

A conservative restorative smile makeover

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Introduction

The patient was a 37-year-old female who presented to the practice requesting six porcelain veneers for her upper front teeth. Her chief complaint was loss of tooth tissue; she felt her teeth had become thin and brittle. Additionally, fillings on incisal margins of teeth UR1 and UL1 had chipped (Figures 1-4b).

The patient reported being examined and diagnosed in few other dental clinics and restoration of the upper incisors and canines was planned by her previous dentist. The dentist provided her with whitening trays and 10% carbamide peroxide gel (Pola Office), which she has been using for three weeks. She did not complain about any pain or sensitivity.

Histories and clinical findings

The patient was in good general health, with no known allergies and taking no medication. She had, however, reported heavy vomiting during her three pregnancies. Her dental history included regular attendance to the dental clinic, a recent course of home whitening with a 10% carbamide peroxide, multiple crown restorations in the past, and no pain or sensitivity in the past few years. The patient reported using a manual toothbrush, and occasionally using whitening toothpaste. She reported flossing one to two times per week, but no interdental brush use, and occasional mouthwash use.

On examination, it was noted that the patient had soft gingival tissues in a good condition. She had a high smile line/gummy smile but had a well-developed habit of hiding it. A diastema and chipped irregular incisal margins of the upper and lower front teeth were noted.

Enamel erosion on the palatal and interproximal surfaces of upper front teeth with dentine exposure (anterior clinical erosion [ACE] class III) was reported, as well as palatal and lingual surfaces of the upper and lower premolars (ACE class I) and lingual surfaces of the lower incisors were observed (ACE class III).

All molars except the lower wisdoms were restored with PBC crowns over 10 years previously, according to the patient, but which were not fitted properly, as metal margins were visible. The aesthetic look was altered by high opacity of the crown restorations.

Active carious lesions were diagnosed on the UL5, LL8 and LR8. The patient did not report any pain or sensitivity of these areas. The front upper incisors had chipped incisal margins and small discoloured fillings on interproximal areas. Her oral hygiene was fair – BPE 011/111, occlusion class I. No occlusal or functional issues appeared to be associated with either the anterior teeth or the occlusion as a whole.

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Figure 1: The patient complained that her teeth had lost thickness and shape



Figure 2: Maximum intercuspation



Figure 3a: Right smile



Figure 3b: Left smile



Figure 3c: Front smile



Figure 4a: Right view in maximum intercuspation



Figure 4b: Left view in maximum intercuspation

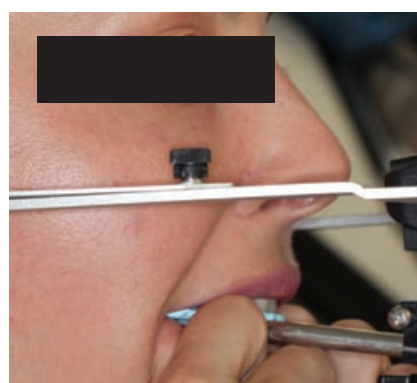


Figure 5: Facebow record

A radiographic examination and vitality testing of the treatment-involved teeth indicated absence of pathology, recording the normal responses of healthy vital teeth. Tooth

UL6 and UL7 were suggested for root canal re-treatment and crown replacement. Alginate impressions were taken and face bow record for study models (Figure 5).



Figures 6a-6e: Preparations. Showing the retracted gingival margin

Diagnosis and treatment aims

Diagnosis: ACE class III; enamel erosion as a main cause of thinning and chipping of the incisal margins of the front teeth together with loss of volume.

Treatment aims: treatment of carious lesions; improve appearance of upper teeth; diastema closure; protect exposed dentine; improve smile aesthetic.

A recommended treatment for patients with ACE class II is providing palatal composite restorations to preserve the tissue

(Vailati and Belser, 2010). The ideal treatment plan proposed consisted of:

- Treatment of carious lesions
- Crown lengthening in upper front teeth area to reduce gummy smile
- Upper and lower old crowns replacement improving fit and aesthetic of restorations (after UL7 root canal re-treatment)
- Restoration of upper incisor, canines and UR4, UL4 and UL5 premolars, with porcelain veneers after restoration of palatal eroded surfaces of incisors and canines with composite.

The patient did not agree to any surgical procedures on her gingiva – she said that she can hide her gummy smile and it is not bothering her. She was also aware that her old crowns needed to be replaced in the near future, but for now she wanted only upper front teeth to be restored due to financial limitations.



