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Case Study

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ENHANCING ESTHETICS WITH METAL -FREE PROSTHESIS - CASE REPORTS

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ABSTRACT

Metal free restorations are widely and successfully used for a fixed dental prosthesis. This veneering material is becoming popular among both dental practitioners as well as patients because of its excellent properties such as biocompatibility, high strength, and superior esthetics. This case report series describes the esthetic enhancement by replacing missing anterior with ridge defect and posterior teeth with zirconia- based all- ceramic prosthesis.

KEYWORDS: All-ceramic restoration, esthetics, zirconia.

INTRODUCTION

Rehabilitation of teeth in esthetic zone becomes a major challenge to prosthodontists. Metal-ceramic restorations have been extensively used as a restoration of choice. But due to problems such as the grayish discoloration at the margins of the restorations, chipping of the porcelain, allergy to the metal and difficulty in shade matching due to the opaque metal beneath[1] all-ceramic systems has become popular alternative because of its reliability and success, considering its dynamic properties to simulate the optical properties of teeth in relation to color, surface texture, and translucency; low biofilm adherence[2] wear resistance; biocompatibility and fracture resistance.[3] Some of the all ceramic materials include alumina, lithium disilicate and zirconia. Zirconia has flexural strength of approximately 900-1100 MPa[4] and resists fracture during function or parafunction, at both anterior and posterior sites.

This case report series describes prosthodontic rehabilitation of patients with missing anterior teeth with ridge defect and posterior teeth with failed orthodontic treatment using zirconia based all-ceramic bridge restoration.

CASE REPORTS

Case 1. A 18 year old female patient reported to the Department of Prosthodontics with the chief complaint of missing teeth in upper front tooth region since last 6 months. On intra oral examination there was partially edentulous space seen with respect to 11,21 and a ridge defect was seen in maxillary anterior region.(Sieberts Class 1 defect) (Fig1 (a).

Fig 1(a) Pre operative photograph.

The patient gave a history of trauma 6 months back. Radiograph revealed root canal treatment with 12 and 22. Thus the treatment plan was to replace the missing 11, 21 and with zirconia fixed partial denture along with gingival porcelain to cover the ridge defect and restore the esthetics.

Clinical procedure

Diagnostic impressions were made and poured in dental stone. Then, mock preparation was done for 12 and 22 and wax up was done over it. The provisional restorations were fabricated using indirect method with tooth colored acrylic resin (DPI) on the mock up diagnostic cast. Tooth preparation was done for 12 and 22 to receive all ceramic crowns (Fig1) (b).

Fig 1 (b) Tooth preparation irt 12,22.

The equigingival shoulder finish line was prepared for 12 and 22. The overall reduction of 2 mm and Incisally, 1.5–2 mm clearance was made so as to provide esthetic prosthesis. Gingival retraction was done with the retraction cord. The final impression was made in elastomeric impression material with doublemix technique. The stock metal tray was loaded with putty impression material, and impression was made with retraction cord in place and the thermoplastic sheet over the teeth. Once set thermoplastic sheet was removed from the impression. The light body impression material (Aquasil), was manipulated as per the manufacturer's instruction. Impression was loaded with light body impression material. Retraction cord was removed and light body impression material was syringed on the margins of the prepared tooth and the impression was made. Shade selection was done with the 3D Master shade guide (VITA). The provisional restoration was relined with the tooth colored acrylic resin and was cemented with non eugenol temporary cement (GC) Final prosthesis was fabricated in Zirconia keeping in consideration the ridge defect, with respect to 11,21 where gingival ceramic of similar shade was used on the ridge defect areas. The zirconia based all ceramic bridge was then cemented with resin based luting cement. (Fig 1 (c).

Fig 1 (c) Post operative photograph.

Case 2

A 29-year-old female patient reported with chief complaint of poor esthetic appearance due to missing teeth. On examination it was found that patient had missing right and left mandibular first premolars.(Fig 2)(a)

Fig 2(a) Pre operative photograph.

The patient gave a history of orthodontic treatment for correction of bimaxillary protrusion with extraction of mandibular ist premolars, but distilisation of canines was not achieved to an extent to bridge the edentulous space left after extraction. The treatment plan to replace missing 34,44 with zirconia based bridges was formulated as the patient had higher demands for esthetics.

