QUESTION :

My patients complain about food impaction around single implant restorations. Can this be managed and how can I prevent it?

Background

here are many reasons for food impaction, but it may occur more often around implants because they are different from natural teeth in many respects. When a natural tooth is extracted, there is often a loss of interproximal papilla, which may not be recreated with an implant restoration. A larger issue is the fact that healthy implants exhibit no mobility, whereas natural teeth move varying degrees based on their periodontal condition and the forces placed on them. This movement is not very noticeable until an implant becomes a point of reference and movement of natural teeth becomes obvious (in relation to the stationary implant). The difference in movement makes both placement of a restoration with an adequate interproximal contact and maintenance of the contact difficult. During the recall period, when we examine occlusion as well as interproximal contacts, neighbouring teeth have often moved causing an opening of the contact (Figs. 1, 2a and 2b).

An open contact is associated with impaction of food debris in soft tissue and caries in the neighbouring teeth caused by inadequate cleaning of the interproximal debris. As the contact opens further, restoration of neighbouring teeth may be required due to caries (Fig. 3). If left unchecked, caries can lead to a need for endodontic treatment and even extraction.

Prevention and Treatment

The possibility of implant contacts opening must be considered during treatment planning.

The patient must be told that although the success rate of implants is excellent, the crowns that are placed on the implants will need maintenance. Additional efforts are also needed because of the differential movement of implants versus natural teeth. Initial contacts are made broad and flat with solid resistance to removal of floss. Prevention of damage to neighbouring teeth is essential and, at recall visits, not only must the implant be examined, but the adjacent teeth must also be evaluated for possible carious involvement.

Once a contact opens, treatment is designed to close it. If the restoration is cemented in place over an implant abutment and cannot easily be removed, bonding resin on the approximating surface of the neighbouring tooth should be considered if that surface is suitable for bonding (enamel or dentin). If caries has developed, it must be treated. If the neighbouring tooth has been previously restored with a full coverage cast restoration, the restoration may have to be replaced (Fig. 4). The contact is then made tight, but the patient must be made aware that there is still potential for movement and treatment may be needed again.

If the patient does not want the neighbouring tooth adjusted, the contact can be closed by slot preparation of the implant crown surface, etching with hydrofluoric acid, silanating the ceramic surface, then bonding composite resin to the area (Fig. 5).

This treatment is easier if the crown placed on the implant is designed to be removed when necessary. This can be accomplished by creating a



Figure 1: An interproximal contact has opened between the second premolar and first molar due to mesial movement of the second premolar.



Figure 2a: Radiograph of implant crown at the time of crown placement showing acceptable mesial contact.



Figure 2b: Radiograph of implant crown at 6-month recall appointment showing an opening mesial contact.

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Figure 3: An open mesial contact between an implant (45) and tooth 44 has allowed caries to develop on the distal surface of tooth 44



Figure 4: An open mesial contact on the implant in the 36 position has allowed collection of debris and development of caries at the gingival crown margin of tooth 35. The crown on tooth 35 was replaced.



Figure 5: An open contact has been restored by cutting into the restorative material along the mesial edge and bonding additional material to it. The carious lesion in the distal surface of tooth 44 must now be restored.



Figure 6: Attempts to add new porcelain to a prosthesis that has been in the mouth for an extended period often causes catastrophic failure of existing porcelain. Fractured porcelain must be stripped from the metal substructure and replaced.



Figure 7: Rather than porcelain, laboratory-cured composite resin can be applied to metal and serve as a final restoration. In future, new material can be easily added intraorally.

screw-retained crown or a cemented crown using temporary cement or built-in design mechanisms allowing easy removal. The crown can then be removed from the mouth and the porcelain removed from its substructure and reapplied to a greater interproximal dimension. Note: new porcelain cannot be added to old porcelain that has been in the mouth for an extended period; therefore, porcelain must be replaced. Forward planning is useful, as one can design the final restoration from material that is easily bonded to so that future additions and repairs are better supported (Figs. 6 and 7). Implant dentistry is an excellent way to replace missing teeth. However, because natural teeth and implants move differently, one must be vigilant during the maintenance phase of implant dentistry. *

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