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Ceramic veneers without tooth reduction: A clinical report

[1]Doctoral program student, Department of Prosthodontics, School of Dentistry, Seoul National University, Seoul, Korea and; Clinical Assistant Professor, Department of Prosthodontics, Dental Hospital, St. Mary's Hospital of Catholic University of Korea, Seoul, Korea.
[2]Associate Professor, Dental Research Institute and Department of Prosthodontics, Dental Research Institute and School of Dentistry, Seoul National University, Seoul, Korea.

Wonsup Lee, DMD, MS[1], Ho-Beom Kwon, DDS, MS, PhD[2]

ABSTRACT

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Wonsup Lee, DMD, MS[1], Ho-Beom Kwon, DDS, MS, PhD[2]

This clinical report presents conservative and esthetic ceramic veneer treatments without tooth reduction. Patients' benefit from avoiding invasive procedure is discussed in terms of biologic price. The margin is placed not only at the cervical area, but also at any place on the tooth where additive volume increase is required. Techniques to camouflage the margin is described where contact lens effect is difficult to achieve. Proper case selection would be imperative to avoid periodontally hazardous restoration.

Key words : Ceramic veneer

Corresponding Author
Ho-Beom Kwon
Associate Professor, Dental Research Institute and Department of Prosthodontics, Dental Research Institute and School of Dentistry, Seoul National University, Yeongeon-dong, Jongno-gu, Seoul, 110-749, Korea.
TEL : +82-2-2072-3816
proskwon@snu.ac.kr

Ⅰ. INTRODUCTION

Ceramic veneer treatment is considered as conservative restorative option compared to conventional extracoronal restorations. However, ceramic veneer treatment calls for up to 30% of tooth reduction by weight according to Edelhoff[(Edelhoff)]. Patient's esthetic requirement is

often limited to correction of small portion of tooth per se. Irreversible reduction of labial or buccal surface of tooth to achieve esthetic goal that is confined to partial area of tooth can hardly be justified and will remain under debate in terms of biologic price[Zarb].

Minimal preparation or even no preparation technique for ceramic veneers have been demonstrated throughout various case report[Gresnigt, Nosti, Radz, Wells, Lowe, da Cunha, Hedge]. Those conservative ceramic veneers were not much different from conventional veneers other than having knife edge margin configuration with full labial surface coverage.

For achieving esthetic goals, full coverage of labial surface may not be required in some cases. Some teeth may require partially additive recontouring. Then, margin will be placed on the tooth surface where recontouring is needed, not on the cervical area. Margin placement other than cervical area while maintaining imperceptible margin can be challenging.

This case report demonstrates partial and full veneer treatment without reduction to fulfil patient's esthetic desire. Margin placement other than cervical area was adopted and was esthetically pleasing.

Ⅱ. CLINICAL REPORT

Case I

Thirty-two years old female patient presented Dental Prosthodontics Clinic of Seoul St. Mary's Hospital with the chief complaint of diastema on her maxillary anterior dentition. The patient was ambulatory and had no specific medical history. The Patient specifically asked for restorative solution excluding orthodontic treatment option. Upon careful oral examination, diastema were found between maxillary lateral incisor and central incisor on both left and right sides(Fig. 1). Left lateral incisor was diagnosed as peg lateral and had recalcified lesion on the mesial surface. Left lateral incisor was lingually inclined

Fig. 1. Intraoral facial view showing diastema and discoloration of maxillary lateral incisors.

compared to right lateral incisor. Right lateral incisor had discolored spot on the mesial surface. Molars were in Angle's classification I. Patient had canine guidance occlusal scheme on both left and right side. Bleaching prior to restorative treatment to improve overall shade and ceramic veneer treatment without reduction was offered. Patient accepted the treatment plan.

A stone model was used to verify esthetics and path of insertion before treatment. Bleaching (Opalescence, South Jordan, UT) on anterior dentition was conducted for four weeks for preliminary esthetic treatment. After bleaching, final impression was made with polyvinylsilo xane(Extrude; Kerr, Orange, CA). There was no tooth reduction. Wax-up model was carefully examined by prosthodontist and this morphologic information was transferred to Leucite reinforced glass ceramic restora tion(Empress; Ivoclar Vivadent, Schaan, Liec htenstein). Left lateral incisor was decided to receive mesial partial ceramic veneer to resolve diastema problem. Right lateral incisor was decided to cover full labial surface due to lack of tooth volume(Fig. 2).

Ceramic veneers were tried in manually for esthetic consent. Veneers were bonded to teeth surface with conventional method using resin cement (Choice translucent; Bisco, Schaumburg, IL)(Magne). Canine occlusal scheme was not changed by the restorations. Gingival condition was good after two weeks recall checkup(Fig. 3).

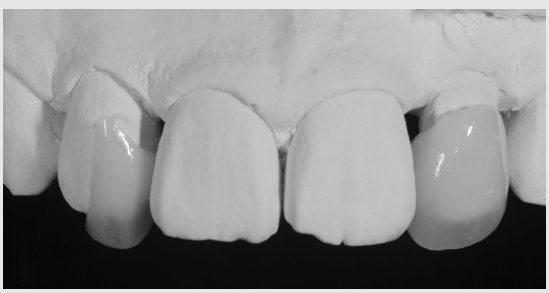

Fig. 2. Partial and full ceramic veneers were tried on the model.

