

Review Article

Food Impaction after Crown Placements

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Abstract:

One of the prime goals of prosthetic therapy is to establish a physiologic periodontal climate and facilitate the maintenance of periodontal health. Food impaction is irritating outcome of certain prosthetic procedures. This is due to certain periodontal defects which are not taken care of before embarking upon prosthetic phase. Elimination of these factors will give rise to trouble free restorations. The present review aims to throw a light on the causes of food impaction, its prevention and its management.

Key words: Food impaction; periodontal; prosthetic.

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Introduction

Periodontal tissues form the foundation for proper esthetics, function, and comfort of the dentition. All prosthetic and restorative therapies generally require a healthy periodontium as a prerequisite for successful outcome. The interplay between periodontics and prosthetic dentistry is present at many fronts, including location of restorative margins, crown contours, and response of the gingival tissues to restorative preparations.^[1] Since most clinical crown preparations present subgingival finish lines, crown margin contour is critical to the health of the gingiva. Should the crown intrude on the gingiva, irritation will result, causing the patient discomfort. Recession, inflammation, ulceration, and infection of the gingiva are possibilities. Food impaction is likely to occur if the walls of a crown are not properly contoured to reproduce normal anatomy or

its contacts with adjacent teeth are not adequately established. Firm contacts normally exist between teeth (in the middle third for posterior teeth and in the incisal third for anterior teeth), which force food to be broken down into two parts and distributed down the facial and lingual surfaces of the teeth. If there is no contact, biting pressure forces food between the teeth and gingiva. The food can cause irritation, which may lead to inflammation and infection.^[2]

Food impaction after the prosthetic treatment has been a common and irritating problem for patients as well clinicians. Impaction may be due to anatomical causes or iatrogenic. Most of vertical food impaction is anatomic or clinician induced during fabrication of restoration where as horizontal food impaction may be secondary to periodontal disease. It is vertical impaction which is

emphasized on in this article. Improper pre operative care, overlooking of certain details and lack of specific knowledge can be attributed to this problem. Though not entirely surmountable, this article may help in mitigating this problem to a small extent. Certain changes in tooth preparation, pre prosthetic care and knowledge of the causes can help in lessening this problem.

Food Impaction: Definition and Classification

Food impaction is the phenomenon appearing in the chewing course when the food dregs or fibers are pushed into the clearance by occlusal force or owing to the gingival shrinkage. It's a disease of high prevalence in population. There is a close relationship among the contact, contour, and shape of the teeth that creates the interproximal space with the help of the interdental gingiva. The interdental gingiva, composed of the facial and lingual papillae and gingival col, is a unique area anatomically. It fills the interproximal space supported by alveolar. The high incidence of caries and periodontal diseases in the Interproximal area is partially the result of this histological and anatomic make-up and the great accumulation of bacterial plaque. Food impaction is a clinical situation that arises from a complex interaction process involving age, periodontal disease, caries and excessive attrition and so on. It will cause halitosis, gingivitis, periodontitis, gingival abscess, alveolar bone absorption, root caries, or teeth deletion, etc.^[3]

Food impaction is forceful wedging of food into the periodontium. Food impaction may be vertical or horizontal. Vertical food impaction as the name suggests is the impaction from occlusal direction due to action of opposing tooth. This can be due to:^{[4],[5],[6]}

i. Open contact between adjacent teeth this obviously causes food to get stuck in

between (Figure 1). Patient complains that he has to use a tooth pick after every meal.

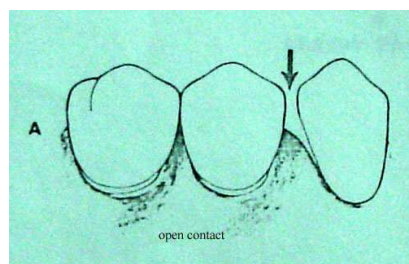


Figure 1: Open contact

ii. Irregular or level difference between adjacent marginal ridges (Figure 2). This causes the food to remain on the occlusal surface. Patient complains that he has to either gargle compulsorily after meals or has to brush. Also he may complain of guava, pomegranate seeds getting stuck.

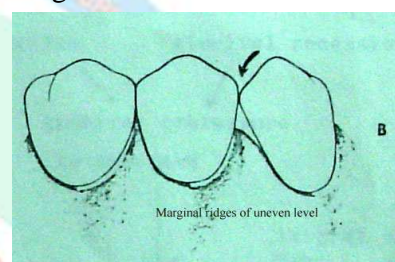


Figure 2: Irregular marginal ridge

iii. Plunger cusps as the name suggest is the cusp which plunges between two opposing teeth.

