International Journal of Enhanced Research in Medicines & Dental Care (IJERMDC),
ISSN: 2349-1590, Vol. 4 Issue 12, December-2017, Impact Factor: 1.338

Smile Rehabilitation in a Flourosis Case with Minimum Prep Porcelain Laminates Partial Veneers: A Case Report

Dr. Anamika Ahlawat[1], Dr. Divya Dahiya[2], Dr. Reena Ravi[3], Dr. Neeraj kumar[4]

[2]Professor, Dept. of Prosthodontics, PGIDS, Rohtak
[1,3,4] Post-graduate student, Dept. of Prosthodontics, PGIDS, Rohtak

ABSTRACT

Demand for excellence in esthetics is leading to newer trends in dentistry. Introduction of porcelain laminates as an effective esthetic alternative has surpassed conventional options and most importantly its conservative approach with respect to tooth preparation makes it a viable option when compared to alternative esthetic procedures. This article describes a case report of a patient of dental flourosis esthetically rehabilitated with porcelain laminate veneers.

Key Words: Esthetics, Laminates, Resin cement.

INTRODUCTION

Dental fluorosis is a condition of enamel hypomineralization because of the effects of excessive fluoride on ameloblasts during enamel formation,[1-3] resulting in surface and subsurface porosities[4] and subsequent optical and physical changes. The main consequence of dental fluorosis is compromised esthetics. A confident smile is one of the most important aspect of one's personality. Teeth discolored by fluorosis or hypoplasia may be managed by performing enamel bleaching, microabrasion, placement of veneers, or artificial crowns. The choice among these treatments depends on the severity of the disease.[7]

Nowadays, cosmetic needs are of fundamental importance to much of society. Among the available esthetic restorative materials, professionals have options ranging from composite resins to ceramics. For a long time, the material of choice for cosmetic and conservative procedures was composite resin. However, the low durability of this material leads to esthetic damage due to color instability. In addition, its organic matrix degrades and it absorbs water; therefore, the material needs constant maintenance and polishing to prolong the duration of its useful life. Porcelain greatly mimics the natural structure of dental elements and is an excellent option to avoid the various deficiencies of composite resin .[8] When properly made in accordance with a precise clinical protocol, porcelain restorations have a long clinical life. The material has several important characteristics, including physicochemical stability, excellent biological compatibility, sufficient resistance to compression and abrasion, excellent reproduction of the optical properties of the dental structure, adherence to the cement agent and dental substrates, and color stability .[9]

The advantages of PLV include minimally invasive preparations, high levels of esthetics and ability to achieve a good tissue response. The ultimate goal during tooth preparation is to remove a uniform layer of the tooth structure.[10,11] The degree of discoloration to be masked plays a significant role in determining the amount of tooth reduction. Tooth preparation involves labial, proximal, cervical and incisal reduction. Traditionally, the labial enamel is reduced by 0.3–0.5 mm, which enables a strong enamel bonding and, at the same time, sufficient thickness of porcelain is maintained. The cervical preparation can either be supra gingival or sub gingival with a chamfer finish line.[12,13] Depth cutting burs of different gauges (0.3mm, 0.5mm, 0.7mm) are available to aid in labial reduction. When the shade difference between the tooth after preparation and the desired final restoration is minimal, proximal chamfer finish lines are placed slightly labial (approximately 0.2 mm) to the contact areas of the adjacent tooth .[14]

CASE REPORT

A 25 years old female patient reported to the Department of Prosthodontics with the chief complaint of yellowish discoloration(Fig 1) with respect to upper front teeth for past 17 years.

Fig . 1: Pre-operative intraoral view showing mild-moderate grade of flourosis.

The patient was not satisfied with her appearence and smile and wanted this discoloration to get corrected. History revealed that a generalized yellowish discoloration of teeth is present since childhood and a diagnosis of mild-moderate dental flourosis was made. Various treatment options addressing the patient's presenting complaint were discussed with the patient and porcelain laminate veneers were planned for esthetic rehabilitation.

CLINICAL PROCEDURE

Maxillary and mandibular impressions were made in irreversible hydrocolloid to obtain working casts. Shade was selected(Fig 2).

Fig 2: Shade Selection.

