ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 9, Issue, 08, pp.55683-55685, August, 2017

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

AESTHETIC MODIFICATION OF TWIN BLOCK

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ARTICLE INFO

Article History:
Received 27th May, 2017
Received in revised form
08th June, 2017
Accepted 20th July, 2017
Published online 31st August, 2017

Key words:

Congenitally missing tooth,
Twin block,
Class 2 malocclusion.

ABSTRACT

A wide variety of functional/orthopaedic appliances are available for the correction of Class II skeletal and occlusal disharmonies. Twin block is a functional appliance described by Clark (1982) in United Kingdom. It is effective in correcting Class II malocclusion with a combination of skeletal (mainly restriction of maxillary growth) and dento-alveolar modifications which effectively modify occlusal inclined plane and induce favourably directed occlusal force by causing a mandibular displacement. The main objective of therapy with functional appliances such as Twin Block is to induce supplementary lengthening of the mandible by stimulating increased growth at the condylar cartilage. The use of functional appliances mainly depends on their cooperation. Once in a while cases with multiple problems do come which calls for change in the conventional design. Here is a case of a 14 year old girl with class 2 division 1 malocclusion with congenitally missing lower central incisor treated with modification of twin block appliance.

Citation: Shashikala Prabhu, Krishnamoorthy, S.H. and Savitha Sathyaprasad, 2017. "Aesthetic modification of twin block", *International Journal of Current Research*, 9, (08), 55683-55685.

INTRODUCTION

Class II malocclusion occurs in about one third of the population.Class II skeletal discrepancy may be due maxillary protrusion, mandibular retrusion or combination of both however mandibular skeletal retrusion being the most consistent finding (Jena *et al.,* 2006). Three alternatives for treating skeletal Class II malocclusions are growth modification, dental camouflage, and orthognathic surgery (Puri and Patel). The goal of functional appliance therapy is to produce a technique that could maximize the growth response to functional mandibular protrusion by using an appliance system that is simple, comfortable and aesthetically acceptable to the patients. This will have psychologically better effect on the growing children (O'Brien *et al.,* 2003). These appliances can be removable or fixed. The mode of action differs depending on the design; however, their effect is produced from the forces generated by the stretching of the muscles (Mills, 1991). As pediatric dentist we are the owners of managing both the problems.

CASE REPORT

A 14 year old girl in her permanent dentition stage reported to our department with the complaint of forwardly placed upper front teeth. On extra- oral examination there was no facial asymmetry and lips were competent.

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She had convex profile with reduced lower facial height and deep mento-labial sulcus with hyper-mentalis activity. Intraorally, there was overjet of 11mm and overbite of 6mm with Angle's class 2 molar relation on both right and left side. There was a retained deciduous central incisor in lower right region (81) which also showed clinical mobility. In orthopentomograph, showed root desorption of retained incisor in the radiograph. Also congenital absence of successional tooth (41). Retained tooth was extracted as there was desorption of root and mobility. Cervical vertebra evaluation showed that her growth was complete with peak pubertal growth spurt. Visual treatment objective was positive.

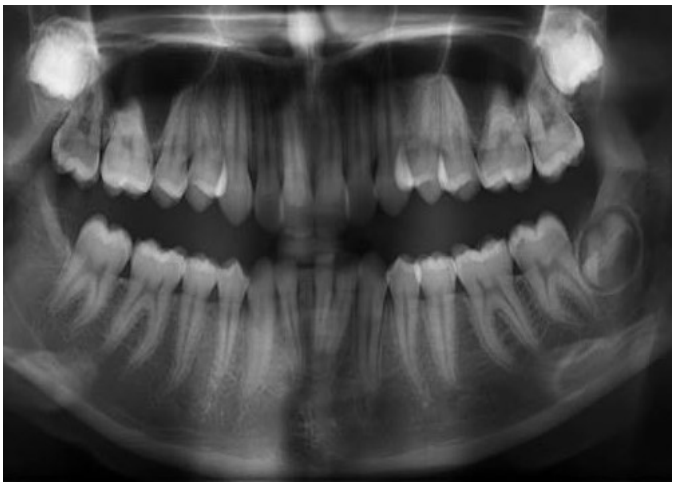
Treatment objective

Correction of facial convexity
Correction of molar relation, overjet and overbite
Prosthetic rehabilitation in relation to 41 till the implant placement.