Horizontal food impaction is mainly due to periodontal destruction. The sequence of event is there is periodontal destruction along with or without recession. This causes food to get stuck causing enlargement of gingival embrasure and further food entrapment due to tongue lip and cheek pressure.^[4-6]

Factors Causing Food Impaction^[7]

Class I: Occlusal wear

Type A: Wedging action produced by transformation of occlusal convexities into

oblique facets, exaggerating the action of plunger cusp.

Type B: Remaining obliquely worn cusp of a maxillary tooth overhanging the distal surface of its functional antagonist.

Type C: Obliquely worn mandibular tooth overlapping the distal surface of its functional Antagonist.

Class II: Loss of proximal contact

Type A: Loss of distal support through the removal of a distally adjacent tooth.

Type B: Loss of mesial support due to extraction of mesial tooth.

Type C: Oblique drifting due to non-replacement of a missing tooth.

Type D: Permanent occlusal openings to interdental spaces.

Class III: Extrusion beyond the occlusal plane

Extrusion of a tooth which was previously retaining contiguity with the adjacent mesial and distal teeth result in occlusal step deformity between marginal ridges of extruded and non-extruded teeth, thus disturbing proximal contact relationship and favoring food impaction.

Class IV: Congenital morphological abnormality

Any congenital morphologic abnormalities in size, shape, form and position of tooth leading to open proximal contact, is conducive to food impaction.

Type A: position of a tooth in torsion.

Type B: emphasized embrasure between thick neck teeth.

Type C: facio-lingual tilting.

Type D: lingual or buccal position of the tooth.

Class V: Improperly constructed restorations

Type A: Loss of contact point in restoration.

Type B: Improper location of contact point.

Type C: Improper occlusal contour.

Prosthesis induced factors for food impaction

Materials

With the exception of self curing acrylics most other materials if used properly are conducive to periodontal health. However they need to be polished properly and have to be devoid of rough surfaces to prevent accumulation of plaque. Plaque accumulation on rough restoration causes inter proximal pocket and attachment loss. This thus creates a space for food impaction.

Construction of restorations

If the margin of restoration is not properly blended with tooth surface it gives a space for bacterial accumulation. It is also a common mistake of clinician of not giving a proper margin for the crown to seat on. Also the proximal finish line preparation should move along the contour of interdental papilla. It is commonly seen this becomes a straight line or a flat margin thus invading in papillary space. After the crown is delivered on such a prepared tooth the interdental papilla is inflamed and later may undergo atrophy. In both condition it gives rise to food impaction.

The under surface of pontic should barely touch mucosa, access to oral hygiene is impeded by excessive pontic to tissue contact causing plaque accumulation and possibly pseudo pocket in adjacent tooth. Also this can give rise to horizontal food impaction in pontic area.

Tooth preparation

The preprosthetic preparation of the patient before the tooth preparation is important. If the gingiva is inflamed, and the tooth preparation is started in such a state there is bound to be bleeding and laceration of gingiva. Thus an ideal margin cannot be established due to impaired visibility. Also the impression when taken in such a state is not recorded properly and details are not transferred to the cast.

Often when a patient is indicated for restoration or endodontic treatment he has had a proximal cavity for a long time prior to the treatment. This has led to a pocket formation due to food impaction occurring continually. Also there is a possibility of interdental bone loss having occurred.

After the management of tooth by required treatment the patient is directly posted for a crown preparation. The crown is delivered. Here though patient gets relief from pain he comes back with the problem of food impaction which he says was never his problem prior to the treatment. Obviously at that point of time the food debris was getting washed away due to open contact. Now the coronal part has been sealed but loss of interdental papilla and/or bone which had already occurred leave a space which now is a like a trap.

Hence patient complains of food impaction. To overcome this problem, it is necessary to do a thorough prophylaxis prior to crown preparation. It is advisable to do a subgingival scaling and curettage and wait for couple of days prior to crown preparation. This helps the papilla to come back to proper shape and a physiologic contour. Also it does not bleed during crown preparation.

Food impaction: Prevention and Management^[7]

Permanent Restoration

The factors that should be properly taken care off in permanent restoration: proximal contact, contour of occlusal surface and facial and lingual contour.

Periodontal Treatment

Scaling and root planing, flossing/interproximal brushing, curettage, etc should be performed as one of the preliminary steps in the prevention and management of food impaction.

Source of support: Nil

Occlusal adjustment

The sharp peaks of plunger cusp should be rounded. Furthermore, extrusion is associated with discrepancy in marginal ridge relationship. If extrusion is less, discrepancy can be managed simply by grinding. But if extrusion is greater, restoration with prosthesis is required to correct marginal ridge discrepancy.

Conclusion

Certain small and basic periodontal principles followed prior to tooth preparation can go a long way in helping the patient for satisfactory prosthesis. It also saves the clinician lot of bother of spending clinical time on non productive work. Basic knowledge of periodontal physiology helps in making this possible.

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