To obtain an acceptable reconstruction from the cosmetic and functional perspectives, a diagnostic wax-up of the maxillary model was made in white wax(Fig.3 a,b,) .

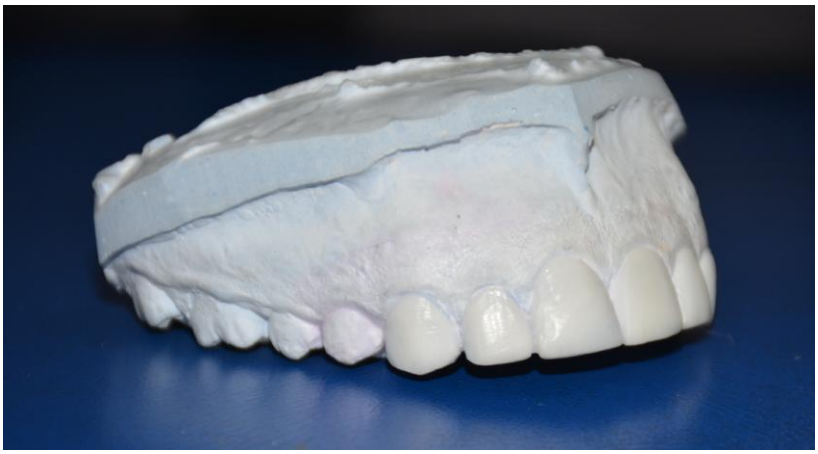

Fig. 3 A: Diagnostic Wax Up, Right Lateral View.

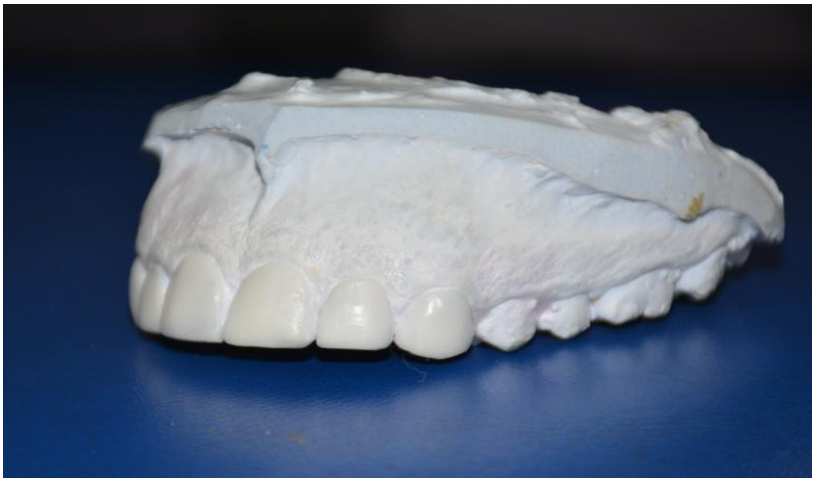

Fig 3 B: Left Lateral View.

A cosmetic mock-up was accomplished to give the patient a three-dimensional view of her new smile before starting treatment. First, the diagnostic wax-up was molded with condensation silicon to generate a matrix. This silicon matrix was filled with a temporary tooth colored material, which was positioned over the dental elements and maintained in position for approximately 2 minutes. After the silicon matrix was removed, the mockup (artificial resin shell) remained mechanically attached to the teeth (Fig 4).

Fig 4: View of patient s smile while smiling with the cosmetic mock-up.

The cosmetic mock-up enabled a three dimensional analysis of the new dental proportions together with the soft tissues (lips and gum). Another silicone index of the diagnostic wax-up was made for guiding the tooth preparation. Facial tooth

surface was prepared using depth cutting diamond burs, 0.5mm and 0.8mm, (Fig 5a) for differential preparation in cervical and incisal region respectively. Prepared depth grooves were marked to make them evident(Fig.5 b) .

Fig 5 A: Depth grooves prepared.

Fig 5 B: Prepared depth grooves marked for making them evident.

Silicone index sectioned at centre of the tooth horizontally assisted in guiding the facial depth of preparation and silicone index sectioned incisally assisted in guiding the incisal preparation (Fig.6). Prepared surfaces were finished and gingival retraction was achieved(Fig 7) and final impressions were made in putty (Fig 8).

