

Enamel Hypoplasia Enhancing Esthetics with Direct Composite Veneering Using IPS Empress Direct - A Case Report

Dr. Anil. K. Tomer¹, Dr. Nitika Verma², Dr. Anila Krishna Saxena³, Dr. Hysum Mushtaq⁴, Dr. Artika Gupta⁵,
Dr. Akankshita Behera⁶, Dr. Nitish Mittal⁷

¹Professor and Head, Divya Jyoti College of Dental Sciences and Research, Modinagar

²Senior Lecturer, Divya Jyoti College of Dental Sciences and Research, Modinagar

^{3,4,5,6,7} Postgraduate students, Divya Jyoti College of Dental Sciences and Research, Modinagar

Corresponding Author: Dr. Anila Krishna Saxena, Postgraduate student, Divya Jyoti College of Dental Sciences and Research, Modinagar

Type of Publication: Case report

Conflicts of Interest: Nil

Abstract

Enamel hypoplasia affects the hard tissues of the teeth. It occurs due to disturbances during the formation of the tooth. It often leads to unesthetic appearance due to pitting and yellowish or brownish appearance of the teeth. The tooth structure becomes weak and subject to chipping. Restoration of esthetics in such cases is a challenge. Direct composite veneering allows the esthetic makeover in such cases. This article presents a case of direct composite veneering done with IPS Empress Direct which is a novel nanohybrid composite that has shown excellent results.

Keywords: Enamel hypoplasia, direct composite veneering, IPS Empress Direct

Introduction:

Enamel hypoplasia is a disorder that affects the hard tissues of the teeth. It is caused due to disturbance in the formative stage of development of ameloblasts that leads to defects in the formed enamel. The clinical presentation of this anomaly shows a wide range of variety. The teeth may show yellow to brown discolouration that is often

accompanied by pitting of the surface of enamel. The tooth structure becomes brittle and is prone to chipping. Enamel hypoplasia can be a result of trauma or pre-existing long standing infection in deciduous teeth. It can show mild, moderate or severe presentation in terms of severity. The etiology can range from local to systemic causes. It can occur due to nutritional deficiencies, exanthematous diseases, local infection or trauma, hypocalcemia, high fluoride content and other causes. Hypoplasia due to fluoride ingestion presents as mottled enamel which is seen in people residing in areas with supply of high fluoride content in water.

Hypoplasia renders an unsightly appearance to the teeth. In today's era where esthetics is the prime concern of an individual, such disorders lower confidence and self esteem. A beautiful smile exudes confidence. The demand for dental esthetics has opened up an entire new dimension of smile designing. Designing a beautiful smile has been made possible with the aid of techniques like direct or indirect veneers, laminates, digital smile designing and others. This case report highlights the

importance of esthetic make over in a patient with hypoplastic teeth due to high fluoride content. The advent of many new materials with nanoparticles has enabled the clinician to achieve a natural appearance. Nanohybrid composites are now available that allow better polishing and finishing of the composite due to their unique composition.

Case Report

A 20 year old female patient reported to the Department of Conservative Dentistry and Endodontics with the chief complaint of yellowish stains and uneven appearance of her teeth. The patient wished for an esthetic treatment as it hampered her smile and lowered her confidence. On clinical examination, it was observed that the labial surface of her teeth showed pits and hypoplastic appearance (Figure 1). There were marked yellow spots present on the labial surface of all teeth specially in relation to maxillary central incisors. The enamel was brittle and subject to chipping on its own. The patient reported that many people residing in her area faced the same problem. After careful evaluation, it was diagnosed to be a case of enamel hypoplasia due to high fluoride content. Direct composite veneers were advised and the treatment plan was explained to the patient.



Figure 1: Preoperative view

Veneer preparation was done on the labial surface (Figure 2) of all the teeth extending from second premolar on right side to the second premolar on left side using veneer

preparation bur kit. The preparation margins were made such that the preparation extended onto the lingual surface mesially and distally. The surfaces were then etched using 37% phosphoric acid. The etchant was washed after 15 seconds and the surfaces were gently air dried.



Figure 2: Veneer preparation

After etching, enamel showed a frosty white appearance. The bonding agent was then applied and cured for 40 seconds. Subsequently, a nanohybrid composite (IPS Empress Direct) was adapted over the labial surfaces. Shade selection was done before isolation to avoid colour change. The composite was contoured in a way that imitated the natural anatomy of the tooth in the best possible manner. Finishing and polishing of the composite was done with composite finishing and polishing kit (Shofu™). The same procedure was carried out in both the upper and lower arches. The procedure was carried over two appointments. The final results showed a good esthetic makeover (Figure 3).