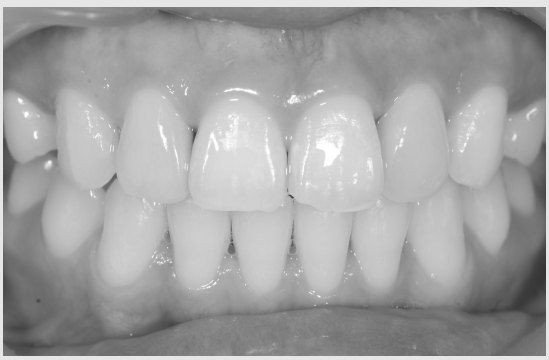

Fig. 3. Facial view after bonding the ceramic veneers.

Case II.

Thirty-two years old female patient visited Dental Prosthodontics Clinic of Seoul St. Mary's Hospital to take care of her diastema on right mandibular canine area. The patient had no known medical history. There was diastema between right mandibular canine and lateral incisor(Fig. 4). Patient had canine guidance occlusal scheme on both sides. Her molars were in Angle's classification I.

Partial ceramic veneer treatment on the mesial surface of right mandibular canine was elected after consultation with the patient. The rest of the procedure was same as described in Case I except the lithium disilicate(Emax LT ingot; Ivoclar Vivadent, Schaan, Liechtenstein) was chosen as the restorative material to mask dark oral cavity background display due to relatively large diastema. Since the canine itself was in normal shape, morphologic compromise was informed to the patient ahead of treatment(Fig. 5).

Ⅲ. DISCUSSION

Seating of veneer is technique sensitive due to its lack of retention or resistance form. In this case report, seating was performed incrementally to visually verify the position of the restoration and the excessive cement was removed with the

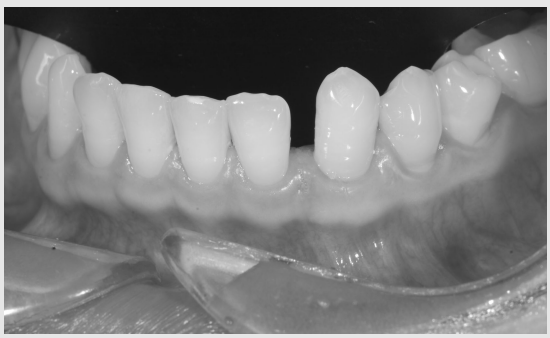

Fig. 4. Intraoral facial view showing large diastema on the left mandibular canine area with the dark background.

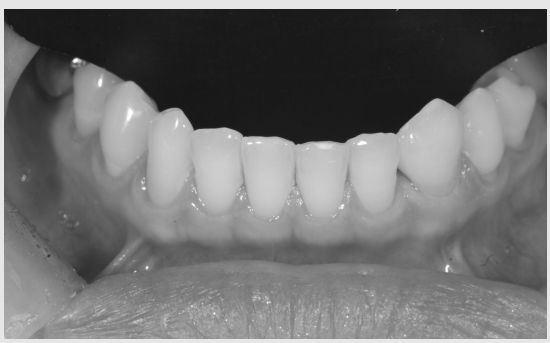

Fig. 5. Facial view after bonding the ceramic veneer.

rubber tip instrument. Incisal jig method had been proposed by Reshad et al[Reshad]. However, this method requires intraoral recontouring which may be quite demanding, time consuming, and inferior finish quality. Furthermore, surface microcrack may compromise the strength of the restoration according to Kelly[Kelly].

Discoloration of the abutment may pose an esthetic problem to both the clinician and the patient. Since there is no tooth reduction, the thickness of the veneer will not be uniform. Therefore, the thickness of the restoration at the discolored area should be carefully checked during the laboratory phase. If the thickness is not sufficient to mask the discoloration, other alternative methods should be considered. Removal and filling of the discolored area defies the rationale of the conservative treatment and therefore, may not be appropriate. Opaque material can be chosen to mask the discolored area. However, overall translucency can be affected. Bleaching the teeth ahead of restorative treatment can be considered. In some case, ignorance of discoloration can be another option if patient may accept the esthetic compromise.

A straight line of interface between the restoration and the tooth along the long axis may arise visual attention. Contact lens effect[Friedman, Materdomini] may not work since a straight line seldom exists in human tooth anatomy. The margin was carefully built up to subtly blend into the natural tooth structure. Therefore, the margin was irregular and wavy in shape and form. Margin configuration was knife edge by default. Careful insight into tooth morphology will be required to render the laboratory process.

It would be imperative to evaluate the morphologic consequence ahead of treatment to avoid overcontoured restoration. Case selection for no-prep veneers was well described by Wells[Wells]. Indications included undersized tooth, worn dentition, lingually inclined tooth, and the tooth in need for enlargement for esthetics[Wells].

Survival rate of ceramic veneer had been reported[Layton, Layton]. However, survival rate of this specific type of veneer without reduction is not known yet. Since the veneer without reduction depends mostly on enamel bonding, its survival rate seems promising[Ge, Gurel]. Yet, the long-term follow up will be required to assess the prognosis of the restoration and the tooth.

Ⅳ. SUMMARY

Upon careful case selection, ceramic veneer treatment without tooth reduction can be an excellent esthetic treatment of choice. Margin placement and configuration will much depend on the tooth morphology to ensure invisible transition from tooth to restoration.

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