



Maxillary Lateral Incisors: Different Agenesis Patterns

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diversified samples of peoples, but the humankind relations of the unlike shapes or uneven figures of lateral incisor variants still vague⁽⁵⁾. Microdontia is a state where the teeth are appeared tiny than the ordinary average bulk or size, either involving all teeth or be confined to a monosyllabic tooth or a grist of teeth⁽⁶⁾. Microdontia of 7& 10 (universal numbering) of maxillary lateral incisor is termed as “peg lateral” or occasionally called wedged shaped lateral incisors, in which the tooth displays a concur or huddle of crown mesial and distal flatness's brewing an etcher like shape,

associated with a shorter root length than normal⁽⁷⁾ as seen in Fig. (1) a & b. Evolution missing of one or more teeth is referred to as Hypodontia, Asians& native Americans are considerably shown like this condition in permanent dentition. The second most rife tooth to be congenitally missing is maxillary lateral incisors, if excluding third molars, its forfeit could be on a single side, or both sides of the dental arch⁽⁸⁾ as revealed in Fig. (2). Dens invaginatus is a chronological abnormality in which its outcomes manifested as a profound or invagination of the developmental organ of enamel directed towards the dental papilla before the dental tissue's calcination⁽⁹⁾, this condition is frequently affecting permanent maxillary lateral incisors; although cases had been recorded in mandibular region and in the deciduous dentition⁽¹⁰⁾, as revealed in Fig. (3) a & b.

Introduction:

The similarity of permanent maxillary lateral incisor is to a great degree to that maxillary central incisor except for its size& length of the root⁽¹⁾, however maxillary lateral incisors have a wide graded variation in brew looks diverge comparing to other tooth in the human oral cavity if we exclude third molars. If there is a vastly variation, it is considered a chronological anomaly⁽²⁾. Such congenital alterations that affecting maxillary lateral incisors could be unilateral or bilateral are: micro, or small teeth microdontia, wanting: missing teeth or what is known for hypodontia, dens invaginatus and dens evaginatus (talon cusp)^(3,4). Maxillary lateral incisors demonstrate different developmental alteration forms whom have been documented to occur in a percentage reaching to 10% of bloke in

Dens evaginatus or what is sometime termed as or idiom for evaginated odontoma is that aberration in the development that takes place in lower jaw territory more repeatedly. In the regions of anterior teeth: could be evident canines & or incisors, dens evaginatus breed is recognized in the cingulum on the palatal quarter, overwhelmingly binary enhance and is usually renowned for "talon cusp". consequently, the fang cusp and or talon cusp is substantive as an off-beat enlargement, or the cingulum is hyperplastic of maxillary and mandibular incisors manifested in the fashioning of an excessive or superfluous cusp look alike an eagle's fang ^(11, 12) as shown in Fig. (4) a & b. Such variations are not only related to the crown of maxillary lateral incisors, but also included in style of root canal, the shape and number of root canal may mutate even for normal dentition. Such complexity & oddities in the root canal morphology may involve maxillary lateral incisors. Teeth 7 & 10 could exhibit two root canals, despite that plenty of dental literature support a 100% monosyllabic canal anatomy. It is spirited to behold the possibility of extra root canal(s), equable in those teeth showing a fading penchant of aberrant anatomy of the root canal ⁽¹³⁾. Also, Nayara et al reported a developmental anomaly in root canal of maxillary lateral incisor as a result of congenital dental gemination of the tooth ⁽¹⁴⁾. Several studies conducted on anomalies of maxillary lateral or second incisor, in an Iceland survey by Muller et al ⁽¹⁵⁾, recorded 18% of students manifested with agenesis of maxillary lateral incisor after inspecting 1116 students. Peg-shaped or wedged shaped maxillary lateral incisor as cited by Clayton ⁽¹⁶⁾ was 0.3 % of United states citizens, although Thilander and Myrberg ⁽¹⁷⁾ documented 0.6% of peg shape monstrosity schoolchildren in Sweden. Magnusson TE. ⁽¹⁸⁾, reported that peg-shaped maxillary lateral incisor in boys 1.3%, and that for girls is 3%. The spread of hypodontia and wedged or peg-shaped of 7 & 10 teeth were surveyed by Al-Emran et al ⁽¹⁹⁾, in a sample of 500 of teenaged boys, the outcomes of the study was 0.6% agenesis of maxillary lateral

incisor was treatise. Whilst the perversion of inbred hone morphology (peg-shaped) spotted in maxillary lateral incisor was 4 %. Salama and Abdel – Megid ⁽²⁰⁾, designed a treatise on the dispersal of agenesis and peg-shaped maxillary lateral incisors in 1300 tad students & recorded inconsistency of 7 & 10 teeth was 9 %, whereas the peg-shaped maxillary lateral incisor was 0.7 % in Saudi Kingdom. Mevlut et al ²¹ found in a study the propagation of maxillary lateral incisor agenesis which was 2.9 % of the females and 1.8 % in males. In a schooling of Japanese survey, the inconsistency of 7 & 10 teeth was standing as third, but its forfeit hesitance was (1.32—1.33%) was to 50% that of the 20 & 29 teeth (universal numbering system) ⁽²²⁾.

