

### **A Diaphanous Space Maintainer -Modification of an Essix Retainer**

<sup>1</sup>Dr.Swathika M.C.L, Post graduate, Department of Pediatric and Preventive Dentistry, Ragas Dental College & Hospital.

<sup>2</sup>Dr.Dharini.V, Post graduate, Department of Pediatric and Preventive Dentistry, Ragas Dental College & Hospital.

<sup>3</sup>Dr.Jayanthi Mungara, Head of the Department of Pediatric and Preventive Dentistry, Ragas Dental College & Hospital.

<sup>4</sup>Dr.Poornima.V, Professor of Department Pediatric and Preventive Dentistry, Ragas Dental College & Hospital. .

**Corresponding Author:** Dr. Swathika M.C.L, Post graduate, Department of Pediatric and Preventive Dentistry, Ragas Dental College & Hospital.

**How to citation this article:** Dr. Swathika M.C.L, Dr. Dharini.V, Dr. Jayanthi Mungara, Dr. Poornima. V, “A Diaphanous Space Maintainer -Modification of an Essix Retainer”, IJMACR- July – August - 2021, Vol – 4, Issue - 4, P. No. 91 – 94.

**Copyright:** © 2021, Dr. Swathika M.C.L, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License 4.0.Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**Type of Publication:** Case Report

**Conflicts of Interest:** Nil

#### **Abstract**

Developing malocclusion in a growing child is major distress to the parents. They will seek the assistance of the dentist once the dental arch is completely a mishap. This majorly occurs due to a lack of knowledge, support, and guidance. To prevent such situations and to intercept and guide the occlusion into a proper state a causative factor must be identified. Among major root causes for the malocclusion, one such is the early loss of primary teeth causing space discrepancy in the dentition. So early orthodontic interventions are necessary to promote favourable changes in the developing dentition which can be obtained by providing adequate space for the developing permanent teeth employing a space maintainer. With regards to the maintenance of space with the added advantage of being aesthetically approved, easily cleanable with the highest benefit of patient's compliance and comfort, this case report describes a new

modification of Essix retainer “that fulfils the need of being a space maintainer” in children.

**Keywords:** Essix retainer, space maintainer, pontic, space maintenance, aesthetic appliance, clear aligners, oral hygiene

#### **Introduction**

Several problems affect the oral health of the children including deleterious oral habits, avulsion, premature loss of teeth due to dental caries that results in arch collapse or changes in arch length.<sup>1</sup>This can be intervened by various conventional treatment modalities. Due to unavoidable situations like the tooth being grossly decayed or chronic infections, extraction is the only choice of treatment. As the pertaining teeth are removed, the tooth that is adjacent to it will swiftly move to the lost space. Therefore ,a barrier or a hurdle is required for hindering the tooth's movement.

Space Maintainers are overpasses for young children who prematurely lost the deciduous dentition. It consists of a wire component and a stainless steel band that engulfed the crown of the neighboring tooth. It is luted to lodge preventing drift and displacement. But not all children satisfactorily accept the wired appliance. Nowadays, choice of children is more optimistically present towards aesthetic restorations and appliance that makes their teeth looks elegant thereby showing that choice of material primarily depends on age, aesthetics, and cooperation level.

Essix retainers otherwise called overlay retainers introduced as an aesthetic, comfortable, and inexpensive alternative to traditional bonded retainers and removable appliances. **Sheridan**<sup>2</sup> was the first to describe the Essix orthodontic retainer (DENTSPLY Raintree Essix Glenroe, Sarasota, FL, USA) in 1993 and subsequently its use to provide a provisional restoration. The Essix appliance completely encapsulates the dentition and the superior part of the alveolus, thus providing better retention. Essix retainers guide your teeth into a position. With this background, the purpose of this study is to provide a **“Modified ESSIX RETAINER “that fulfills the need of being a space maintainer.**

