Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/13398
DOI URL: http://dx.doi.org/10.21474/IJAR01/13398

RESEARCH ARTICLE

KAMATUDAY APPLIANCE (TRIPLE-BANDED SPACE REGAINER): AN INNOVATIVE APPLIANCE

Dr. Deepika U[1], Dr. Louis Solaman Simon[1], Dr. Sarita Das[2], Dr. Khwairakpam Monika[2], Dr. Prasanna Kumar Sahoo[3] and Dr. Prayas Ray[4]

1. Senior Resident Dept of Pediatric and Preventive dentistry, S.C.B Dental College and Hospital Cuttack - 753007, India.
2. Post Graduate Student Dept of Pediatric and Preventive dentistry, S.C.B Dental College and Hospital Cuttack - 753007, India.
3. Professor & Head Dept of Pediatric and Preventive dentistry, S.C.B Dental College and Hospital Cuttack - 753007, India.
4. Associate Professor Dept of Pediatric and Preventive dentistry, S.C.B Dental College and Hospital Cuttack - 753007, India.

Manuscript Info

Manuscript History
Received: 14 July 2021
Final Accepted: 18 August 2021
Published: September 2021

Key words:
Space Regainer, Open Coil Spring, Double Band Regainer

Abstract

The premature loss of primary teeth in mixed dentition commonly results in space loss. The spacelost is regained with the help of an appliance referred to as a space regainer. The appliance is of both removable and fixed type. This case report highlights the usage of a fixed KamatUday appliance (Triple-banded space regainer) in compromised abutment teeth.

Introduction:-

Space regainingis one of the most commonly used interceptive orthodontic procedures whichrequires tipping of the adjacent teeth, either primary or permanent molar. The indications for the procedure are Class I occlusion, adequate anchorage, the second permanent molar is unerupted and there is a favorable relationship between the second permanent molar and the first permanent molar[1,2].

This article highlights the use of new design space regainers, "KamatUday appliance" (Triple-banded space regainer).

Case Report

An 8-year-old boy reported to the Department of Pedodontics and Preventive Dentistry, SCB dental college and Hospital, Cuttack with a complaint of misaligned teeth. The patient had Cleft Lip and Palate, a history of cleft lip and palate repair was present. He was referred for orthodontic correction before secondsurgery for palatal repair. His facial profile was convex with mid-face deficiency. Advised for OPG to evaluate the congenitally missing teeth. Alginate impressions of the upper and lower arch were taken. In the lower arch, the teeth present were 46,43 (peg-shaped), 83, 42,41,31,32, 72, 73, 75, 36, congenitally missing 85, 75, 33, 35, 45, and space lost in the region of 44 which is mesial to 46 (Fig. 1-3). After cast analysis, treatment was planned to retain 83 because it had sufficient root structure and to distalise the permanent first molar to gain space for obstructed 44.

A space regainer was designed to regain the lost space [Fig. 4-5]. The mandibular right permanent first molarwas banded (0.006 × 0.180 in) with molar tubes(1.1 mm diameter, 10 mm length) welded on both the buccaland lingual

Corresponding Author:- Dr. Deepika U
Address:- Senior Resident Dept of Pediatric and Preventive dentistry, S.C.B Dental College and Hospital Cuttack - 753007, India.

sides of the band. The peg-shaped mandibular rightpermanent canine and retained rightdeciduous canine (83) werebanded (0.004 × 0.150 in) and soldered with two orthodontic stainless steel wire(0.17×0.25inch) to it buccal and lingual sides,extending posteriorly to insert into the molar tubes ofthe mandibular right permanent first molar. The open coil springs made up of NiTi (GACIntInc, Central Islip, NY; 0.012 in diameter; 0.045 inlumen; 13 mm length) were inserted into the wiressoldered to the bands of mandibular right permanent canine and retained deciduous canine between stoppers placed anteriorly with silver solder [fig. 6]. Firstly, the molar band was cemented followed by which double-band was cementedonto the teeth (83,43)present mesial to the edentulous space with the springs held in compressionto half their lengths [Fig. 7]. After 2 and 4 months,the space gained was 2.0, 3.5 mm respectively [Fig. 8a,8b]. The appliance was removed afterthe eruption of premolar into the space upto its mesial and distal heights of contour [Fig. 9].

Discussion:-

Interceptive orthodontics is implemented to recognize and eliminate irregularities and malposition in the developing dentofacial complex. Numerous techniques that are recommended for reducing or eliminate the discrepancy in malocclusion are serial extractions, space regaining, etc. Various removable and fixed space regainers were used inpediatric dentistry either to distalize or for the bodily movement of the mesial or distal abutment teeth. This article represents a case where an innovative fixed spaceregainer was used to distalise the distal abutment teeth. In this appliance, the space regainer works on the principle of open coil spring similar to space regainers like Double-banded space regainer, Gerber space regainer[3].

The coil spring made up of NiTihas properties like shape memory, super-elasticity, and spring back ability. It producesand maintains light, continuous force below 75-100 g for a long period of activation. It delivers a constant force over a range of 7mm tooth movement with one activation, in this case, we have regained around 3mm. The open coil spring was compressed from an initial length of 13mm to 7mm[4,5].This appliance has taken reference from Chalakka P et al. (2012)here, the two teeth mesial to the edentulous area are banded to overcome the tipping of the peg-shaped compromised tooth[3].

Declaration of parent consent

The informed consent forms were written and obtained from parents reporting to publish their son's images and clinical information.

Why this paper is important to pediatric dentistry??

1. Space regainer used at mixed dentition reduces the treatment timing of corrective orthodontics.
2. Space regainers can be used in cleft lip and palate patients.
3. Provides knowledge on regainer used in cases with compromised abutment tooth.

Fig 1:- Mandibular occlusal view.

Fig 2:- OPG revealing congenitally missing 45,35.

Fig 3:- IOPA of obstructed 44

Fig 4:- Band with molar tubes on both sides**.**

Fig 5:- Double band soldered with wire.

Fig 6:- Double band soldered wire with open coil spring.

Fig 7:- Appliance in situ.

Fig 8a:- After 2 months.

Fig 8b:- After 4 months, erupting 44.

Fig 9:- After 8 months, erupted 44.

Reference:-

1. Bishara Textbook of Orthodontics. 2nd Edition, Elsevier, 410-412.
2. Miura F. Inventor; Gac International, Inc., assignee. Orthodontic coil spring. United States patent US, 1991; 5:046-948.
3. Chalakka P, Thomas AM, Akkara F, Pavaskar R. New design space regainers:'Lingual arch crossbow' and 'Double banded space regainer'. J Indian SocPedodPrev Dent. 2012; 30(2):161.
4. Von Fraunhofer JA, Bonds PW, Johnson BE. Force generation by orthodontic coil springs. The Angle Orthodontist, 1993; 63(2):145-8.
5. Da Costa GC, Chalakkal P, Aras MA, Chitre V. Use of the Open Coil Space Regainer for Tooth Movement Prior to Prosthodontic Treatment. Journal of clinical and diagnostic research: JCDR. 2015; 9(6):ZJ03.