Esthetic correction of peg laterals – a case report

Loganathan Saatwika , M.D.S, I yr Post Graduate, Balasubramaniam Anuradha, M.D.S, Reader Newbegin Selvakumar Gold Pearlin Mary, M.D.S, Reader , Arunajetasan Subbiya ,M.D.S., Professor and Head

Department of Conservative Dentistry and Endodontics,

Sree Balaji Dental College and Hospital,

Bharath Institute of Higher Education and Research,

Narayanapuram , Pallikaranai, Chennai -600100.

Tamilnadu, India.

E-mail :saatwika.l@gmail.com

Abstract-

We live in a society where appearance plays a major role. People of all ages are concerned about their smile and overall appearance. Microdontia is a condition in which teeth are smaller than the normal size. A common form of microdontia that affects the maxillary lateral incisor is known as peg lateral, which exhibits converging mesial and distal surfaces of crown forming a cone like shape. Treatment approach should depend on the number of missing teeth, status of occlusion and patient preference. .This clinical report describes the treatment of bilateral peg-shaped lateral incisors that were restored with resin composites.

Key words: Esthetic, peg laterals, developmental anomalies, composites.

INTRODUCTION

Maxillary lateral incisors shows variation in size, shape and form next to third molars. It is considered a developmental anomaly if the variation is too great[1]. Alterations in shape, size, position, color, or texture of the tooth may have a negative influence on the harmony of smile[2]. A peg lateral is defined as an undersized, tapered, maxillary lateral incisor"[3] which may be associated with other dental anomalies, such as canine transposition and retained deciduous teeth. Dental anomalies can result from various genetic and environmental factors. Peg shaped laterals have been genetically linked with tooth agenesis[4].The homozygous child will have total anodontia of the succedaneous tooth if both the parents have peg laterals[4]. A peg-shaped incisor has a marked decrease in diameter, extending from the cervical region to the incisal edge[5].They are usually healthy and functional. Malformation is seen in the crown, while the root structure remains sound and slightly reduced in size[6]. These are more common among Mongoloid people and women. The prevalence is more common on the left side of the maxilla[7]. In a study by Backman and Wahlin, the incidence of peg-shaped incisors was found to be 0.8% in 739 children[8].In another study by Chattopadhyay A, it was found to be 0.4 %[9].In a recent meta analysis the prevalence of peg laterals was 1.8%[7]. The prevalence has been reported to be higher than the prevalence of other developmental malformations. The treatment options of peg laterals include extraction of the peg shaped tooth and orthodontic movement of canine into the space of lateral incisor which can be then re-contoured to resemble lateral incisors or replacement with a single – tooth implant/FPD supported restoration or direct resin composite bonding or indirect restoration of the peg laterals with Porcelain laminate veneers, Metal – ceramic restorations or All ceramic crowns to develop normal tooth morphology[10]. Though porcelain laminate veneers have high abrasion resistance and color stability they are relatively expensive. A conservative veneer technique is the application of the resin composite without reduction of the tooth structure. Resin composite can be altered and re-polished in situ, also direct resin composite are not expensive as porcelain laminate veneers[6]. This case report describes a simple direct technique for restoring the esthetic appearance of the peg – shaped lateral

incisors of an adult female patient with upper anterior spacing, deep bite and peg shaped upper right and left lateral incisors.

CASE REPORT

A 19 year-old female patient reported to the department of Conservative dentistry and Endodontics with the chief complaint of spacing and irregularly shaped tooth in her upper front jaw region. Patient did not have any systemic diseases and intraoral examination revealed peg laterals and midline spacing was seen between maxillary central incisors. After thorough examination,treatment plan was finalized with two objectives:(1) Esthetic correction of peg laterals using direct composites using a putty technique and (2) Orthodontic treatment for midline diastema. Vitality of the teeth were checked and radiograph did not reveal any signs of pathology. Based on all these evaluations, a direct composite restoration was planned. A preliminary impression was made using dental alginate following which a diagnostic cast was obtained. A diagnostic wax up was done on the cast using modelling wax and a putty index was created (Figure-1). The palatal half was then checked for the fit to serve as the reference guide to reconstruct palatal enamel. Incorporation of bevel is done following shade selection. Then etching is done with 37% phosphoric acid. After 15 to 30 sec it is washed for 5 seconds and dried. Then a single bottle bonding agent was applied and polymerized for 20 seconds with a LED light generator and resin based composite build up was done using putty index (Figure-2). The composite resin was visible light polymerized for 40 seconds and any excess restorative material at the restorative margin was removed with a series of finishing burs, followed by polishing to a high luster using aluminum oxide discs.The pre and post restorative treatment images are shown in the figure 3,4 and 5. The patient was given oral hygiene instruction and informed for recalls. At the 6-month recall the restorations were just polished using polishing discs.