Clinical Procedure

Diagnostic impressions were made and poured in dental stone. Tooth preparation was done quadrant wise. First tooth prepration of 33,35 was done to receive all ceramic crowns (Fig 2 (b).

Fig 2 (b & c) Tooth prepration irt 33,35 and cementation.

The equigingival shoulder finish line was prepared for 33 and 35. The overall reduction of 2 mm and Incisally, 1.5–2 mm reduction was made so as to provide esthetic prosthesis. Gingival retraction was done with the retraction cord. The final impression was made in elastomeric impression material with double mix technique. The stock metal tray was loaded with putty impression material, and impression was made with retraction cord in place and the thermoplastic sheet over the teeth. Once set thermoplastic sheet was removed from the impression. The light body impression material (Aquasil), was manipulated as per the manufacturer's instruction. Impression was loaded with light body impression material. Retraction cord was removed and light body impression material was syringed on the margins of the prepared tooth and the impression was made. Shade selection was done with the 3D Master shade guide (VITA). The provisional restoration was relined with the tooth colored acrylic resin and was cemented with non eugenol temporary cement (GC) Final prosthesis was fabricated in Zirconia and then cemented with resin based luting cement.(Fig 2(c) Similarly rehabilitation was done on contralatral side of same arch. (Fig 2 (d & e).

Fig 2 (d & e) Tooth Prepration irt 43,45 and cementation.

DISCUSSION

All ceramic restorations are the viable alternative to the metal ceramic restoration in view of biologic, physical, and esthetic properties. Zirconia or yttrium oxide partially stabilized zirconia (3Y TZP) is a crystalline dioxide of zirconium. Zirconia is considered as a tooth colored metal and hence fulfills both the esthetic and the mechanical properties required for the long term success of the prosthesis.[5-6] All ceramic systems have expanded their range of indications in almost all the areas of fixed restorative dentistry. However, there were some issues regarding the survival rate of the all ceramic restorations in the past. However, the studies have proved the survival rate of all ceramic restoration comparable to metal ceramic restorations. Many studies are being conducted to find the suitable luting cement for zirconia crowns.[7-8] It has been found that resin based composites are the best luting agent for the all ceramic restoration as it improves the retention and marginal adaptation of the restoration to tooth. In this case, esthetics was the primary requirement of the patient. And hence, all ceramic restoration was planned in these cases to overcome the drawbacks of the metal ceramic restoration.

CONCLUSION

Successful anterior restorations can be achieved when using a detailed treatment plan and when considering the esthetic and functional parameters. The use of a conservative technique to condition soft tissues is attractive to the patient, and metal-free crowns improve the dental arrangement and shade matching, providing a pleasant smile for the patient.

REFERENCES

1. Dudhekar AU, Nimonkar SV, Belkhode VM, Borle A, Bhola R. Enhancing the esthetics with all ceramic prosthesis. J Datta Meghe Inst Med Sci Univ, 2018; 13: 155-7.
2. De Andrade OS, Hirata R, Celestrino M, Seto M, Siqueira S, Nahas R. Ultimate ceramic veneer: A laboratory-guided reparation technique for minimally invasive laminate veneers Journal of the California Dental Association, 2012; 40(6): 489-494.
3. Radz GM. Minimum thickness anterior porcelain restorations Dental Clinics of North America, 2011; 55(2): 353-370.
4. Miranda ME Esthetic Challenges in Rehabilitating the Anterior Maxilla: A Case Report Operative Dentistry, 2016; 41(1): 2-7.
5. Vichi A, Louca C, Corciolani G, & Ferrari M Color related to ceramic and zirconia restorations: A review Dental Materials, 2011; 27(1): 97-108.
6. Walia S, Thomas PM, Sandhu H, Santos GC. Restoring esthetics with metal-free ceramics: A case report Journal of the Canadian Dental Association, 2009; 75(5): 353-355.
7. Shetty SK. Esthetic rehabilitation of anterior missing teeth with ridge defect using zirconia fixed prosthesis-A case report, 2019; 8(5): 24-2.
8. Censi R, Vavassori V, Borgonovo AE, Re D. Esthetic rehabilitation of a severely compromised anterior area: Combined periodontal and restorative approach. Case Rep Dent, 2014.