

A 60-year-old male with gradual loss of tooth surface

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Presentation of Case

Dr. Sageer Ahmed (MS Resident): A 60-year-old male came with complaints of a gradual loss of tooth surface structure on the upper left anterior tooth with no complaints of pain and hypersensitivity. He was very much concerned about the appearance of the tooth and developing any pathology and therefore wanted to get his tooth treated.

Medical history was not contributory, proper history about foods and diet habits, occupational, para-functional, and other abnormal habits were recorded but nothing significant was notified. The only significant was the horizontal brushing technique. On intra-oral examination, tooth surface loss was detected at the cervical area in multiple teeth but it was prominent at the upper left canine tooth. Furthermore, the loss of cervical tooth structure appeared a V-shaped lesion and it was located at the cervical third just above the cement-enamel junction on the labial surface. Moreover, the lesion was yellowish translucent in color and it was hard and smooth when tested by a caries explorer (Figure A). The tooth was non-tender to percussion and palpation. The vitality test also revealed no abnormality.

Provisional Diagnosis

Cervical tooth loss

Differential Diagnosis

Chemical Erosion

Exogenous and endogenous acids are the causes of cervical erosion of the tooth.^{1,2} The tooth having cervical erosion usually demonstrate a smooth, polished, and saucer-shaped lesion.^{3,4} Exogenous sources include acidic beverages, citrus fruits while the endogenous sources include eating disorders, oesophageal reflux, vomiting, etc.^{5,6} However, well defined outline is absent in erosion, so it was excluded from the diagnosis.

Abfraction

Abfraction is a defect in the cervical area of teeth, which are wedge-shaped and usually affect a single tooth.^{7,8} The depth of the lesion is greater than its height, and develops due to eccentric forces.^{9,10} However, in the present case, as multiple teeth were affected and the depth of the lesion was less than height, it was also excluded from the diagnosis.

Root caries

Root caries is a microbial progressive lesion that is soft in consistency and usually develops anywhere on the root surface and is more prominent when there is the loss of connective tissue attachment of the periodontium.^{11,12} It may be irregular, round, or oval-shaped and found when there is the gingival recession, dental plaque and in old age.^{13,14}

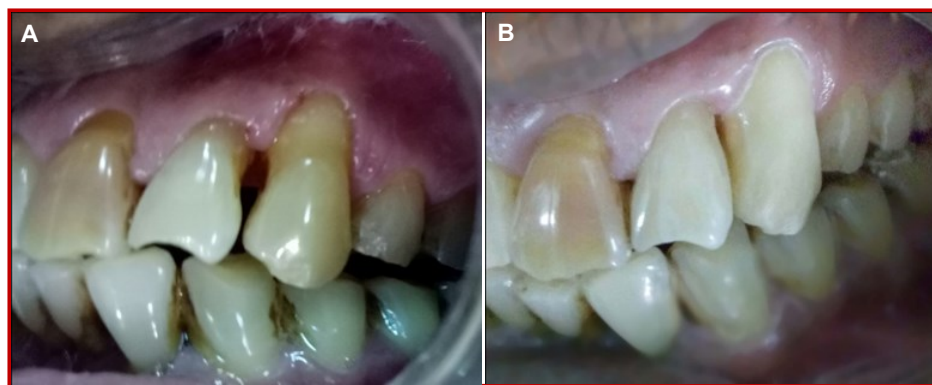


Figure 1: . The preoperative view showed a cervical lesion at the upper left canine tooth (A), and following completion of the treatment, the restorative material covered the lesion with proper contouring and polishing (B)

Dr. Ahmed's Diagnosis

Non-carious cervical lesion

Treatment Procedure

Dr. Ahmed: The upper left canine tooth was planned to be restored with flowable Giomer and long term follow up for the remaining teeth. The benefits of treatment versus non-treatment were explained to the patient and were accepted by the patient. Shade selection was done with the help of the Vita shade guide. After mouth preparation (scaling and polishing) tooth was isolated, etchant (37% phosphoric acid) was applied over the lesion including enamel margins for 15 sec and then it was gently washed off with water for another 15 sec. The tooth was air-dried, the bonding agent (Beuti Bond, Shofu Dental) was applied with a micro brush, and dispersion of bonding agent was achieved with a gentle air blow, and light-curing was placed for 20 sec. The flowable Giomer was dispensed to the lesion with the available tips in an incremental way from the depth of the lesion to outward. Microbrush was used to further refine the shape of the material and blend with enamel surface and it was light-cured for 20 sec after each incremental layer. Fine diamond was used to finish the marginal excess. Finally, the restoration was polished using the super snap polishers (Shofu Dental) and the photograph was taken (Figure B). The patient was instructed to maintain proper brushing technique.