DISCUSSION

Individuals with peg laterals often present with a diastema in the midline region caused by the distal movement of the central incisor[11].The treatment includes two primary objectives; to restore or replace the hypoplastic laterals and to close the midline spacing. It is important to choose a treatment plan that is best for the patient and dentist. There are many treatment modalities available such as porcelain laminate veneers, metal-ceramic, all ceramic crown as well as minimally invasive procedures such as direct resin composite bonding or composite veneering for the peg laterals to transform into a normal tooth morphology[12]. Resin composites exhibit excellent physical properties, marginal integrity and esthetics[13,14]. Moreover in comparison to all ceramic restoration, Resin composites do not have the potential to cause catastrophic fracture nor does it cause abrasive wear of the opposing dentition[15]. If the patient does not smoke or drink dark colored liquids that can alter the color of the teeth, esthetic bonding with resin composite may be the most conservative approach because the sound tooth structure will not be removed, the procedure may not require administration of local anaesthetic, the procedure may be completed in a single appointment and the treatment is also relatively inexpensive[16]. Direct composite bonding can easily change the emergence profile and alter the shape and length of the tooth. It can be repaired easily and also be polished and repolished to a high shine[17].The first step in direct resin bonding is to determine the shape and opacity. The shade of the tooth should be determined before the teeth are subjected to drying because dehydrated teeth become lighter in shade as a result of a decrease in translucency. The incisal third is lighter and more translucent than the cervical third, whereas the middle third is a blend of combination of incisal and cervical colors[18].As the shape, size and inclination of the teeth are predetermined using putty index, it facilitates the reconstruction of the tooth structure by acting as guide that enables the dentist to plan the procedure in detailwhich reduces the need for adjustment eventually.Besides, it is also useful in the determination of incisal edge thickness and cervico-incisal length, allowing easy insertion in the portion that needs to be restored[19].There are also limitations with direct resin bonding. It can chip and break and there is a possibility of developing marginal leakage. It can pick up stain easily in patients who smoke and can have a deleterious effect on gingival health on patient with poor oral hygiene[17].The reversible nature of this treatment allows for other treatment approaches in the future. A significant advantage of this restoration is that repair may be possible intra orally without the risk of modifying esthetics or mechanical performance[13].

CONCLUSION

A direct composite can be a successful alternative to more invasive, expensive procedure when restoring hypoplastic teeth.A multidiscilplinary treatment planning and the use of contemporary restorative materials and techniques allow for a conservative and esthetic final result.

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FIGURES

FIGURE -1

WAX MOCK UP

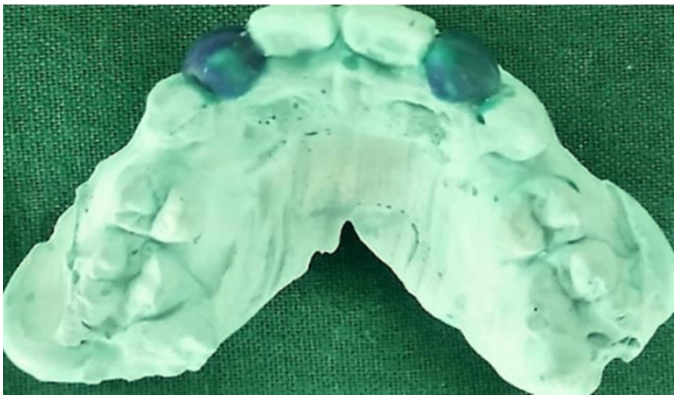

FIGURE - 2

PUTTY IMPRESSION

FIGURE -3

PREOPERATIVE AND POST OPERATIVE IMAGE OF RIGHT PEG LATERAL INCISOR

FIGURE - 4

PREOPERATIVE AND POSTOPERATIVE IMAGE OF LEFT PEG LATERAL INCISOR

FIGURE - 5

PREOPERATIVE AND POST OPERATIVE IMAGE OF LEFT AND RIGHT PEG LATERALS