Causes related to these variations:

The lessen size of maxillary lateral incisors, shape and other morphological variations often reverberate the interplay of genetic, non-genetic factors in addition to environmental laborer ⁽²³⁾. Certain genetic defects are the most important etiological factors in the prenatal and after birth (post-natal) era have also been seen in the anomalies affecting tooth situation, remoteness, and even numeral of teeth. The obscurity of one or few teeth might be caused by the precocious disturbance in the tooth figuration practicability during inception or generation of tooth burgeon ⁽²⁴⁾. However, aberration in the tooth shape, framework, and bulk or size are consequences from turmoil occurring during the morpho-segregation stage of development ⁽²⁵⁾. In some cases, reduction in size of the maxillary lateral incisor has been seen associated with palatally displaced canines, second premolar agenesis, third molar agenesis and infra-occlusion of deciduous molars. This was explained on the basis that maxillary lateral incisor agenesis and palatal displaced canines shares a common genetic background ⁽²⁶⁾. Changes in tooth size, hypodontia, disturbance in root formation, also fluoride ingestion in the period of tooth development can affect tooth morphology ⁽²⁷⁾, however patients with maxillary lateral incisor agenesis did not show boost expansion rate of other

permanent teeth inconsistency⁽²⁸⁾ On the other hand a study express the rapport mesio-distal garland hands measurements between the teeth of 7&10 and the other perpetual successors, and displayed the lateral incisor magnitude or bulk was of elevated renovated ratio in a relative equation to the other different teeth bulk or magnitude, i.e. when the lateral incisor is minified, the existing grinder teeth also resort to be minified or minimized⁽²⁹⁾.

Conclusion:

The most common chronological mutated tooth is maxillary lateral incisors, that occurs either due to authentic germinal or ambience turmoil. Running of wanting or disfigured lateral incisors is a quarrel and intricate process & an accurate decision which encompass a multi dental specializations to put back the esthetics and function.

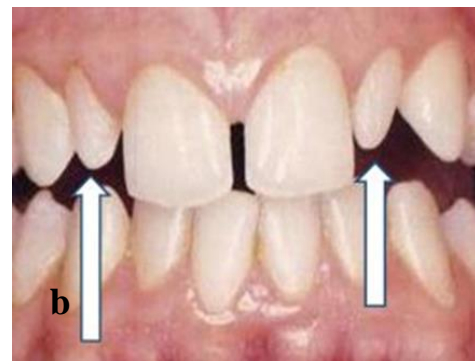


Fig. (1): (a) Bilateral presence of peg shaped maxillary lateral incisors white arrow on both photographs, but the first one show less convergent incisal while the second one (b) show more convergent to seem as conical shape.



Fig. (2): Bilateral hypodontia of 7&10 as in the spacing that present between central and canine (red arrow).

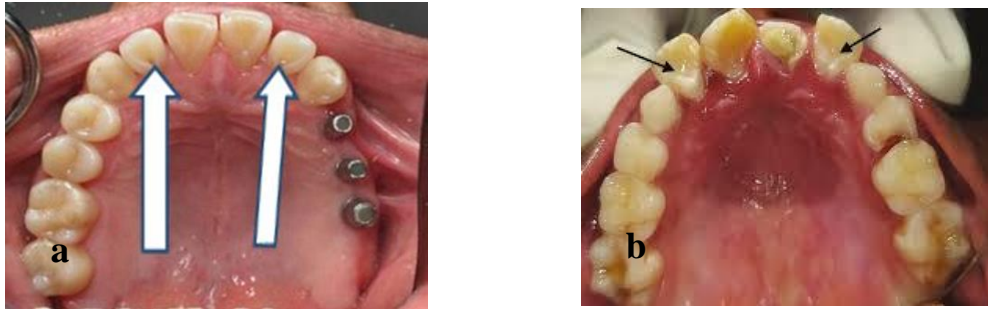


Fig. (3): (a & b) Dens invaginatus revealed as deep pit on lingual surface of 7 & 10 as shown by arrows.



Fig. (4): (a) Dens evaginatus (talon cusp) seen in maxillary left lateral incisors unilaterally as pointed by white arrow. (b): show that the dens evaginatus (talon cusp) present by laterally as pointed by white arrow and associated with maxillary central incisors.

