



## Peg Lateral- Whether to Extract or to Preserve?

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### Authors' contributions

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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Case Study

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### ABSTRACT

**Introduction:** Cosmetic desires have improved over time and currently, in the modern world, patients not only demand for an assertive smile but also express a desire to save their natural dentition in favour of extraction whenever and wherever possible. Peg lateral, an undersized, tapered, maxillary lateral incisor, not only often presents with periodontal complications but also down-regulates the self-esteem of the patients.

**Aim:** To restore a fully functional and esthetically pleasant peg lateral.

**Methodology:** A 17-year old female patient complained of mobility and bleeding from upper front teeth region during brushing since last 6 months. So it was decided to perform thorough scaling and root planing, root canal treatment #12, followed by open flap debridement with alloplastic bone graft placement #12. Surgical area was allowed to heal for 15 days and after that composite build-up of peg lateral was done to give it a proper shape.

**Results:** Uneventful healing was seen in terms of periodontal consideration. Mobility of teeth #12 was reduced after 4 weeks and there was no complaint of bleeding during brushing or mastication.

**Conclusion:** This case highlights the interdisciplinary approach of root canal treatment, open flap debridement, bone regeneration with composite build-up as an innovative approach providing better results with minimum patient apprehension and long term stability.

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**Keywords:** Peg lateral; open flap debridement; regeneration; bone grafts.

## 1. INTRODUCTION

Periodontitis has been stated as a chronic multifactorial inflammatory disease associated with a dysbiotic plaque biofilm and characterized by progressive destruction of the tooth supporting apparatus. [1] Although, Periodontitis is an infectious disease of gingival tissue, changes that occur in bone are crucial because the destruction of bone is responsible for tooth loss. [2] Normal height and density of alveolar bone are maintained by an equilibrium, regulated by local and systemic influences between bone formation & bone resorption, both bone height and bone density may be reduced and leads to bone defects. [3] Modern day periodontics aims at maintaining the health of teeth and their supporting structures with the main goal of controlling the infection and regenerating the lost supporting structures by means of either mechanical recontouring or by grafting techniques such as barrier membranes, bone replacement grafts, growth factors, tissue engineering or by various combination of these above materials.[4]

There are various causes of bone destruction and defects- 1. Caused by Extension of gingival inflammation. [5] Heijl et al. [6] able to convert a confined, naturally occurring chronic gingivitis into a progressive periodontitis in experimental animals by placing a silk ligature into the sulcus. This induced ulceration of sulcular epithelium, a shift of population of plasma cells in connective tissue to predominantly PMNs, and osteoclastic resorption of alveolar crest. Recurrence of this mechanism leading to bone loss. 2. Caused by Trauma from occlusion- Trauma from occlusion can produce bone destruction in the absence or presence of inflammation. In the absence of inflammation- -increased compression and tension, increased osteoclasts, increased bone resorption. When combined with inflammation, trauma from occlusion aggravates the bone destruction caused by the inflammation and causes bizarre bone patterns. [7] In case of constant force acting on the tooth, there will be (a) gradual increase in number and width of periodontal ligament fibres, (b) inflammatory changes are present in the ligament tissue, (c) active bone resorption occurs, and (d) the tooth displays signs of gradually increasing (progressive) mobility. 3. Caused by Local or Systemic disorders- various local and systemic factors may accelerate the pathogenesis of

periodontitis by altering the host response or by providing an environment conducive for the enhance proliferation of pathogenic microbes. [8]

## 2. CASE REPORT

A 17-year old female patient reported to the Department of Periodontology, Kothiwal Dental College and Research Centre 5 months back with chief complaint of mobility and bleeding from the gums. Bleeding was intermittent in nature, it aggravated during brushing and stops by its own within minutes.

There was no history of pain or discharge from that region. There was no relevant medical or dental history reported by the patient. There were no contributory family and habit history. Periodontal examination revealed good oral hygiene with minimal plaque and calculus deposits.

