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DISTAL SHOE SPACE MAINTAINER: A GUIDE FOR THE PERMANENT FIRST MOLAR

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ABSTRACT:

Background: Prevention of primary teeth until their normal exfoliation plays an important role in preventive and interceptive dentistry. Premature loss of primary second molar prior to eruption of the permanent first molar in the absence of the primary second molar can lead to mesial movement and migration of the permanent molar before and during its eruption. In such cases, an intra alveolar type of space maintainer to guide the eruption of the permanent first molar is indicated.

Case report: A case of space maintenance of three year old boy was described in which the primary second molar was lost due to dental caries. An intra alveolar type of space maintainer also known as willet's distal shoe was given. A 12 month follow up was taken.

Conclusion: In Pedodontic practice the main concern of the dentist is to provide maximum benefit to the patient with minimum discomfort, more co-operations and less chair side time. The distal shoe space maintainer will be useful aid in the preventive and interceptive therapy.

KEY WORDS: Space maintenance, willet's distal shoe, pediatric dentistry, occlusion guidance

INTRODUCTION:

The distal shoe space maintainer, as introduced by Gerber1 and extended by Croll, is a valuable part of the pediatric dentist's armamentarium, because in those cases where the second primary molar is lost prematurely, it helps guide the first permanent molar into place. In 1973, Hicks outlined in detail the indications and contraindications for the distal shoe appliance, as well as the diagnostic and systemic considerations.¹ The causes for loss of deciduous teeth can be deep dental caries, trauma or congenital absence, which may present significant problems for growing child.² Premature loss of primary teeth results in space loss as reported in early 20th century by Stallard, Lyons and Willet.³ When the deciduous second molar is lost before the eruption of first permanent molar, intra-alveolar type of space maintainers are indicated but with some contraindications like certain medical conditions such as blood dyscrasias, immunosupression, congenital heart disease, patients with poor oral hygiene and many more

CASE REPORT

A three year old boy came to the department of pedodontics and preventive dentistry, Karnavati school of dentistry with the chief complain of decay in lower left back region since 6 months. There was no significant medical history present. Oral examination revealed a primary dentition. On intra oral examination class I caries was noted in 75, 85 in which 85 was found tender on percussion (Figure 1).



Figure 1: Preoperative intraoral photograph Intra oral periapical radiograph of 85 revealed a marked radiolucency extending to enamel, dentin and also involving pulp with involvement of the furcation area (Figure 2).



Figure 2: Preoperative radiograph of 85

Whereas radiograph of 75 revealed a radiolucency involving enamel, dentin and pulp (Figure 3).



Figure 3: Preoperative radiograph of 75

Treatment planned was: extraction of 85 followed by distal shoe space maintainer and pulpectomy in 75 followed by stainless steel crown. The stainless steel crown is selected and placed on 84 after the tooth preparation and impression was made with the alginate. The model cast was made and design framework of distal shoe space maintainer was made after necessary carving of the second primary molar on the cast. The ends of the wire were soldered. In the following appointment, the 85 was extracted and distal shoe space maintainer was cemented (figure 4 and 5).



Figure 4: post operative intra oral photograph.



Post extraction instruction was given. Pulpectomy of 75 was performed and stainless steel crown was cemented. Periodic recall at 3 months interval was planned. 12 months follow up showed the eruption of permanent first molar against the arm of distal shoe that would stimulate the surface of lost deciduous second molar (Figure 6 and 7).



Figure 6: 12 months recall intra oral photograph





Dental caries is the most common cause of the premature loss of primary teeth; other indications include trauma, ectopic eruption, congenital disorders, and premature resorption due to arch-length deficiency⁵. One of the most frustrating problems of managing the developing dentition is the premature loss of the primary second molar prior to the eruption of the permanent first molar. An erupting tooth adjacent to an edentulous area has a greater potential for space loss than fully erupted ones, indicating that clinical intervention should be considered. Sequelae requiring no intervention include ectopic eruption of the permanent molar and tipping into the space required for the eruption of the second premolar, resulting in its impaction. Additionally, molar relationships may subsequently be altered. Providind space to allow teeth to erupt and prevent impactions is valuable. A space maintainer that will guide the permanent first molar into its normal position is indicated. The appliance traditionally

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suggested as the treatment of choice is the distal shoe space maintenaner.⁶

In the present case, the patient was co-operative with Frankle's positive behavior rating. The conventional design given by willet was effective. Also the patient was maintaining the oral hygiene properly.

Thus distal shoe space maintainer is very useful in case of premature loss of primary second molar prior to eruption of permanent molar. If the various other factors like co operation, maintenance of oral hygiene can be achieved successfully, the conventional design of distal shoe is effective.

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