

Minimally Invasive Surgical Technique with Occlusal Re-Contouring in the Management of Food Impaction: A Case Report

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Abstract:- Food impaction is forceful wedging of food into the periodontium. Continuous impaction food leads to localized periodontitis, periodontal abscess and even carious lesion. The contour of occlusal surface established by the marginal ridges and related developmental grooves normally serves to deflect food from interproximal spaces. MIS-based periodontal therapy involves minimal incision and removal of the affected tissues and formation of a space to allow for the maximum retention of blood clots on the wounded surface, thereby inducing wound stability with the aim of achieving new attachment, which is the ideal mode of attachment. This case report is based on using minimally invasive surgical technique (single flap approach) with occlusal recontouring in the management of patient with chief complaint of food impaction causing localised periodontitis.

Keywords:- Food impaction, MIST, Single flap approach (SFA), Occlusal recontouring.

I. INTRODUCTION

Food impaction is the forceful wedging of food into the periodontium by occlusal force. It may occur interproximally or in relation to the facial or lingual tooth surfaces. Food impaction is a very common cause of gingival and periodontal disease leading to gingival inflammation-bleeding & foul taste, progressing into chronic periodontitis with alveolar bone destruction. Failure to recognize and eliminate food impaction results in unsuccessful outcome periodontal therapy performed in the region.

Food impaction is distinct from food lodgement, later being just a mere lodgement of food particle, which get washed away even after normal mouth rinsing. The forceful wedging of food normally is prevented by the integrity and location of proximal contact, the contour of the marginal ridge and developmental grooves & the contour of the facial and the lingual surfaces. An intact and firm proximal contact relationship precludes the forceful wedging of food interproximally. The location of the contact is also important in protecting the tissues against food impaction. The optimum cervico-occlusal location of the posterior contact area is at the longest mesiodistal diameter of the generally just apical to the crest of marginal ridge. The proximity of the contact point to occlusal plane reduces the tendency toward food impaction in the smaller occlusal embrasures. The absence of contact or presence of unsatisfactory proximal relationship is conducive to food impaction. The contour of occlusal surface established by the marginal ridges and related developmental grooves normally serves to deflect food from interproximal spaces¹. (FIG-1)¹

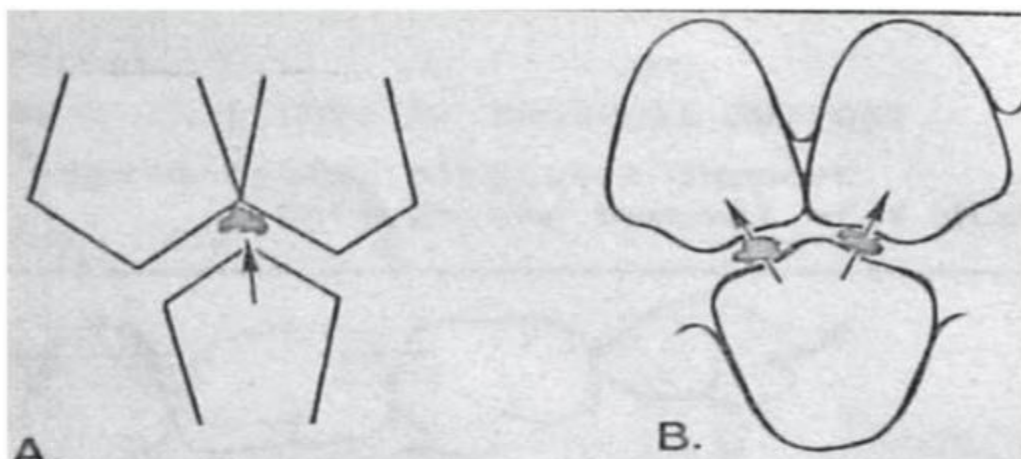


Fig. 1: Role of contour of marginal ridge in prevention of food

- **Hirschfeld** (1930)¹ have documented several conditions and factors responsible for food impaction and gave classification of factors causing food impaction as follows: **Classification of Factors Causing Food Impaction**

Class I: Occlusal wear

Class II: Loss of proximal contact

Class III: Extrusion beyond the occlusal plane Class IV: Congenital morphological abnormality Class V: Improperly constructed restorations

Periodontitis is the chronic inflammation of the periodontium that extends beyond the gingiva and involves the destruction of the connective tissue attachment of the teeth. The treatment involves debridement of the tooth surface and the adjacent areas employing scaling, root planning and periodontal flap surgery. While scaling and root planning are non-surgical treatment modalities and are conservative; periodontal flap surgery gains access to the underlying bone for complete debridement achieving pocket depth reduction, periodontal regeneration and maintenance of periodontium in healthy condition feasible by routine home care methods by the patient².

Minimally invasive surgery (MIS) is a concept that was introduced to the field of medicine in the 1990s and subsequently applied to periodontal surgical procedures (flap surgery) by Harrel and Rees⁴). MIS-based periodontal therapy involves minimal incision and removal of the affected tissue and formation of a space to allow for the maximum retention of blood clots on the wounded surface, thereby inducing wound stability with the aim of achieving new attachment, which is the ideal mode of attachment⁵.

Building on this concept, Cortellini and Tonetti have reported minimally invasive surgical technique (MIST) and modified-MIST (M-MIST) for interproximal isolated intra-bony defects. Trombelli et al have also reported single flap approach (SFA) as a minimally invasive surgical technique⁶. A single-flap approach (SFA) is one of the periodontal flap designs proposed to minimize the surgical trauma³. The principle behind single-flap surgery consists of elevating a limited mucoperiosteal flap to allow surgical access from either the buccal or palatal/lingual aspect only, depending on the extension of the lesion, and leaving the interproximal supracrestal gingival tissues intact with minimal alveolar bone exposure. The primary advantage of the SFA compared to the double-flap approach (DFA) is flap repositioning, and suturing to the undetached papilla, thereby preventing contamination by blood clots, minimal alveolar bone loss and reduction in the post-surgical recession⁷

II. CASE REPORT

A 44 year-old male patient visited the Department of Periodontics, with a chief complaint of food getting stuck in his upper back tooth region since 1 year with no relevant medical history and with past dental history of restorations in his back tooth region 5 years ago.

