Coexistent Peg Shaped Mandibular Central Incisors Along with Maxillary Lateral Incisors: A Rare Case
Chanchala HP, Nandial B

Abstract
Variations in the size of the teeth can be either in the form of microdontia or macrodontia. One of the common forms of localized microdontia is that which affects the maxillary lateral incisors, called Peg laterals. They are seen either in the left or the right quadrant of the maxillary arch whereas the occurrence of peg shaped central incisors bilaterally in the mandibular arch coexistent with bilateral presence of peg shaped lateral incisors has been a rare entity. Thus the case report outlines the incidence, prevalence and conservative oral rehabilitation of non syndromic bilateral microdontic peg shaped mandibular central incisors along with the presence of bilateral maxillary peg shaped lateral incisors.

Key words: Dental; Peg; Mandible; Incisors; Jaw; Microdontia; Abnormalities; Stomatognathic System; Developmental Disorders.

Introduction
Microdontia is a term used to describe teeth that are smaller than normal, such as outside the usual limits of variation. Microdontia is much more common than macrodontia. There are three types of microdontia as recognized, true generalized microdontia, relative generalized microdontia and microdontia involving a single tooth. More often, microdontia involving a single tooth is a common condition. Microdontia like other dental defects is often found in the so called variable teeth, those that are more prone to congenital failure to develop. One of the most common forms of localized microdontia is that which affects the maxillary lateral incisors, called a “peg lateral”. A peg shaped incisor has a marked reduction in diameter, extending from the cervical region to the incisal edge.1,2 The size of the teeth is predominantly genetically determined, depends on the race and can also be caused due to endocrinal disturbances. Microdontic / peg shaped incisors are commonly seen affecting the maxillary lateral incisors. The reported prevalence varies from 0.8-8.4% of the population.3 However, microdontia of maxillary and mandibular central incisors is a rare condition. Several genes linked with early tooth positioning and development has been identified as the reason for such anomalous events. In children with peg shaped teeth, for psychological reasons and proper development of the stomatognathic system, an early treatment strategy has been suggested. Here a case of non syndromic bilateral microdontic peg shaped mandibular central incisors along with bilateral maxillary peg shaped lateral incisors has been presented. The dental management, traditionally focusing on provision of an esthetic rehabilitation with minimal tooth preparation due to the conical shape and the highly placed pulp horns is also discussed.

Case report
A child aged 12 years reported with the chief complaint of irregularly placed upper and lower front teeth. The family, Medical and Dental history were non contributory. On extra-oral examination, the face was symmetrical bilaterally, convex profile was seen and no temporomandibular joint abnormality was observed (Fig 1). The skin, hair and sweat glands appeared normal. On intra oral examination firstly, the soft tissue examination revealed no abnormality. The hard tissue examination revealed a full complement of permanent dentition with peg shaped lateral incisors seen in the maxillary left and right quadrant and peg shaped central incisors in mandibular left and right quadrant with tooth #12, #22, #31 and #41. They appeared distally curved with respect to tooth #31 and #41 (Fig 2). The orthopantomograph revealed the full complement of permanent dentition including the presence of developing third molars (Fig
3). Intraoral periapical radiograph showed the incomplete root formation with respect to 22 and mild root dilacerations with respect to the same. Pulp horns were highly placed in tooth #31 and #41 (Fig 4). Thus based on these findings it was diagnosed as non syndromic bilateral microdontic peg shaped mandibular central incisors along with bilateral maxillary peg shaped lateral incisors. The treatment was initiated by fluoride varnish application to the lower central incisors. After one month it was followed by minimal tooth preparation on the incisal and proximal surfaces. A direct composite resin restoration was carried out using the template method on the lower central incisors. Six months later the maxillary lateral incisors were restored in the similar fashion. A follow up of thirty four months was done and the integrity of the restoration was evaluated (Fig.5). There has been no sign of discoloration, marginal leakage or fracture with respect to the same.

