

CASE REPORT

Minimally invasive management of Hypoplastic Young Permanent Teeth of various Etiologies: Case series

¹Dr.Harmesh Lal Chouhan, ²Dr.Ranu Rai, ³Dr. Arunima Guru, ⁴Dr. Vishal Sharma, ⁵Dr.Tabita Khumukcham, ⁶Dr. Shikha Dogra

¹Senior Lecturer, Department of Periodontics and Implantology, Swami Devi Dyal Hospital and Dental College, Panchkula, Haryana, India

^{2,5}Department of Pediatric and Preventive Dentistry, Faculty of Dental Sciences, SGT University, Gurgaon, Haryana, India

³Reader, Department of Pediatric and Preventive Dentistry, Desh Bhagat Dental College and Hospital, Mandi Gobindgarh, Punjab, India

⁴Senior Lecturer, ⁶Reader, Department of Pediatric and Preventive Dentistry, Faculty of Dental Sciences, SGT University, Gurgaon, Haryana, India

Correspondence:

Dr. Ranu Rai

Department of Pediatric and Preventive Dentistry, Faculty of Dental Sciences, SGT University, Gurgaon, Haryana, India

Email: ranu.rai523@gmail.com

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ABSTRACT

Presence of hypoplastic teeth on erupted permanent dentition in young children poses a psychological trauma to patient as well as to parents also where management of these defects in non-invasive manner is a real challenge to dentist also as per reported clinical picture. In this case series we have shown four clinical cases we have opted conservative approach for management of hypoplastic defects in young permanent teeth based on present clinical picture of patient's chief complaint aesthetically and functionally in minimally invasive manner.

Keywords: Turner's hypoplasia, Infection, Enamel hypoplasia

INTRODUCTION

Hypoplastic teeth of various aetiologies is clinical depiction of quantitatively thin enamel reduced in its thickness histomorphologically.¹Post eruptive enamel breakdown with caries and loss of tooth structure can lead to pain /sensitivity with aesthetic challenges.²

These cases should be treated following strict protocols of clinical picture by Pediatric dentist where only emphasis radiographic assessment by general dentist may pose child for invasive procedures of endodontic and esthetic interventions which may not be indicated for mild defects or young permanent teeth with incomplete root formation as per chronological age and dental age assessment.³These hypoplastic defects may have pulpal involvement with caries progression or tooth fracture due to weak tooth margins or inappropriate root formation may further complicate the prognosis.⁴

Therefore this case series of four clinical cases, we have shown management of Hypoplastic young permanent teeth with interim interventions in the form of cast metal or stainless-steel crowns to prevent further disruption or caries progression in posterior teeth and esthetic composite restoration in permanent anterior teeth.

CASE SERIES**CASE 1**

A 10 year old boy came to Pediatric dental opd of private clinic with his mother presented with chief complaint of decayed yellowish upper left back tooth which has mild sensitivity to beverages. There was no relevant history of any medical conditions or allergies for the child. The dental history showed no dental trauma but patient had retained decayed predecessor deciduous tooth (64) which was left untreated and later on shed off by its own few years back.

Clinical examination revealed mixed dentition period with Turner's Hypoplasia and post eruptive enamel breakdown and occlusal caries w.r.t 24 (Figure 1(a)) and decayed 65 with grade 1 mobility. Intraoral periapical radiograph showed decayed 24, with caries approaching close to the pulp and incomplete root formation w.r.t 24 (Figure 1(b)), retained 65,63.

As there was no history of intermittent or continuous pain, minimally invasive treatment approach with indirect pulp capping (IPC) was opted (with Dycal base and GIC restoration) after caries excavation and removing hypoplastic tooth areas. 63 and 65 were extracted. After 2 weeks patient was recalled (Figure 1(c)). if no pain and sensitivity issues after IPC. As restorations have poor retention in hypoplastic teeth, therefore cast metal crown was fabricated to avoid further risk of restoration dislodgement and hypoplastic tooth breakage (Figure 1(d)). Written consent was obtained from patient for being in follow up to analyse any sign of caries progression or patient reported symptoms.

