiltration was carried out for 51, 52, and 61, and gross carious lesions were removed. The pulp chamber was opened, pulp tissue was extirpated, and working length determination was carried out by IAPA film. The preparation of the canal was carried out for 51, 52, and 61, and proper irrigation with 2.5% of NaOCl and normal saline was performed for all the canals. The canals were dried using paper points, and the thick endo paste of Vitapex was used to fill the canals as much as possible and condensed by a Lentulo spiral into the canal; the opened canals were closed with a temporary filling. After 1 week, the patient came back for the dental appointment and the preparation of the fiber post space.

The fiber post preparation required the removal of 4-5 mm of the endo paste from the canal and cleaning with saline and dried with air. The spaces made for the post were acid etched, rinsed, and dried; a light-cured bonding agent was brushed on the etched surfaces and dispersed by an air blast. Before the placement of the fiber post, flowable composites were inserted in the post spaces, and then, the post was introduced to the space with the composite inside. Then, both were light-cured for 60 seconds.

The coronal area was etched, washed, and bonded using a light cure. Strip crowns were prepared according to the final post placement and filled with composite. Next, they were
placed on 51, 52, and 61. Then, the final coronal restoration was cured with a light cure, 62 was extracted, and an IOAR was taken to keep the follow-up record (Figures 1 and 2).

The patient returned after 2 months for IOAR and a checkup, and the parents were satisfied with the result with no pain or discomfort. However, the crown of 52 fell and

Figure 6: Clinical healing of anterior maxillary area.

Figure 7: Eruption of anterior permanent incisors.
was lost. The canal obturated, and the efforts for repeating
the crown failed (Figure 3).

On March 2017, the patient returned for another visit,
and the dentist took IOAR. The radiograph showed evidence
of normal physiological root resorption with no complaint or
mobility. On June 2018, the patient complained of the
mobility of the three teeth, which required the extraction
of these teeth since it caused problems for her during eat-
ing (Figures 4 and 5).

On July 2018, the patient came with complete healing of
the anterior maxillary area (Figure 6).

The next visit was on November 2018. Her centrals
erupted. The patient’s last visit was on May 2019 when the
four anterior teeth, both maxillary centrals and laterals, fully
erupted in the oral cavity (Figure 7).

4. Discussion

Esthetic restorations of primary anterior teeth represent a
great challenge for most pediatric dentists. Small crown size,
caries pattern, and the behavior of the patient plays a big role
in successful treatment for restoring the esthetic appearance
for young patients. Destructed anterior primary teeth with
root canal treatment need a retentive post to hold the coronal
crown on the treated canal [1, 2, 12, 13]. However, post selec-
tion is not an easy or successful procedure. Omega-shaped
orthodontic wires and nickel-chromium cast posts did not
meet the esthetic requirements as well as the adaptation to
the canal shape [1]. A resin composite post building up
directly did not achieve the required retention for the long
term.

A glass fiber post is one of the posts used in some cases of
primary anterior teeth [2, 13]. With root canal treatment and
coronar placements, it can be used as an alternative to other
post types for root canals. It has great advantages over the
other posts, with greater flexural strength, easy application
and handling, applications in high stress-bearing areas,
esthetically acceptable, and the ability to bond to any com-
posite [14]. According to the present study, it shows great
retention within the canal for a long time. Due to these rea-
sons, this method is considered superior to other types of
posts for primary anterior teeth [15–18]. By the end of the
treatment, parents were so happy with the results and on
how we could keep the teeth until the permanent teeth
erupted without affecting the child’s appearance.

Restoration of child esthetics became one of the main
concerns for parents as well as for children. Improving root
channel post selections for a root canal-treated tooth will make
the restoration of the coronal crown a successful one. The

treatment of this case and the follow-up at 3 years until the
primary is removed on time. The case has interesting, prom-
ising results for future treatments for traumatic or carious
anterior primary teeth.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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