On extra-oral examination, the face appeared bilaterally symmetrical, with competent lips and the lymph nodes were not palpable.

On intra-oral examination revealed a clinically healthy gingiva with recession #12 (Class I, Cairo F et al. [9]. (Fig. 1) Deep pockets were found both on mesial (5mm), distal (8mm) and palatal (9mm) (Fig. 2). Hard tissue examination revealed that the tooth #12 was degree 2 mobile (Lindhe's classification of mobility).



**Fig. 1. Intra-oral status w.r.t #12**

The teeth #12 was non-vital (did not respond to electric pulp tester). Intra-oral peri-apical radiograph (IOPAR) (Fig. 3) revealed angular bone loss #12, peri-apical radiolucency #12.

The haematological investigation revealed that all the blood parameters were within the normal range. After complete clinical, radiological and haematological investigations and analysis the diagnosis was made as- Perio-Endo lesion w.r.t 12.

## 2.1 Treatment Procedure

After a successful phase I therapy comprising of thorough scaling and root planing, root canal treatment was done w.r.t #12. The surgical part comprised of- after achieving full anesthesia, crevicular incision was given from distal line angle of #11 to mesial line angle of #13 and a full thickness muco-periosteal flap was reflected preserving the papilla (Papilla preservation technique, Takei and Han, [10] (Fig. 4). All the granulation tissues were removed and the root surfaces were thoroughly planed. Alloplastic bone graft (Hydroxyapatite) was packed #12 (Fig. 5) and sutures were placed. Following surgery, the surgical site was covered with Periodontal Pak (Coe-Pak™, GC America INC., ALSIP, IL 60803 U.S.A). Post-surgery, mechanical oral hygiene maintenance was avoided for 1 week at the surgical site. Oral hygiene was maintained by using 0.2% Chlorhexidine mouthwash. Surgical area was allowed to heal for 15 days and after that composite build-up of peg lateral was done to give it a proper shape (Fig. 6). Uneventful healing was seen in terms of periodontal consideration. Mobility of teeth #12 was reduced after 4 weeks and there was no complaint of bleeding during brushing or mastication. Fig. 7 showing pre-operative and 3 months post-operative status of the patient.

## 3. DISCUSSIONS

The present clinical report demonstrates a conservative treatment approach to a perio-endo problem by root canal treatment, open flap debridement with papilla preservation flap technique, bone graft placement and ultimately build-up with composite resin.

So, a peg lateral is defined as “an undersized, tapered, maxillary lateral incisor” that may be associated with other dental anomalies, such as canine transposition and over retained deciduous teeth. [11] It may be associated with other dental anomalies, such as canine transposition and over retained deciduous teeth. Individuals with malformed lateral incisors often display a diastema in the midline region caused by the distal movement of the central incisor. There are many acquired and inherited developmental abnormalities that alter the size, shape and number of teeth peg-shaped laterals are also known as cone-shaped lateral incisor, which is a form of microdontia. [12] The reports of peg-shaped laterals in the maxilla is more prevalent than any other tooth as 1.8% of incidence is seen and 2.15% in the Turkish population, 4.3% in the Iranian population and 2.58% in the Indian population. [13]

There are different causes of formation of Peg Lateral incisors. 1. Genetics: there seems to be a genetic component to this condition. Some people with peg laterals have parents who had the same condition. 2. Developmental anomaly: Sometimes the teeth just do not form correctly. Some people are genetically missing the adult lateral incisors so the primary or baby lateral incisors remain in the position of the adult lateral incisors which looks abnormally small in an adult mouth. 3. The endocrine disturbances may affect the size/form of the crown of teeth in utero or in the first year of life. 4. Disturbances in morpho-differentiation may affect the form and size of the tooth without impairing the function of the tooth and the function of ameloblasts/odontoblasts, thus, the result may be a peg-shaped/malformed tooth with enamel and dentine that may be normal in structure. [14]