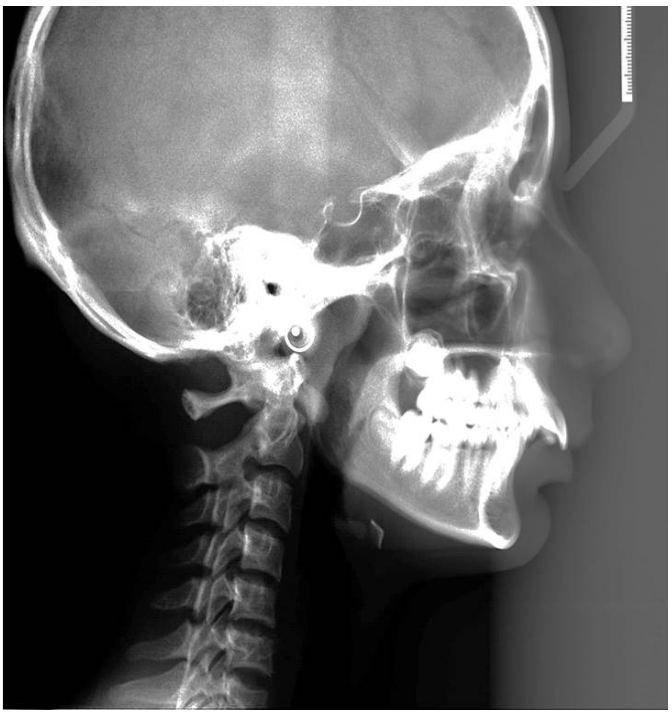
Treatment done

Twin block appliance was fabricated with the incorporation of acrylic tooth in the lower segment for the replacement of lateral incisor (41). Lower lip pads were also incorporated to reduce the mentalis muscle action.

Preoperative view



Preoperative OPG showing retained deciduous 81 & congenitally missing 41



Preoperative lateral cephalogram

Twin block appliance delivered with replacement of 41 and lower lip pads

Comparison of pre and post-operative facial view

DISCUSSION

The rate of mandibular growth is not constant throughout the juvenile and adolescent periods, with the existence of a pubertal peak in mandibular growth described previously in classical cephalometric studies. The onset, duration, and intensity of the pubertal spurt in mandibular growth vary on an individual basis (Baccetti *et al.,* 2000). Twin-blocks are upper and lower acrylic bite blocks with occlusalinclined planes that interlock at a 70 degree angle and guide the mandible forward and downward (Ehsani *et al.,* 2014). There are a number of successful treatment results obtained in an age group of 14-16years (Patel *et al.,* 2015; Aminian *et al.,* 2017).

Twin Block functional appliance has several advantages including the fact that it is well tolerated by patients, (Nanda, 1955) easy to repair, suitable to use in permanent and mixed dentition (Aminian *et al.,* 2017). As a result of the skeletal and dento-alveolar changes produced by twin block appliance with lip pads, a more favourable soft tissue environment was created with elimination of the lip trap and the lower lip acting labially on the upper incisors (Chowdhary, 2016). In this case we preferred giving prosthesis attached to the lower twin block as the patient wanted to go for implant therapy in later stage. It also avoids the possibility of space loss, development of tongue thrusting and also alteration in speech.

Conclusion

Modification of twin block appliance provided the benefit of aesthetics, prevented the space loss from occurring and also improved the facial appearance of the patient. Thus it can be used even in the patients with completed growth if they show good compliance.

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