#### Case Description

An 8-year-old boy reported to the Department of Pediatric and Preventive Dentistry, Ragas Dental College and Hospital, Chennai. The patient gives a history of continuous throbbing pain from a decayed upper left first primary molar. Detailed past medical history was taken and extraoral and intro oral examination was done. An intraoral periapical radiograph was advised to rule out the pathology about teeth and bone height for the permanent tooth to erupt. It revealed radiolucent areas of the crown with reduced root structure with relation to the first

primary molar and radiolucency of enamel and dentin in the second primary molar suggesting dental caries (proximal lesion). Due to loss of root structure and persistence of pain for a long period, extraction of the tooth under local anesthesia was planned. Extraction was done and later in the second visit, consecutively an impression was taken. Once the alginate impression was set it was removed from the patient’s mouth and orthocal was poured into it. .Once, the setting time was achieved the cast was trimmed and the edges were smoothed. 0.75 mm, thick polypropylene sheet was placed onto the cast and compressed under vacuum pressure with the incorporation of tooth placed in a position to achieve the modified Essix retainer with a space maintainer. The excessively distributed retainer edges were trimmed and polished in such a way that debris does not stick onto the occlusal and gingival margins. Oral prophylaxis was done for the patient and oral hygiene instructions were given. The patient was asked to report after 2 weeks for review. After 1 year when the tooth erupted the Essix retainer was removed.



Figure 1: Radiograph of 1<sup>st</sup> primary molar of the patient



Figure 2: Pre-operative photograph



Figure 3: Post extraction socket



Figure 4



Figure 5: Placement of Essix appliance with tooth to maintain the space in the extracted socket

### Discussion

Primary teeth play an important role in a child's growth and development necessitating adequate speech, esthetics, form, and function, and act as a guide for the developing tooth bud. When the child attains appropriate age, exfoliation of primary teeth and eruption of the predecessor is the normal physiological process. When this vicious cycle is disturbed a space maintainer takes its place but despite its stability, cement disintegration, fracture of the band luted, caries due to food lodgement are some of the disadvantages of the conventional space maintainer.<sup>3</sup> In case of functional fixed space maintainer eruption of the permanent tooth underneath the pontic will not be visible and the child should be exposed to x-ray for further evaluation of the tooth.<sup>4</sup> Parents should be instructed about careful supervision and information regarding the recall once the exfoliation of teeth occurs to remove the appliance. With all these limitations kept in mind, a new innovative cleansable and at the same time that has functional and aesthetic component an Essix retainer with the function of being a space maintainer was developed. Yet, only limited literature was available with

modification with the Essix retainer. Hence the longevity and resistance to occlusal force have to be evaluated. Therefore close supervision and once in 6 months recalls are essential.

In this study, the child was cooperative and both the child and the parent understood the instructions after the appliance was given. After 6 months there was an eruption of the cuspal tips of the premolar and the patient was asked to remove the appliance. The child and the parent gave feedback that the appliance was aesthetically appealing and at the same time it was added an extra advantage of being functional. The literature review did not reveal any study conducted among children with Essix retainers being used as a space maintainer in the posterior tooth, hence this could be the study that came up with a modification of Essix retainers, which is an initial stage of research therefore further exploration is necessary.

### **Conclusion**

Premature loss of tooth due to caries or other etiological causes should be corroborated by a space maintainer. Therefore, this is a simple and efficient method of preparing a space maintainer, that is aesthetically pleasing, cost-effective, and no separate banding procedure is required. This appliance is easily cleansable and at the same time motivates the individual for maintaining oral hygiene.

### **References**

1. Rao AK, Sarkar S. Changes in arch length following premature loss of deciduous molars. *J Indian Soc Pedo Prev Dent.* 1999; March:28–32.
2. Sheridan JJ, Ledoux W, McMinn R. Essix retainers: fabrication and supervision for permanent retention. *J Clin Orthod* 1993;27:37-45.

3. Kirzioglu Z, Ozay MS Z, Ozay MS. Success of reinforced fibre material space maintainers. *J Dent Child.* 2004;71;2:158-62.
4. V. Vinothini, A. Sanguida, A. Selvabalaji, G. S. Prathima, M. Kavitha, "Functional Band and Loop Space Maintainers in Children", *Case Reports in Dentistry*, vol. 2019, Article ID 4312049, 4 pages, 2019.