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RESEARCH ARTICLE

CORRECTION OF MALALIGNMENT AND GINGIVAL ZENITH LEVEL IN ANTERIOR ESTHETIC ZONE USING IPS E-MAX ALL CERAMIC SYSTEM- A CASE REPORT

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ABSTRACT

Rehabilitation in the anterior esthetic zone has always posed a challenge to the "ABLE" practitioner. The position of the anterior teeth is crucial in creating a life-like prosthesis. Dental appearance is extremely important because it affects the self-esteem of the patient, especially for a socially active and young patient. With the evolution and advancement in the field of dental ceramics, all-ceramic systems provide a choice between various materials which give performance in terms of both esthetics and function. However, it's not just the choice of material based of its chemical constituents but there are a lot of factors that influence the final esthetic outcome. This is a case report of esthetic rehabilitation in the anterior esthetic zone using IPS e.max ceramic system along correction of gingival zenith level using laser surgery to obtain a striking balance between red and white esthetics.

INTRODUCTION

Patients today are highly informed and aware of the upcoming treatment modalities. The demand for highly esthetic and pleasing restoration has been growing over the years. Also time being one of the crucial factors, it is important for us as dentist to come up with treatment options that not only fulfill the needs of function and esthetics but are easy and less time consuming (Vishwasanjum, 2012). A clinical case report which involves rehabilitation of maxillary anterior esthetic zone with IPS e.max ceramic system has been discussed below:

Case report

A 30year old male patient with no relevant medical history reported to T.P.C.T's Terna Dental College, Navi Mumbai

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with a concern regarding malalignment in maxillary anterior region and desired correction of the same. Patient did not give any relevant past dental history. On intra-oral examination, it was observed that there was rotation and crowding seen in between 11, 12, 21 and 22 (Figure: 1). Treatment options like orthodontics were suggested to the patient. However, he did not want to undergo any orthodontic treatment due to time required for the treatment and desired immediate correction of malalignment with the help of prosthetic treatment options. Therefore considering the desires of the patient, it was decided to plan lithium di-silicate crowns for 11, 12, 21 and 22.

Treatment Procedure: The treatment procedure was divided into following phases

Phase 1: Intentional endodontic treatment of maxillary incisors.

Phase 2: Crown preparation and correction of gingival zenith level with the help of Laser Surgery.

Phase 3: Modification of crown preparation followed by final restoration.

A Coe pack (GC Crop- Tokyo Japan) was given after surgery and the site was subjected to a healing period of 7 days.



Figure 1. Pre-operative Intra-Oral View



Figure 3. Marking the Correct Gingival

Phase 1

The treatment protocol was finalized with the patient and it was decided to do intentional endodontic therapy of 11, 12, 21 and 22 as correction of rotation during crown preparation would lead to pulpal exposure. Thus 11, 12, 21 and 22 were endodontically treated. Impressions were made with irreversible hydrocolloid material (Zhermack- Tropicalgin). A facebow record was obtained and the casts were mounted on a semi-adjustable articulator. Diagnostic wax-up was then done on the cast using the guides of golden proportion. While doing diagnostic wax up it was realized that only correction of rotation would not help us to achieve desired esthetics but correction of gingival zenith level was also equally important. However, to guide the periodontist it was necessary to do the crown preparation of incisors (Figure: 2). Also as the patient has rotated and malaligned maxillary incisors; it was necessary to establish the anterior guidance in the diagnostic wax up.



Figure 4. Laser Correction of Gingival Zenith Level



Figure 2. Irregular gingival Zenith Level

Phase 2

Crown preparation of maxillary incisors was done following biomechanical principles. This helped us to evaluate the gingival finish lines and also guide the periodontist to desired level of zenith level (Figure: 3). Thus laser surgery was planned to correct the gingival zenith level (GZL) (Figure: 4). The GZL of central incisors was coronally positioned the same as canines and about a 1mm distal to the long axis of the tooth. The GZL of the lateral incisors was 1mm incisal to the GZL of the central incisors and along the long axis of the tooth (Stephen et al., 2009; Chicheg, 1994; Nathan blitz, 1997).

Phase 3

Once the healing of the soft tissue was satisfactory, crown preparation of maxillary incisors was modified. Gingival retraction was done 000chord (Ultrapack- Ultradent) and 25%aluminium chloride (Ultradent- Viscostat). Elastomeric impressions were made using putty and light body wash by two-step double mix technique (Denstply-Aquasil). Provisionalization was done using the putty index of the diagnostic wax-up by direct technique with the help of Bis-acrylic composite material (3M ESPE- Protemp 4).



Figure 5. Anterior Guidance Duplicated in Final Restoration

Shade selection was done using 3D master Vitapan shade guide. For final restoration the material of choice was lithium disilicate (IPS e. max- Germany) (Frank spear, 2008). Emax crowns were fabricated. The fit, size, shade and shape of the crowns were evaluated in the bisque trail. The anterior guidance created was duplicated in the final restoration with the help of customized guide table (Figure: 5). The golden proportion guide used for diagnostic wax-up was also used for fabrication of final restoration (Figure: 7). Finally glazed crowns were luted using translucent dual cure resin cement (Dentsply-Calibra) (Figure: 6). Patient was then educated about the oral hygiene and maintenance therapy. A marked difference was appreciated in the patient's pre and post treatment smile (Figures: 8, 9).



Figure 6. Final Cementation



Figure 7. Golden Proportion Duplicated in Final Restoration



Figure 8. Pre-treatment Extra-Oral



Figure 9. Post- treatment Intra-Oral

DISCUSSION

Considering the clinical status and demands of the patient it was necessary for us to divide the treatment procedure into phases: (1) Intentional endodontic therapy and crown preparation of incisors, (2) Correction of gingival zenith level and (3) Modification of crown preparation followed by final restoration. Here in this case, the need for intentional endodontic therapy arises from the fact that correction of alignment could have led to pulpal exposure. Another factor which was considered in anterior esthetic rehabilitation of this case was golden proportion (Edwin I. Levin, 1978). When the ratio between the teeth is same as the ratio of golden proportion pleasing esthetic outcome can be obtained. Also it is important to understand that a perfect smile can be created only when there is a striking balance between the red and white esthetics. This led to the need for correction of GZL. All ceramic fixed dental prosthesis IPS e.max crowns were material of choice as it would give a highly esthetic outcome which was the primary demand of the patient. Amongst various materials available in the market lithium disilicates still has been the master when esthetics has to be achieved par excellence. However, it is essential to understand that it was not just the choice of material that gave us the desired result. It was the understanding of all the contributory factors together and their influence helped us to achieve clinical success and patient satisfaction.

Conclusion

Appropriate diagnosis and judicious treatment planning is imperative in anterior esthetic rehabilitation. With increasing esthetic awareness, treatment modalities which are quicker and predictable where in functional and esthetic outcome can be achieved becomes the need of the hour.

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