

**Management of Turners Hypoplasia and Radix Entomolaris in a Pediatric Child.**

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**Abstract**

Trauma to primary dentition usually presents with problem in the permanent dentition called Turners hypoplasia. This case report describes the treatment of a 11 year-old adult male patient with discoloration of maxillary right central incisor and radix entomolaris. A sequential approach of endodontic treatment followed by stainless steel crown was given . To produce esthetic results, discoloration of maxillary right central incisor was treated with the pulp capping and composite restoration.

**Keywords:** Radix entomolaris, hypoplasia, turner's hypoplasia

**Introduction**

A complete knowledge of variations of pulpal anatomy from normal is essential for the successful outcome of endodontic treatment which otherwise will lead to failure of the root canal therapy (RCT). Barrett stated, " one of the most complex phases of anatomic study in the human system is that of pulp cavity morphology".<sup>1,2</sup> The most common variations among the mandibular first molars as documented by Carabelli (1844) are the presence of three roots known as radix entomolaris (RE), i.e., the presence of distolingual supernumerary root or mesiobuccal root which is known as radix paramolaris.<sup>3</sup> The frequency of 5%–30% among the mongoloids such as Chinese, Eskimos, and Native Americans and <5% in

white Caucasians, Africans, Eurasians, and Indian populations is reported in literature.<sup>4</sup>

**Case Discussion**

A male patient aged 11 years old reported to the Department of Pedodontics and Preventive Dentistry of ITS Dental College and Hospital with chief complaint of pain in the lower left and right back tooth region since 1 day. The patient also complained of discolouration of permanent upper right central incisor and had a history of trauma to primary right central incisor when he was 5 years old. On clinical examination there was a deep Class II distoocclusal caries irt 85(Figure 1) which was tender on percussion and a deep occlusal caries irt 36 which was also tender on percussion. Thermal and electric pulp test elicited a negative response. A pulpotomy followed by stainless steel crown was given irt 75 (Figure 2).



Figure 1: Occlusal View of upper lower arch



Figure 2: a) Diagnostic IOPAR irt 85 b) Pulpotomy followed by stainless steel crown irt 85

A radiolucency approximating pulp space with widening of periodontal ligament at apical third of the root was seen and an extra root was seen distolingually called as Radix entomolaris (RE) which was of Type III irt 36 (Figure 3a). A diagnosis of symptomatic apical periodontitis was made and RCT was recommended (Figure 3b).



Figure 3: (a) Diagnostic IOPAR irt 36 (b) Obturation radiograph (c) Radiograph of stainless steel crown irt 36

A root canal treatment procedure was initiated under local anesthesia by giving inferior alveolar nerve block (LIGNO 2% With 1:80000 adrenaline) was done. Access cavity was prepared, orifices were located using DG-16 an endodontic explorer (Dentsply, United Kingdom).

During the procedure, an extra orifice which was located toward distolingual part of pulpal floor indicating the presence of RE, which was confirmed by Type 2 radiographic image. Working length was determined with an apex locator. Radix root showed Type 2 configuration of the canal. Cleaning and shaping were performed with rotary Protaper files (Neoendo rotary) in crown down manner.

Apical preparation was done until size F2 Protaper file (master apical file) and canals were irrigated with 2.5% sodium hypochlorite, 0.2% w/v chlorhexidine gluconate

and 17% ethylenediaminetetraacetic acid during instrumentation and finally with normal saline. calcium hydroxide intracanal medicament was placed in first visit. The canals were dried with paper points, master cone protaper (Dentsply, Maillefer, Swiss made) and AH plus sealer was used as a canal sealer (Dentsply DeTrey GmbH, Germany). Post endodontic restoration was done with composite. As the age of the child was 11 years a stainless steel crown was luted (Figure 3 c) (Figure 4).

A radiograph was taken with respect to 11 to rule out pulpal involvement and thermal and electric pulp test showed that the tooth was vital. The right central incisor was diagnosed with Turner's hypoplasia was given a calcium hydroxide (Dycal) pulp capping followed by composite veneering irt 11 (Figure 6 b).