Fig 6: Silicone index for guiding the tooth preperation.

Fig 7: Finished tooth preperation, gingival retraction cord packed.

Fig 8: Putty- Medium Body Impression.

The provisional restorations fabricated using silicone putty indices were luted (Fig 9) The final restorations of the selected shade (Fig 2) were given after a week and patient was instructed regarding oral hygiene. The esthetic outcome of the treatment was satisfactory (Fig 10 a, b).

Fig 9: Provisional Restoration Luted.

Fig. 10 A: Preoperative Smile.

Fig 10 A: Post-Operative Smile

Fig. 10 B: Intraoral view of finished Restoration

DISCUSSION

Laminate veneers are a conservative treatment of unaesthetic anterior teeth. The continued development of dental ceramics offers clinicians many options for creating highly aesthetic and functional porcelain veneers. This evolution of materials, ceramics, and adhesive systems permits improvement of the aesthetic of the smile and the self-esteem of the patient. Clinicians should understand the latest ceramic materials in order to be able to recommend them and their applications and techniques, and to ensure the success of the clinical case.

SUMMARY AND CONCLUSION

Currently, the properties of ceramics indicate that they are materials capable of mimicking human enamel and their mechanical properties are expanding their clinical applications. The clinical success of laminate veneers depends on both the suitable indications of the patient and the correct application of the materials and techniques available for that. in accordance with the necessity and goals of the aesthetic treatment. In view of the reported advantages of the utilized technique, the present case was successfully done with most conservative preparation.

REFERENCES

[1] Aoba T, Fejerskov O. Dental fluorosis: chemistry and biology. Crit Rev Oral Biol Med 2002;13:155–70.
[2] DenBesten PK. Biological mechanisms of dental fluorosis relevant to the use of fluoride supplements. Community Dent Oral Epidemiol 1999;27:41–7.
[3] Robinson C, Connell S, Kirkham J, et al. The effect of fluoride on the developing tooth. Caries Res.2004;38:268–76.
[4] Thylstrup A, Fejerskov O. Clinical appearance of dental fluorosis in permanent teeth in relation to histologic changes. Community Dent Oral Epidemiol 1978;6:315–28.
[5] Dean HT. The investigation of physiological effects by the epidemiological method. In: Moulton FR, editor. Fluorine and dental health. Washington: American Association for the Advancement of Science 1942;19:23–31.
[6] Riordan PJ. Perceptions of dental fluorosis. J Dent Res 1993;72:1268–74.
[7] Akpata ES. Occurrence and management of dental fluorosis. Int Dent J 2001;51:325–33.
[8] A. McLaren and Y. Y. Whiteman, "Ceramics: rationale for material selection," Compendium of Continuing Education in Dentistry, vol. 31, no. 9, pp. 666–668, 670, 672, 680, 700, 2010.
[9] N. P. Pini, F. H. B. Aguiar, D. A. N. Leite Lima, J. R. Lovadino, R. S. Suga Terada, and R. C. Pascotto. "Advances in dental veneers: materials, applications, and techniques".Clinical, Cosmetic and Investigational Dentistry, vol. 4, no. 10, pp. 9–16, 2012.
[10] Aschheim KW, Dale BG. Porcelain laminate veneers and other partial coverage restorations In: Aschheim KW, Dale BG, editors. Esthetic dentistry A clinical approach to techniques and materials. 2nd ed. pp 151-184. Mosby.
[11] Magne P, Belser UC. Novel Porcelain Laminate Preparation Approach Driven by a Diagnostic Mock-Up. J Esthet Restor Dent 2004; 16:7–18.
[12] Shetty A, Kaiwar A, Shubhashini N, Ashwini P, Naveen, DN, Adarsha MS, et al. Survival rates of porcelain laminate restoration based on different incisal preparation designs: An analysis. J Conserv Dent. 2011; 14(1): 10-15.
[13] Hahn P, Gustav M, Hellwig E. An in vitro assessment of the strength of porcelain veneers dependent on tooth preparation. J Oral Rehabil. 2000; 27:1024-9.
[14] Bhoyar AG. Esthetic Closure of Diastema by Porcelain Laminate Veneers: A Case Report. People's Journal of Scientific Research. 2011; 4(1): 47-50