**Case Report**

**Conservative cosmetic treatment of Amelogenesis Imperfecta**

Swetha Bollineni, P Prashanthi, P Karunakar, Raji V Solomon

**ABSTRACT**

Amelogenesis Imperfecta (AI) is a complex group of hereditary enamel defects, existing independently of any related systemic disorders.**1,2** Dental enamel disturbance that occurs during the stages of enamel formation will impact the quality and/or quantity of the enamel formed, depend ing on phase of amelogenesis.**3** This enamel anomaly affects both the primary and permanent dentitions. Amelogenesis Imperfecta is a rare enamel mineralisation defect, described by Spokes in 1980 as ‘hereditary brown teeth’.**4** Amelogenesis Imperfecta cases necessitate careful diagnoses to improve function and esthetics because they present with a complex set of problems, such as decreased occlusal vertical height, deep bite, rampant caries attributable to plaque accumulation, abnormalities in dental eruption, tooth sensitivity, and psychosocial problems related to poor esthetics.**5-7**

As Amelogenesis Imperfecta is a genetic disorder, preventive treatment is not possible; therefore, the treatment is focused on esthetic and functional rehabilitation.**8-10** Treatment depends on the severity of the problem and the need for esthetic enhancement, ranging from simple composite resin restorations to complete crown restorations in cases involving greater loss of tooth structure or loss of vertical dimension.**11** The use of adhesive restorations has great popularity owing to many improvements such as excellent esthetics, conservative approach and improved wear and mechanical properties. Minimal invasive conservative techniques obtain desirable esthetics.**12** The teeth and supporting structures were preserved and a harmonious relationship was maintained between the occlusion and temporomandibular articulation.**13** The use of laminate veneers and composite resins has matured to a predictable treatment methods in terms of longevity, periodontal status and patient satisfaction.**14-16** This paper reports the functional and esthetic rehabilitation of a 22-year-old female patient with AI with direct cosmetic composite resin restorations with two-year follow-up.

**Case Report**

A 22-year-old female patient reported to the Department of Conservative Dentistry and Endodontics, Panineeya Mahavidyalaya Institute of Dental Sciences and Research Centre, Hyderabad, India, with a chief complaint of poor esthetics from the presence of irregularities and discoloration of upper and lower front teeth. She had a related family history. Intra oral examination revealed that all her upper and lower anterior teeth were yellow brown in colour with an anatomical variation. This includes macro sized upper central incisors of the central group of incisors (Figure 1.2). Diastema was noted in the lower anterior region (Figure 1.2). Incisal edges of both upper and lower anterior teeth were chipped off and irregular on palpation. Posterior teeth had white opaque frosted appearance with intact enamel. All teeth had surface roughness with enamel pitting. Examination of the periodontium revealed unhealthy gingival condition with presence of generalized marginal papillary gingivitis, calculus deposition and unsatisfactory oral hygiene. She was displeased with the appearance of teeth which had an adverse impact on her self image. Once the patient had expressed her treatment expectations a detailed clinical examination, photographs and stone casts were prepared for initial documentation. Based on clinical examination and diagnostic tools the existing problems and major elements of the treatment were explained to the patient. The treatment plan included oral prophylaxis and re-etching by re-adhesive bonding procedures for anterior teeth and written consent was taken.

The initial Phase consists of deep sub gingival scaling with proper oral hygiene instructions. Patient was recalled after a two weeks and assessed for improvement in gingival health. The inflammation was subsided with no bleeding on probing. During the second Phase suitable composite resin colour was selected using the shade guides. Maxillary and mandibular anterior teeth were prepared for direct composite resin lamine nate veneer restorations (Figure 3). The teeth were prepared and blackened enamel that may negatively affect the final esthetic appearance of the rehabilitation were removed. For this purpose 0.5 mm facial and proximal reduction was performed. Teeth were etched with the phosphoric acid for prolonged time than normal and rinsed for 30sec and dried with absorbent paper. A two component adhesive system was applied on the prepared tooth surface and was light cured for 20 sec with a blue phase LED light source. The direct veneer restorations were per formed with Tetric N Ceram i.e., radiopaque nano-hybrid composite. A combination of incremental and stratified layering technique was used to fill the teeth. The composite was added in increments of 1.5-2mm and was light cured after each layer according to manufacturer’s instructions (Figure 4). Finishing and polishing was accomplished with ultrafine diamond burs and composite rubber polishing burs. Completed restoration of anterior teeth enhanced the esthetics and smile of the patient (Figure 5.6).