Figure 3: Post operative image after direct composite veneering

Follow up was done over 1 month (Figure 4 and 5). The follow up showed good results. The esthetics showed good results.



Figure 4: Follow up at 1 month

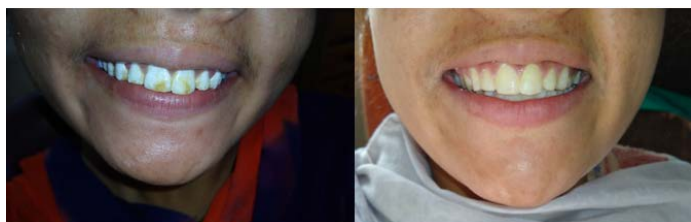


Figure 5: Images before and one month subsequent to direct composite veneering

Discussion

Hypoplastic defects of enamel are a frequent finding in the primary as well as permanent teeth. There are many factors responsible for hypoplasia of enamel. Excess fluoride in drinking water can also cause hypoplasia called dental fluorosis, leading to enamel with lower mineral content and increased porosity. The importance of restoring esthetics as well as function in the growing years cannot be over emphasized.^[1]

The earliest manifestation of dental fluorosis is an increase in enamel porosity along the striae of Retzius. Clinically, the porosity in the subsurface of enamel reflects as opacity of the enamel. With an increased exposure to fluoride during tooth formation, the enamel exhibits an increased porosity in the tooth surface along the entire tooth surface. Very severely hypo mineralized enamel will be very fragile and hence as soon as they

erupt into oral cavity they undergo surface damage as a result of mastication, attrition and abrasion.^[2]

Re-establishing a patient's lost dental esthetic appearance is one of the most important topics for contemporary dentistry. New treatment materials and methods have been coming on the scene, day by day, in order to achieve such an aim. Most dentists prefer more conservative and aesthetic approaches, such as direct and indirect laminate veneer restorations, instead of full-ceramic crowns for anteriors where aesthetics is really important.^[3]

Veneers with direct resins are one of the common treatment options for clinical applications following the developments in adhesive and restorative dentistry in recent years. These restorations are applied on prepared tooth surfaces or even without any preparation, with an adhesive agent and a composite resin material directly in a single visit in the dental clinic. If done properly, the aesthetic outcomes of direct composite veneers are very satisfactory in addition to superior optical and physical properties.^[4]

Direct composite veneers have indications and contraindications like almost all other dental procedures which can be listed as proper occlusion, lateral and protrusive movements, correct shade analysis, effective isolation, good adhesion, effective polishing, eliminating oxygen inhibition layer, frequent recalls, high-quality materials and clinical experience. These are pieces of a whole and if one fails, then the whole restoration fails. If the direct composite veneers are carried out by observing the rules, the success rate will definitely increase.^[4]

Creating a beautiful smile is more important than restoring a single tooth back to its proper form. One must take into account the entire aesthetic zone, along with the mechanics of restoring the teeth to proper form and function. To make this effort even more challenging, the

clinician is in full control and completely accountable for making the direct composite resin restorations from which the smile is created.^[5]

Conclusion

Smile designing has formed an important aspect of esthetic dentistry. Direct composite veneers remain an easily approachable treatment modality for esthetic makeovers. The innovation of nanohybrid composites have made it possible to achieve better surface finish. Further research is needed to find more patient friendly options for esthetic restoration of teeth.

References

1. Meenu M, Sharnpal S. Clinical management of hypoplastic defects of enamel-a report of five cases. *Journal of Pierre Fauchard Academy (India Section)*. 2009 Dec 1;23(4):155-9.
2. Sherwood IA. Fluorosis varied treatment options. *Journal of conservative dentistry: JCD*. 2010 Jan;13(1):47.
3. Korkut B, Yanıkoğlu F, Günday M. Direct composite laminate veneers: three case reports. *Journal of dental research, dental clinics, dental prospects*. 2013;7(2):105.
4. Korkut B. Smile makeover with direct composite veneers: A two-year follow-up report. *Journal of dental research, dental clinics, dental prospects*. 2018;12(2):146.
5. Koczarski M. Smile makeover utilizing direct composite resin veneers. *Dentistry today*. 2008 Dec;27(12):76-8.