Fig. 2. Periodontal pockets #12



Fig. 3. Radiographical evaluation

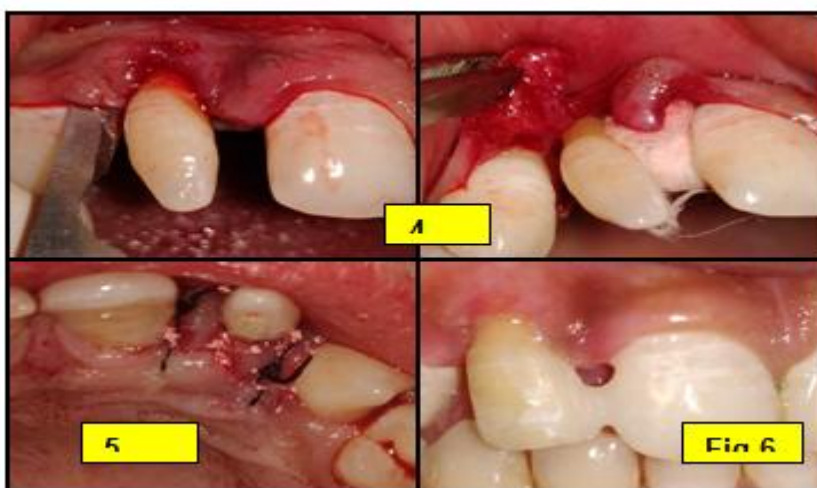


Fig. 4-6. Treatment procedure



Fig. 7. Pre-operative and 3 months post-operative status

Different treatment options for peg shaped laterals- 1. No treatment, patient not concerned 2. Orthodontic treatment first to align the teeth in the arch 3. Direct composite bonding onto peg laterals 4. Indirect composite placement 5. Bonded crowns 6. Porcelain bonded to metal

crowns Bello ; 7. Crown lengthening surgery to get better gingival heights then direct bonding. 8. Extractions and implant placement 9. Combinations of treatment in different sequences. [12]

The different restorative techniques available for anterior teeth anomalies like peg laterals include- 1. indirect ceramic crowns and veneers, 2. direct computer-aided design computer-aided manufacturing technique (Cerec), 3. direct prefabricated and individualized ceramic veneers (Lumineers, Cerinate), and 4. freehand technique with composite and newly direct composite veneers, especially the componeer. [15,12] The above-mentioned techniques represent changing trends of dental techniques over time and patient's requirements in modern era. Ceramic crowns or veneers or laminates are predictable and durable strategy for anterior teeth but require an excessive tooth reduction that may affect pulpal and periodontal health. [16] All the indirect techniques are time consuming, material intensive, painful, and combined with high costs. On the other hand there is direct composite veneers to camouflage the peg laterals. Benefits of direct composite bonding-1. [12] Preserve sound tooth structure (Inzgi 2005). 2. Can be placed directly onto the tooth surface 3. Can place as a type of direct composite veneer 4. It is a conservative restoration 5. Can easily change the emergence profile and angle 6. Can alter the shapes and length of the tooth 7. Can close diastemata 8. Can be used as an interim restoration in an adolescent and added to as the gingival heights matures 9. Can be repaired easily [17]. Can be polished and re-polished to a high shine 11. Long lasting 12. Not expensive treatment option. However, there are certain disadvantages of direct composite veneers- 1. Can chip and break 2. Can discolour of older composite used 3. Can develop marginal leakage Walls; 4. Can pick up stain easily in those patients who smoke and have poor oral hygiene 5. [12] Can have a deleterious effect on gingival health on patient with poor oral hygiene (Walls 1988).

#### 4. CONCLUSION

Treatment decision should consider a risk to benefit ratio for every case selection. Ultimately, priority is to save the natural teeth whenever indicated. With the boon of periodontal surgery and with the advent of new regenerative materials and concepts we, the periodontist can save the life of the tooth and maintain it in a healthy position, which would have been otherwise extracted.

#### DISCLAIMER

The products used for this research are commonly and predominantly use products in our

area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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Informed consent was taken from the patient and ethical approval has been collected and preserved by the authors.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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