Discussion

Regarding the etiological factor

Dr. Ahmed: Previous studies have revealed that there are several factors associated with non-carious cervical lesions. These factors may include faulty brushing techniques in gingival recession cases, acidic food and drink consumption, and occlusal stress developing factors such as obstacles in occlusion, unusual contacts, habits of bruxism and clenching).^{15,16} On the basis of intraoral examination it was assumed that faulty tooth brushing might be the possible reason for cervical tooth loss of the present case.

Regarding the treatment procedure

Dr. Ahmed: Restoration of Class V carious cavity and non-cariou cervical lesion is not long-lasting due to marginal degradation, and secondary caries.^{17,18} Furthermore, the area is difficult to isolate, and the placement of the restorative material is not easy along with its contouring, finishing and polishing procedures.^{17,18} Therefore, it is advised to diagnose the case at the beginning stage and identify the causative factor. It is also necessary to remove the etiological factors and if necessary, a restorative

treatment should be done. Finally, the selection of a proper restorative material is also important.

Regarding restorative material

Dr. Ahmed: Recently, metallic restoration such as amalgam and gold for cervical lesions are not indicated for esthetic restoration because several alternative tooth-colored materials such as glass ionomer cement, resin-modified glass ionomer cement, a glass ionomer or resin-modified glass ionomer liner and base, laminated with a resin composite, and resin composite in combination with a dentine bonding agent have been developed in modern dentistry.

Glass ionomer cements have better adhesive property, and discharge of fluoride.^{19,20} However, the moisture sensitivity, minimum wear resistance, and low fracture toughness, and less esthetic properties are the main drawbacks.

Composite resin on the other hand have favorable surface texture, marginal adaptation, anatomical contour, and good color stability as reported by many of the previous clinical studies. However, they are associated with loss of marginal sealing, adhesion, and retention after a period of time.^{21,22}

Compomers due to its good elasticity, it works in stress-bearing cervical areas but does not show better performance compared to the traditional composites.^{23,24} Ormocers have less polymerization shrinkage, and the coefficient of thermal expansion is almost similar to that of natural tooth structure, it was believed that that the material might reduce marginal gap formation.^{25,26} However, few studies have been performed on their clinical success.

The use of flowable composite resins has been increased because of their low modulus of elasticity, increase retention and easy handling.^{27,28} Furthermore, it has low filler content but retaining the same particle sizes as that of traditional hybrid composites, which increases the resin content and reduces the viscosity of the mixture. Therefore, they are also now indicated for the cervical restoration.

Regarding the restorative procedure for a cervical lesion

Restorations in the cervical area e.g. class V carious cavity, root caries, the non-cariou cervical lesion is difficult due to the closeness of the cervical third of the tooth to the alveolar bone (fulcrum), the gingival margin of any restoration can suffer flexure during the mastication.^{29,30} The problem is more serious in patients who clench and/or grind their teeth because the enamel in this area can chip off, forming a "notch-like" abraded area and secondary caries is also common in these areas. Therefore, a restorative material that can release protective ions to reduce the frequency of secondary caries is indicated.

Giomer (Beutifil Flow, Shofu Dental) consisting of surface pre-reacted glass filler that is pre-reacted with a polyacrylic acid solution. They are also protected from water sorption and material degradation, and can neutralize the acids produced by bacterial metabolism. Therefore, flowable giomer (Beutifil flow, Shofu Dental) can be the best option for restoration of non-carious cervical lesions like abrasion as it has benefits of both flowable composite and glass ionomer cement. However, glass ionomer and resin-modified glass ionomer cement can be used in the deep non-carious cervical lesion, where a laminate technique (sandwich technique with composite resins) is required.

Final Diagnosis

Abrasion of tooth

Follow-up

At 7 days following the completion of the treatment, the restoration margin was intact and there was no increase in the lesion size.

Dr. Khandoker Rumon (MS Resident): What are methods we can adopt to prevent the occurrence of such lesions in teeth?

Dr. Ahmed: Proper tooth brushing technique, correction of occlusal problems, not to sip or swish acidic drinks, do not brush sooner following an acid intake, use of fluoride mouth wash daily and treatment of abnormal habit such as bruxism are main measures that can be adopted to prevent the occurrence of such lesion.

Dr. Tahmida Haque (MS Resident): Is there any relation between the filler content and longevity of the cervical restoration?

Dr. Ahmed: Yes. Previous studies have indicated that composite resin with low amount of filler may have prolonged clinical longevity in case of the cervical restorations. For example, compared to microhybrid composites, microfills have a lower elastic modulus which makes it flex with the tooth during function, reducing failure of the bonding and detachment of the restoration.^{23, 25, 27, 28} Based on this theory, flowable composites flex more than microhybrid composites during and after curing, leading to greater relief of tensions created on the tooth-resin composite interface due to polymerization shrinkage, stretching/constricting stresses due to change in temperature, and occlusal forces. These factors made flowable composite suitable for the cervical lesion.

Conflict of Interest

Authors declare no conflict of interest

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