Figure 1(a) clinical photograph w.r.t. 24



Figure 1(b) Intraoralperiapical radiograph w.r.t 24



Figure 1(c) Post operative photograph w.r.t 24



Figure 1(d) Postoperatively Cast metal crown w.r.t 24**CASE 2**

A 5.5 year-old boy came in dental OPD at private clinic with chief complaint of brownish discoloration of upper right front tooth and wants esthetic restoration for the same. Clinical examination revealed Hypoplasia w.r.t 11 (Figure 2(a)). Patient's parent gave history of trauma to deciduous predecessor tooth at 2.5 years of patient's age which was left untreated and later on shed off by its own. As per clinical features and history, 11 was Diagnosed as Turner's Tooth . An intraoral Periapical radiograph (Figure 2(b)) revealed incomplete root formation w.r.t 11 with thin walls. As patient had no sensitivity issues and pain w.r.t 11, conservative treatment approach was opted. Hypoplastic tooth areas (where soft caries were present) were removed with hand excavation and tooth conditioner was applied. Base layer of Glass ionomer restoration was place followed by etching and bonding with composite restoration (Figure 2(c)). Patient was instructed not to eat or bite and be regular in follow-up visits to report in case of restoration dislodgement and if any sign/ symptoms of pain and sensitivity. In follow-up visit patient will be recalled for extraction of 61.

Figure 2(a) Clinical photograph w.r.t 11 (Turner's hypoplasia)**Figure 2(b) Intraoral Periapical Radiograph w.r.t 11****Figure 2(c) Post operative photograph 11**

CASE 3

A 9 year old female patient came to private dental opd with the chief complaint of dislodged GIC filling material after few months of restorative procedures done right lower back tooth region w.r.t 46 (Figure 3(a)). Clinical examination revealed, dislodged restoration w.r.t 46 with left over GIC restoration where hypoplastic enamel margins w.r.t buccal groove were evident. Patient had cloudy opacities w.r.t molars and Incisors giving Diagnosis of Molar Incisor Hypoplasia.

As patient had no pain or sensitivity issues, after restoring the tooth with composite restoration (following etching and bonding of previous GIC restoration), full coverage Cast metal crown was fabricated to prevent further tooth loss or caries development in hypoplastic areas as intermittent treatment approach (Figure 3(b)). Topical fluoride varnish (Duraphat, Colgate Oral Care, Sydney, Australia) was applied on all hypo mineralization spots.

Figure 3(a) Preoperative photograph w.r.t 46**Figure 3(b) Post operative photograph w.r.t 46****DISCUSSION**

Various etiologies of hypoplasia are present like Molar incisor hypo mineralization (MIH), dental fluorosis, post orthodontic decalcifications, trauma and infection to primary tooth, and it can be of systemic origin. Enamel hypoplasia has also been reported in other pediatric disorders in which hypocalcemia is a major sign (for example, vitamin D deficiency, prematurity, and neonatal tetany).⁵

Other than MIH, Turner's hypoplasia usually affects only 1 tooth in the mouth and it is referred to as a Turner's tooth. If Turner's hypoplasia is found on canine or a premolar, it is mostly because of presence of infection, decayed primary tooth and inflamed tissues around the root of the tooth affected the development of the permanent tooth (Case 1). But if it is in anterior region of mouth, most likely it is because of the traumatic injury to a primary tooth. Usually, a maxillary central incisor is the traumatized tooth, and is pushed into the developing tooth underneath it and affects the formation of enamel (case-2).⁶ Ribeiro *et al* reported that traumatic injury is the major cause of discolorations of the enamel (46.08%) i.e. Turner's Hypoplasia and is the most prevalent sequelae of traumatic injury in permanent

dentition. Where in Molar incisor hypo mineralization (MIH) there are many underlying etiological factors and hypoplastic areas are confined to Permanent molars and incisors.⁷

Several non-invasive and minimally invasive procedures have been proposed as preventive measures against caries in hypomineralized molars. Singh SK et al. (2021) reported that Lithium disilicate, Zirconia and full cast metal crowns showed success in rehabilitation of First permanent molars with severe MIH over 24 months of follow up where Bandeira Lopes L et al. (2021) reported that treatment of MIH affected molars with SS Crown and cast metal crown.⁸⁻¹⁰

According to Singh et al (2021); the drawback associated with the atypical restoration of a severely affected hypomineralized tooth is the repeated breakage of its cavosurface margins, thus required frequent replacements.⁸ Adhesion of the restorative material to Hypomineralized Enamel may occur if opaque enamel that appears clinically sound is left during cavity preparation. This may later result in disintegration of the restoration and involvement of even a single surface may warrant replacement of the entire restoration.¹¹

Further Somani C et al (2022) reported that use of resin-based fissure sealants, preformed metal crowns, direct composite resin restorations and laboratory-made restorations can be recommended for MIH-affected molars as shown in Case-2 in this case series and as per reported literature so far.¹²

CONCLUSION

Lack of documented oral health policy and planned oral health check-ups in various times schedule in India is a major constraint lead to child neglect for the early management of various enamel defects other than dental caries as shown in this case report.

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