Figure 4: Lateral view a) Right b) Left



Figure 5: Radiograph irt 11

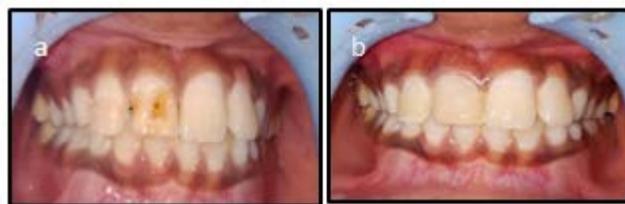


Figure 6: a) Turner's hypoplasia irt 11 b) Calcium hydroxide capping followed by composite buildup irt 11

## Discussion

Missing of an extracanal is a critical reason of endodontic failure, so having a proper knowledge of law of symmetry, law of orifice location, visualizing the dentinal map and canal bleeding point is important for a successful endodontic treatment.<sup>5</sup>

Carlsen and Alexanderson classified RE based on the location of its cervical part into four types where Type A is distally located cervical part with two normal distal root components, Type B as Type A; however, only one normal distal root component, Type C is Mesially located cervical part and Type AC is Central location between mesial and distal root components.<sup>6,7,8</sup>

De Moor *et al.* classified RE-based on the curvature in buccolingual orientation into three types where Type I refers to a straight root/root canal, Type II refers to an initially curved entrance which continues as a straight root/root canal and Type III refers to an initial curve in the coronal third of the root canal, and a second buccally oriented curve starting from the middle to apical third<sup>9</sup>

Wang *et al.* gave radiographic classification for RE where Type 1 presents the most identifiable radiographic image, Type 2 is when a large beam angulation is necessary mesially or distally for their identification and in Type 3 identification becomes extremely difficult because of the overlap of the adjacent distobuccal root.<sup>10</sup>

Manual preflaring is recommended to prevent instrument separation as RE exhibits the greatest degrees of curvature having relatively longer length and smaller radius of curvature.<sup>3</sup>

Turners hypoplasia usually affects one tooth and is called turners tooth. According to Silberman *et al* Type I hypoplasia is enamel discoloration due to hypoplasia, Type II hypoplasia abnormal coalescence, Type III some parts of enamel missing due to hypoplasia. In this case the patient showed Type IV hypoplasia which is the combination of all three types of enamel hypoplasia.<sup>11</sup>

## Conclusion

A sound knowledge about various aberrations and variations of root morphology and careful examination of pulpal floor and radiographs help in successful endodontic management of radix entomolaris. Also hypoplasia was seen in the case which is the result of disruption of enamel matrix formation which causes defect in quality and thickness of enamel.

## References

1. Segura-Egea JJ, Jiménez-Pinzón A, Ríos-Santos JV. Endodontic therapy in a 3-rooted mandibular first molar: Importance of a thorough radiographic examination. *J Can Dent Assoc* 2002;68:541-4.
2. Tu MG, Huang HL, Hsue SS, Hsu JT, Chen SY, Jou MJ, *et al.* Detection of permanent three-rooted mandibular first molars by cone-beam computed tomography imaging in Taiwanese individuals. *J Endod* 2009;35:503-7.
3. Karunakar P, Faizuddin U, Nagarjun M, Ranga Reddy M S. Endodontic management of radix entomolaris in second molar. *Contemp Clin Dent* 2018;9:137-9
4. Attam K, Nawal RR, Utneja S, Talwar S. Radix entomolaris in mandibular first molars in Indian population: A review and case reports. *Case Rep Dent* 2012;2012:595494.
5. Tabassum S, Khan FR. Failure of endodontic treatment: The usual suspects. *Eur J Dent.* 2016;10(1):144-147.
6. Carlsen O, Alexandersen V. Radix entomolaris: identification and morphology. *Scand J Dent Res* 1990;98:363-73.
7. Grossman LI. In: *Endodontic Practice*. 11<sup>th</sup> ed. California: Lea and Febiger; 1987. p. 145-78
8. Ingle JI, Bakland LK. Endodontic cavity preparation. In: *Endodontics*. 5<sup>th</sup> ed. B.C. Decker: Elsevier Inc; 2002. p. 405-510.

9. De Moor RJ, Deroose CA, Calberson FL. The radix entomolaris in mandibular first molars: an endodontic challenge. *Int Endod J* 2004;37:789-99
10. Wang Q, Yu G, Zhou XD, Peters OA, Zheng QH, Huang DM. Evaluation of x-ray projection angulation for successful radix entomolaris diagnosis in mandibular first molars *in vitro*. *J Endod* 2011;37:1063-8
11. Golpaygani VM, Mehrdad K, Mehrdad A, Ansari G. An evaluation of the rate of dental caries among hypoplastic and normal teeth: A case control study. *Res J Biol Sci* 2009;4: 537-41