Figures 7a-7c: Impressions

A compromised treatment plan was made, consisting of:

- Treatment of carious lesions
- Composite direct platforms on upper incisors and canines on palatal and incisal surfaces as a test drive for future restorations and protection of exposed dentine tested for at least four weeks
- Porcelain veneers for teeth UR4-UR1 and UL1-UL4 and composite restoration with reshaping of buccal surface of UL5. To achieve desirable volume, eight veneers were planned instead of six, which was advised previously by the other dentist to avoid a hollow look of the smile.

Treatment

Once treatment was fully consented, alginate impressions were taken to produce a wax-up for palatal veneers. Palatal veneers were placed directly during a two-hour appointment using a clear matrix (Elite Transparent, Zhermack) based on the wax-up.

No anaesthesia was provided during the appointment and

the patient felt very comfortable with the new restorations. A control appointment was scheduled for seven days' time and occlusal contacts were evaluated. No chipping of the material was observed, and the patient did not have any discomfort.

The patient was going on holiday for three weeks, so another appointment was scheduled in three weeks' time. After three weeks, evaluation of the restorations was performed – no chipping was observed, and the patient was without any pain or sensitivity.

On the next appointment, carious lesions on the mesial surfaces of UL5, LL8, and LR8 were treated. Alginate impressions and face bow registration record using Blu-Mousse was taken to produce a wax-up for the final restorations on the buccal area.

Based on the wax-up, a mock-up was tested. The patient was fairly satisfied with the design, although she requested more volume and length on the incisors. The incisors were reshaped and minimal preparation was performed through



Figure 8: The provisional restorations in situ



Figure 9: Retracted view of provisional restorations in situ



Figure 10: Provisional restorations right view



Figure 11: Provisional restorations left view

a mock-up, with almost no preparation on the buccal surface to preserve most of the enamel (Figures 6a-6e).

After immediate dentine sealing, an impression was taken with the single cord technique using 3M Espe Express heavy and light body. Two impressions were taken due to insufficient capturing of details (Figures 7a-7c). Provisionals were placed using a matrix based on the wax-up and crown and bridge acrylic temporary material shade A1, and then customised with Filtek A1B after silane and bond application (Figures 8-11).

A shade matching appointment was scheduled in the lab with an initial prescription. More volume was added according to patient request, and corrections of the incisal embrasures were completed.

Two days later, the patient returned for shape reassessment. Embrasures were corrected again and the volume was reassessed. The patient was very detail-orientated and indecisive. After achieving a final satisfying

result, alginate impressions of the temporaries and photographs were taken to help the technician transfer the desirable shape to the final restorations (Figure 12).

In two weeks, an appointment for trying in final restorations and cementation was scheduled. Temporary veneers were removed with local anaesthesia – no chipping occurred during the two weeks. The gingival tissue was in very good condition, since the patient was advised to use Corsodyl mouthwash daily.

Veneers were tried in using Relyx try-in paste (translucent shade); a reassessment of dark triangles between teeth UR2, UR3, and UR1 was necessary. The patient also requested more translucency on the incisal margins, even though she did not want any translucency before when advised. The patient was provided temporary veneers and the restorations were sent back to the lab, together with the new instructions.

The final restorations were tried in after two days. The patient was very happy with the final result; she appreciated



Figure 12: The restorations



Figure 13: The final result



Figure 14: The final restorations in situ

that the translucency advised before looked very natural (Figures 13 and 14). The veneers were freshly etched by the lab, so after cleaning off the try-in paste and decontamination with acetone, silane was applied.

Cementation was performed under local anaesthesia using Optragate, and bite block isolation, retracting cord (sutures) Teflon tape, silane, bond and Relyx veneer cement (translucent shade). The excess cement was cleaned initially using microbrushes and then with a surgical blade after polymerisation. Glycerine was applied and then the restorations were cured again for 10 seconds on the proximal areas, and gingival and palatal margins. Finally, the restorations were polished with porcelain polishers.

Postoperative RVG X-rays were taken to check for the cement residues, which were found on interproximals on teeth UR3 and UR2, and removed. The patient was scheduled for a control appointment in two days' time. Alginate impressions for a Michigan splint and face bow record was taken. The

post-treatment instructions were as follows:

- After fitting the splint, the patient was recalled every seven days for one month, and then after three weeks, six weeks, three months and six months
- The patient was advised on daily oral hygiene maintenance (brushing, flossing daily, Tepe pink in the molar areas, Oral-B Enamel Erosion Shield toothpaste and regular visits to the hygienist, ideally every six months). Tooth Mousse (GC) was advised once a week.

References

Vailati F, Belser UC (2010) Classification and treatment of the anterior maxillary dentition affected by dental erosion: the ACE classification. *Int J Periodontics Restorative Dent* 30(6): 559-571

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