

Esthetic anterior space maintenance

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Abstract

This paper describes an appliance to replace prematurely lost maxillary anterior teeth. A review of the literature is given. The prosthesis is different from previous appliances in its use of intraorally placed composite-filled celluloid crown forms. This allows for superior control of both esthetics and functional occlusal relationships. A case presentation is given describing laboratory and office procedures.

Premature loss of primary anterior teeth is an event that may present significant problems for the growing child. These concerns are not only limited to the developing dentition, but also may affect physiological as well as psychosocial growth patterns. This paper describes an appliance designed to eliminate the damaging effects of premature anterior tooth loss.

Children with nursing bottle caries or traumatic injuries of the anterior teeth often require extraction of the affected teeth. Early loss can be quite disturbing to the young child especially when he views himself as being different from his peers.¹ Parents often blame themselves for tooth loss and relate feelings of guilt regarding their child's appearance (Figure 1). In addition, parents have reported personality changes that include children who will not smile and appear withdrawn.

Tooth loss can have subtle effects on the child's speech. In order to hide missing teeth the embarrassed child may restrict lip and jaw movements while speaking. Anterior dental dysharmonies can interfere with normal tongue placement which then can lead to the development of maladaptive articulatory habits.² In addition, the absence of maxillary anterior teeth may initiate a tongue thrust pattern.

Most authors contend that once the primary cuspids erupt, space loss in the anterior region is negligible. However, collapse of anterior arch integrity is evident in cases where the incisor teeth are in close approximation prior to extraction.³

In determining the nasolabial angle, the position of the maxillary incisors plays an important role in the anteroposterior position of the lips.⁴

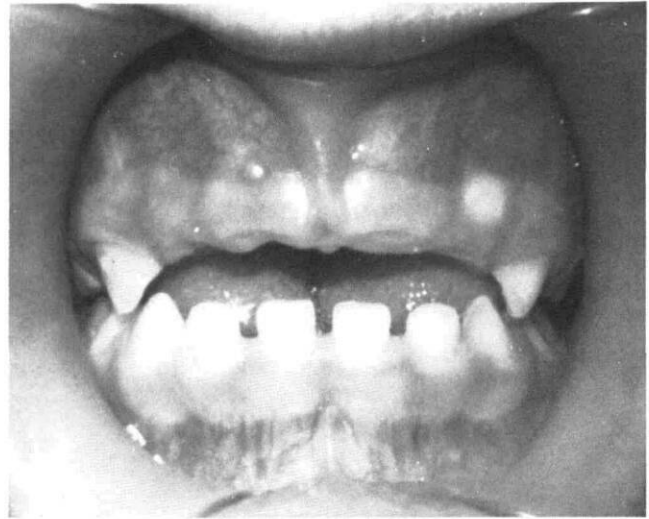


Figure 1. Typical appearance of a three-year-old patient following extractions of the primary maxillary anterior incisors.

Restorative options available to the practitioner for treatment of anterior tooth loss include both removable and fixed appliances. There is essentially one design with various modifications for removable appliances. In situations where a fixed appliance is desired, there are several options to be considered: (1) a Nance-type appliance with acrylic pontics processed to the lingual arch,⁵ (2) porcelain fused to metal bridge utilizing full coverage of abutment teeth, and (3) acid-etch retention of crowns and pontics.^{6,7} This paper describes one design of a fixed appliance.

Technique

Visit 1

1. Pedodontic molar bands are fitted on the maxillary second primary molars.
2. A full-mouth alginate impression is taken with bands in place.
3. Adhesion of the band to the alginate is maintained by the use of an alginate powder and water brush technique.
4. The model is poured in plaster.

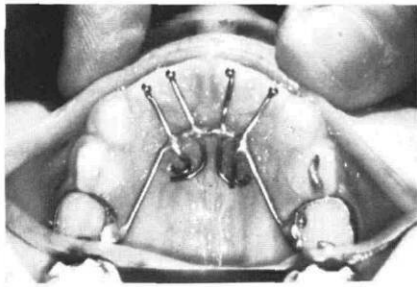


Figure 2. Occlusal view of the appliance prior to the construction of the acrylic palatal button and the removal of the palatal extensions of the wire struts.



Figure 3. Appliance shown with properly extending struts from the crest of the alveolar ridge.



Figure 4. The technique allows proper placement of the crown form with regard to intra-arch and interarch relationships.

Laboratory Procedure

1. .036 wire is conformed to the palatal arch. (The wire must lay passively against the anteroinferior aspect of the palatal vault.)
2. The distal end of the wire rests in contact with the lingual surface of the maxillary molar bands.
3. The arch wire is soldered to the molar bands.
4. The wire struts (ball clasp wire) for support and retention of the composite-filled celluloid crown forms are placed in their proper position (Figure 2). The struts for the central incisors extend 5mm from the crest of the alveolar ridge; the lateral incisor struts extend 3mm (Figure 3).
5. Acrylic palatal button.

Visit 2

1. *Try-in of the appliance*
Final adjustment of the ball clasp struts can be accomplished at this time.
2. *Fitting the celluloid crown form*
The crown form is adapted into proper occlusal and functional relationships (Figure 4). It is filled with a microfil composite, placed into position and allowed to set. The procedure is the same for all crowns.
3. *Polishing*
The plastic strip crown forms are removed and the crowns are trimmed and polished.
4. *Insertion*
The appliance is cemented into place utilizing appropriate band cementation technique (Figures 5 and 6).

5. Prior to discharge the patient/parent is given instructions regarding the proper use and care of the appliance. The following points are stressed:
 - (a) The appliance is not a functional appliance. It is primarily for esthetics. Attempting to utilize the anterior crowns for chewing will damage the prosthesis.
 - (b) Brush the pontics in the same manner as one would natural teeth.
 - (c) Notify the office immediately if any displacement of the appliance or crowns is noted.
 - (d) Notify the office if the child states that the appliance feels loose and is moving or if it does not appear properly positioned.

Discussion

The appliance described utilizes occlusally and functionally generated placement of crown forms. The incorporation of an acrylic palatal button prevents the metal framework from impinging on the palatal mucosal tissue. This prevents the development of hyperplastic tissue created by excessive forces concentrated on a single wire.

The appliance provides an esthetic replacement of prematurely lost primary maxillary anterior teeth. It is cemented permanently into position and requires minimal postinsertion adjustments. Further investigation regarding the effects on speech production is currently in progress and will be reported in the future.

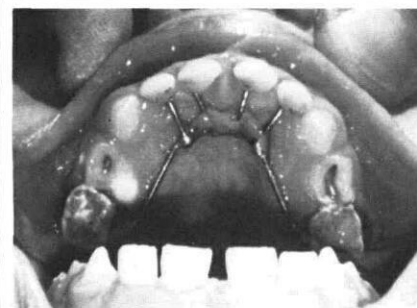


Figure 5. (Left) Appliance shown prior to the removal of excess cement. Observe that the acrylic palatal button is kept thin so as not to interfere with tongue position.

Figure 6. (Right) Occlusal harmony is attained easily by the ability to place the crown forms in proper occlusal relationships while the composite is setting.



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