Discussion
The morphologic pattern or basic form and relative size of the future tooth, is established by morphodifferentiation, i.e. by differential growth. The frequent statement in the literature is that, endocrine disturbances affect the size/form of the crown of teeth is not tenable unless such effects occur during morphodifferentiation, in utero or in the first year of life. Size and shape of the root, however, may be altered by disturbances in later periods. Disturbances in morphodifferentiation may affect the form and size of the tooth without impairing the function of the tooth and the function of ameloblast / odontoblasts, thus the result may be a peg shaped / malformed tooth with enamel and dentine that may be normal in structure. The presence of maxillary peg shaped lateral incisors has been reported either on the left or right side of the jaw. Simultaneous presence of both the upper lateral incisors is a rare case. In the present case along with the bilateral peg laterals it is also associated with bilateral lower incisors which are peg shaped. All characters associated with ectodermal dysplasia were evaluated and only the dental findings were positive.

An analysis of orofacial traits and dental findings in five patients affected by hypohydrotic ectodermal dysplasia (HED) and gene carriers for this disorder in their mother’s was conducted by Glavina et al. In the above study of five families, dental findings showed oligodontia in the upper jaw and anodontia in the lower jaw. The upper jaw contained only peg shaped deciduous incisors. The heredogram analysis indicated X-linked recessive heredity. The patient’s mothers had a normal appearance, but with diagnosed hypodontia of both upper lateral incisors and microodontia of all lower incisors. Among the mothers of five patients two of them had bilateral upper peg laterals with peg shaped lower central and lateral incisors and only one mother showed the presence of bilateral peg shaped upper laterals and peg shaped central incisors as seen in the present case report.

HED is a syndrome characterized by affected ectodermal structures like hair, teeth, nails and skin. It has been found that the syndrome is inherited by an X-linked recessive gene. It is only expressed in male children, but females are gene carrier for this disorder. The Lyons hypothesis / lyonization phenomenon is accidental inactivation of an X chromosome in the cells, so that they are mosaic. Some of them containing an active X chromosome with HED gene and the others containing normal X-chromosome. The clinical finding and the expression of the gene depend on the proportion between the two cell types. Thus suggesting these characteristic dental finding in heterozygous females which can be used as reliable criterion for the detection of HED gene carriers.

Results of a study by Monreal et al. emphasized the critical role of EDA 1 isoform II which plays a major role in the tooth, hair and sweat gland morphogenesis, where as the biological significance of isoform I remain unclear. The diagnosis will allow carrier detection in families with a single affected male and will assist in distinguishing X-Linked HED from the rarer, clinically indistinguishable, autosomal recessive form of the disorder. Another study described the prevalence of peg shaped laterals in the maxilla to be 7.5% in Asians and 1.6% in non Asians. The prevalence of peg shaped mandibular incisor, unilateral has been reported to be 1% of the population. The occurrence being common in girls when compared to boys. Thus we report a case of non syndromic bilateral microdontic peg shaped mandibular central incisors along with the presence of bilateral maxillary peg shaped lateral incisors.
The extraoral view of the patient (Figure 1) with intra oral findings (Figure 2) of peg shaped teeth. The Panoramic (Figure 3) and Intra oral periapical radiograph (Figure 4a & b) showing peg shaped incisors with highly placed pulp horns in tooth #31 and #41.

Figure 5: Postoperative picture with direct composite resin restoration

Despite clinical suggestions of incomplete expression of HED, the final diagnosis is only possible through genetic investigations. For a more efficient and accurate diagnosis of HED and early detection of female carriers, the dental analysis of daughters of positive gene carriers is required. The determination of hypoplastic and sharp alveolar ridge as an early sign of HED is important for the early diagnosis of this disorder in male children before the manifestation of dental abnormalities. Thus in the present case presence of Peg laterals were considered as a mere dental developmental anomaly and management of such case warrants regular and long term follow ups. A multidisciplinary approach with different expertise in several areas of dentistry plays a very important role to achieve esthetic and functional success of such rare conditions.

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