**Discussion**

The term esthetics is extremely subjective in the field of den tistry. During the evaluation of esthetically compromised teeth, dentists encounter adverse clinical conditions of great complexity, marked by the invasion of the mineralized structures at depth. Amelogenesis imperfecta of anterior teeth results in poor psychologic image in young patients. This makes the problem urgent from psycho-social point of view. Most defects in enamel are cosmetic rather than functional dental problems.**17** The main clinical characteristic is extensive loss of tooth tissue, carious lesions, tooth sensitivity and poor esthetics. In amelogenesis imperfecta the enamel is insufficiently mineralized, extremely soft and may show a chalky, dull color or a cheesy consistency with the possibility of a rapid break down. These teeth have an abnormal shape when they erupt. Loss of enamel from wear and staining tends to increase with age. Interestingly, the enamel at the cervical portion is frequently better calcified than that on the rest of the crown.**18,19**

A variety of treatment approaches have been proposed to address the esthetic concern and functional rehabilitation of defective enamel in amelogenesis imperfecta patients. The treatment plan is related to factors such as age, socio-economic status, type and severity of the defect and intraoral situation at the time the treatment.**20** Attempts should be made to achieve esthetics while keeping the loss of tooth substance to a minimum.**11** Direct veneers have been increasingly used in clinical den tistry to restore anterior teeth that have alterations in color or anatomical shape.**21** Direct veneering with composite resin is a conservative and economical option that provides good and long lasting esthetics and functional restoration.**22** In order to achieve good bonding strength of defectve enamel, extend ed etching periods have been recommended for conventional adhesive systems.**23**

Composite resins are challenging ceramics because they offer excellent aesthetic performance and acceptable longevity, with a much lower cost than equivalent porcelain restorations for the treatment of both anterior and posterior teeth.**24** The treatment of the tooth volume utilizing composite veneers not only re-establish the smile but also allows the biomimetic recovery of the crowns. In cases which necessitate correction or alteration in tooth shape or position and changes in morphol ogy composite veneers display promising esthetic results.**25**

The clinician must consider that a dry, clean working field and proper use of bonding protocol is the key to achieve success in adhesive dentistry.**26-28**

**Conclusion**

In conclusion, the use of direct laminate veneer technique with adhesive bonding system and composite resin materials benefits, correction of tooth shapes and dimensions that result in improved tooth proportions with an aesthetically pleasing appearance.

**Authors Affiliations**

1. Swetha Bollineni, MDS, Senior Lecturer, Department of Conservative Dentistry and Endodontics, Pinnamaneni Siddhartha Institute of Dental Sciences, Vijayawada, Andhra Pradesh, India.
2. P Prashanthi, MDS, Department of Conservative Dentistry and Endodontics, Pinnamaneni Siddhartha Institute of Dental Sciences, Vijayawada, Andhra Pradesh, India. 3. Karunakar P, MDS, Professor and Head, Department of Conservative Dentistry and Endodontics, Panineeya Institute of Dental Sciences and Research Centre, Hyderabad, Andhra Pradesh, India. 4. Raji V Solomon, MDS, Professor, Department of Conservative Dentistry and Endodontics, Panineeya Institute of Dental Sciences and Research Centre, Hyderabad, Andhra Pradesh, India.

**References**


**Figure 2.2** Preoperative, Figure 3. Teeth prepared for composite restora tion, Figure 4. Composite restoration done, Figure 5,6. Post op era tive.


**How cite this article**

**Address for Correspondence**
Dr. Swetha Bollineni, MDS, Senior Lecturer, Department of Conservative Dentistry and Endodontics, Pinnamaneni Siddhartha Institute of Dental Sciences, Vijayawada, Andhra Pradesh, India Email: drswethakotagiri@gmail.com

**Source of Support:** Nil

**Conflict of Interest:** None Declared