References

- 1- Stanley J. Nelson. Wheeler's dental anatomy, physiology, & occlusion. 10th edition. Elsevier.
- 2- Amin F, Asif J, Akber S. Prevalence of peg laterals and small size lateral incisors in orthodontic patients — a study. *Pakistan Oral & Dental Journal* 2011;31(1):88-91.
- 3- Sharma A. Unusual localized microdontia: case reports. *J Indian Soc Pedo Prev Dent* 2001;19(1):38-39.
- 4- da Silva Neto U. X, Hirai V. H. G, Papalexiou V, Gonçalves S. B, Westphalen V. P. D, Bramante C. M et al. Combined endodontic therapy and surgery in the treatment of dens invaginatus type 3: case report. *J Can Dent Assoc* 2005; 71(11):855-8.
- 5- Shintaro Kondo, Grant Townsend, & Masanobu Matsuno. Morphological variation of the maxillary lateral incisor. *Japanese Dental Science Review* (2014) 50, 100—107.
- 6- Byahatti S. M. The concomitant occurrence of hypodontia and microdontia in a single case. *Journal of Clinical and Diagnostic Research*. 2010 December(4):3627-3638.
- 7- Rajendran R and Sivapathasundharam B: *Shafer's textbook of oral pathology*, 6th ed. India: Elsevier, 2010.
- 8- Kure K, Arai K. A meta-analysis of tooth agenesis pattern of permanent teeth. *Orthod Waves — Jpn Ed* 2011; 70:184—96.
- 9- Hulsmann M. Dens invaginatus: aetiology, classification, prevalence, diagnosis, and treatment considerations. *International Endodontic Journal* 1997; 30:79-90.
- 10- Jaramillo A, Fernandez R, Villa P. Endodontic treatment of dens invaginatus: A 5-year follow-up. (*Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2006;101:E15-21.
- 11- Ferraz J.A.B, de Carvalho Junior J.R, Saquy P.C, Pecora J.D, D. Sousa-Neto M. Dental anomaly: dens evaginatus (talon cusp). *Braz Dent J* 2001;12(2):132-134.

- 12- Hegde U, Mull J P, Danish G, Nabeel S. An uncommon dental anomaly: Talon cusp. *World Journal of Dentistry* 2010;1(1):47-50.
- 13- Danny Low & Alex W K Chan. Unusual maxillary lateral incisors: case reports. *Aust Endod J.* 2004 Apr;30(1):15-9.
- 14- Nayara Romano, Luis Eduardo Souza-Flamini, Isabela LimaMendonça, Ricardo Gariba Silva, and Antonio Miranda Cruz-Filho. Geminated Maxillary Lateral Incisor with Two Root Canals. *Case Reports in Dentistry* Volume 2016, Article ID 3759021, 5 pages
- 15- Muller, T. P., Hill, I. N., Patersen, A. C. and Blayney, J. R. "A summary of congenitally missing permanent teeth" *Journal of American Dental Association.* Vol. 81: 101 - 107, 1970.
- 16- Clayton, J.M. "Congenital dental abnormalities occurring in 3557 children" *Journal of Dentistry for children.* Vol. 23: 206-208, 1956.
- 17- Thilander, B. and Myrberg F. "The prevalence of malocclusion in Swedish schoolchildren" *Scandinavian Journal of Dental Research.* Vol. 81: 12- 21, 1973
- 18- Magnusson, TE. "Prevalence of Hypodontia and malformation of permanent teeth in Iceland" *Community Dent Oral Epidemiol.* Vol. 5: 173-178, 1977.
- 19- Al-Emran Suliman. "Prevalence of Hypodontia and developmental Malformation of Permanent Teeth in Saudi Arabian Schoolchildren" *British Journal of Orthodontics,* Vol.17: 115 - 118, 1990.
- 20- Salama FS. and Abd el- Megid FY., "Hypodontia of primary and permanent teeth in a sample of Saudi children" *Egypt Dent J.* Vol. 40: 625-632, 1994.
- 21- Mevlut Celikoglu, Hasan Kamak. Investigation of the maxillary lateral incisor agenesis and associated dental anomalies in an orthodontic patient population. *Med Oral Patol Oral Cir Bucal.* 2012 Nov 1;17 (6).
- 22- Yamasaki Y, Iwasaki T, Hayasaki H, Saitho I, Tokutomi J, Yawaka Y, et al. Frequency of congenitally missing permanent teeth in Japanese children. *Jpn J Pedodont* 2010;48:40—7.
- 23- Rehan Qamar, Annam Imtiaz, Muhammad Kamran. Maxillary lateral incisor agenesis: A review of literature. *POJ* 2012;4(2) 69-72.
- 24- Townsend GC, Hughes T, Luciano M, Backmann M, Brook A. Genetic and environmental influences on human dental variation: a critical evaluation of studies involving twins. *Arch Oral Biol* 2009;54S:S45—S51.
- 25- Gupta S. K, Saxena P, Jain S, Jain D. Prevalence and distribution of selected developmental dental anomalies in an Indian population. *Journal of Oral Science* 2011;53(2):231-238, 2011.
- 26- Baccetti T. A controlled study of associated dental anomalies. *Angle Orthod.* 1998;68:267-74
- 27- Park J. H, Kim D, Tai K. Congenitally missing maxillary lateral incisors. *dentalCEToday.com* 2011; May: Aesthetics.
- 28- Jane Wright, Jose A. Bosio, Jang-Ching Chou, and Shuying S. Jiang. Maxillary lateral incisor agenesis and its relationship to overall tooth size. *The journal of prosthetic dentistry.* 2016. Volume 115 Issue 2
- 29- Daniela Gamba Garib, Bárbara Maria Alencar, José Roberto Pereira Lauris, and Tiziano Baccetti. - Agenesis of maxillary lateral incisors and associated dental anomalies. *Am J Orthod Dentofacial Orthop.* 2010 Jun;137(6):732.