

New space maintainer for children in low income countries

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Abstract: The early loss of deciduous teeth is a big challenge in low income countries. Many appliances have been proposed in order to maintain space however; the use of these appliances requires impressions, models, bands and an orthodontic laboratory. So, a simple and fast made space maintainer is needed.

Methods: To prepare this new space maintainer, a stainless steel rectangular wire (0.75 mm*1.5 mm) (Figure 1) and a composite (flow composite, restoration composite or orthodontic composite) are required. The wire is prepared to look like a big U loop and soldered with the composite to a posterior tooth.

Results: This new space maintainer was really efficient in achieving interception goals and maintaining space for permanent teeth. It was simple to use by the practitioner at the office. It was also comfortable for the patient.

Discussion: This paper aims to present a new space maintainer with a simple use, without orthodontic laboratory need. Many space maintainers have been presented in the scientific papers but this is a different one because it is a hybrid maintainer (metal and composite).

Conclusion: The new “Space Maintainer” can be an advantageous appliance for the orthodontists, pedodontists and general dentists.

Keywords: Space maintainer, Deciduous teeth, Low income countries, Hybrid.

1. INTRODUCTION

The prevention of malocclusions and orthodontic disorders is a big challenge in low income countries. One of the etiologies of malocclusions and crowding problems is the deciduous teeth early loss which can be taken in charge by preventive and interceptive approaches. The preventive approach aims at avoiding this loss and keeping the deciduous teeth with different means. But the interceptive approach aims to keep the space for the permanent teeth with space maintainers.(1) In this context, many appliances have been proposed to maintain space.(2) However, the use of these appliances requires impressions, models, bands and an orthodontic laboratory. For this reason, some general dentists in low income countries avoid putting space maintainer after deciduous teeth extractions. The purpose of this paper is to present new space maintainer with a simple use and a low cost used in 8 year-old-girl with early loss of the 74 and 75. (FDI World Dental Federation notation)

2. METHODS

8 year-old girl has been referred to our department for early loss of deciduous teeth. Intra-orally, she has presented early loss of the 54, 74 and 75. (FDI World Dental Federation notation) (Figure 1), (Figure 2), (Figure 3) and (Figure 4).

To prepare this new space maintainer, a stainless steel rectangular wire (0.75 mm*1.5 mm) (Figure 1) and a composite (flow composite, restoration composite or orthodontic composite) are required. In this case, a light cure orthodontic adhesive in syringes type Transbond™XT from 3M Unitek has been used (Figure 6).

The wire is prepared to look like a big U loop on the working model or immediately in the mouth (Figure 7). Then the length of the space maintainer must be verified.

The buccal and lingual faces of the molar are prepared with the same technique of brackets bonding then a small amount of composite is put on the buccal side of space maintainer and on the lingual side. The composite is gently applied on both sides and cured with LED light.

As well, the composite is removed from the occlusal face of the teeth and the bonding strength is controlled.

3. RESULTS

The space maintainer has been successfully accepted by the patient and is comfortable comparing to usual space maintainers (Figure 8) and (Figure 9). For the cost, this appliance is really a low cost one and the laboratory is not needed. So it can be made immediately after deciduous teeth inevitable extraction.

4. DISCUSSION

The appliance presented in this paper is an advantageous space maintainer, with a low cost for low income countries, easy to use by general dentists and without impressions or models.

Several types of space maintainers have been proposed in scientific papers. (3) Some space maintainers are removable, others are fixed but both of them need impressions, models, orthodontic laboratory and few days to be ready. This one can be put on the same day of the deciduous tooth extraction.

Garg et al. compared between metallic space maintainers and fiber reinforced composite ones and they concluded that the Fiber Reinforced Composite Resin space maintainers are more successful than the conventional space maintainers. (4)

The new space maintainer presents the same principles of the space maintainer proposed by Yeluri et al. (5). The difference was the use of a rectangular stainless steel wire to replace a fiber reinforced composite because this fiber reinforced composite is not available in some countries especially African ones.

Although this hybrid space maintainer looks like the bonded space maintainer, there is a difference in the stainless steel wire used in this appliance. A rectangular wire 0.75 mm*1.5 mm has been used. this wire is perfect to be adapted to buccal and lingual faces of the molars better than the round wire used in bounded space maintainer.

5. CONCLUSION

The new “hybrid Space Maintainer” can be an advantageous appliance for the orthodontists, pedodontists and general dentists. This appliance is easy to prepare, for immediate use after deciduous tooth extraction and with a low cost. It can be a new alternative to improve the preventive and interceptive approaches in orthodontics.

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Figure 1: The 54 loss



Figure 2: Frontal view



Figure 3: The 74 and 75 loss



Figure 4: Lower arch



Figure 5: Stainless steel wire



Figure 6: Light cure orthodontic adhesive

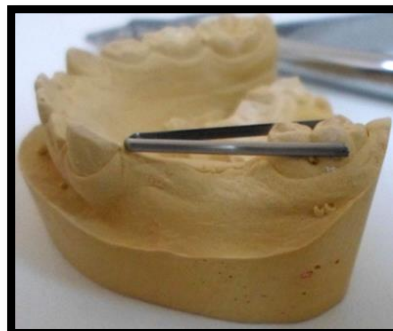


Figure 7: The appliance on the model



Figure 8: Space maintainer after bonding



Figure 9: Lateral view of the appliance