On clinical examination, generalized supra gingival and localized subgingival calculus with periodontal pocket of 7 mm i.r.t. to 16 & 17, also sharp marginal ridges and slopes (mesial and distal) i.r.t. 46,47, was elicited.

Patient was advised for IOPA i.r.t 16& 17. On radiographic examination vertical bone loss was present in the interproximal area (Fig- 2).



Fig. 2: IOPA i.r.t 16 & 17

Based on the clinical and radiographic examination patient was given the diagnosis as chronic generalized gingivitis with localized periodontitis i.r.t.16 & 17.

Based on the above findings the proposed treatment plan -routine blood investigations(which was under normal limits),oral prophylaxis ,occlusal correction followed by Minimally invasive surgical technique i.e. Single flap approach(SFA) was planned.

III. PHASE I THERAPY

As phase I therapy oral prophylaxis was performed and oral hygiene instructions were given to the patient followed by occlusal re-contouring as follows:

Patients normal occlusion was noted in maximum intercuspation position ,then using articulating paper the

(Fig -3(A-D)

premature contact points are recorded by asking the patient to make protrusive ,retrusive and latertotrusive movements.The articulating paper imprint is noted and the marginal ridge along with the cuspal inclinations are then recontoured and rechecked followed by polishing the tooth surface.

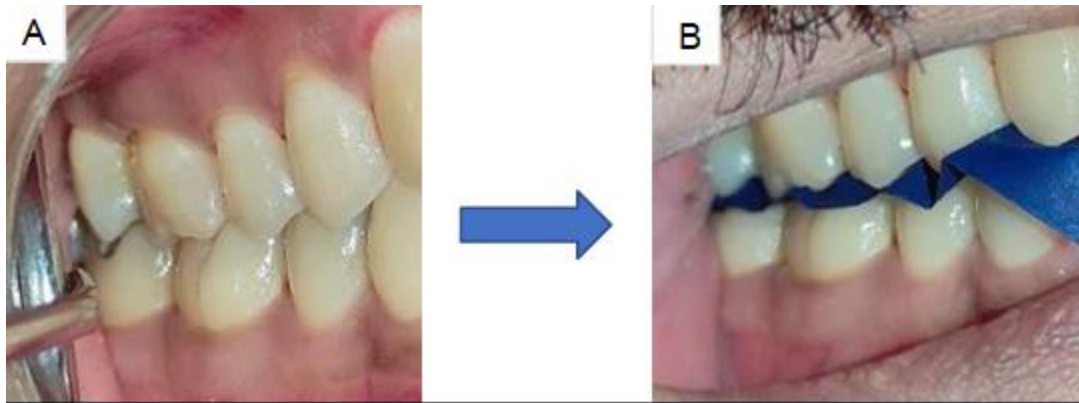


Fig. 3: A& B-OCCLUSAL ANALYSIS USING ARTICULATING PAPER

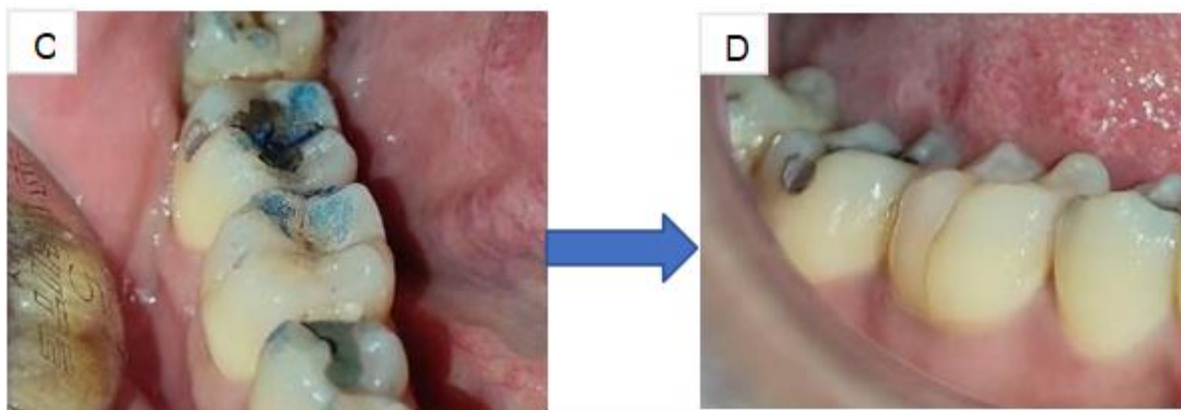


Fig. 3: C- SHARP MARGINAL RIDGES & SLOPES ,D-AFTER THE RE CONTOURING OF MARGINAL RIDGES AND THE SLOPES

IV. PHASE II THERAPY

The area was anaesthetized with a local infiltration by using 2% lignocaine with 1:80000 adrenaline. The SFA was performed by making crevicular and interdental incisions using a No.15 BP blade.A full-thickness single-side mucoperiosteal flap was reflected using a periosteal elevator.Thorough debridement and root planing was done. The mucoperiosteal flap was approximated and sutured with 4-0 silk suture.Periodontal pack was placed.Patient was recalled after 7 days post operatively ,suture and the periodontal pack was removed and healing was satisfactory.On 3 month post operative evaluation there was reduction of periodontal pocket to 3mm (Fig 4 A-I) and patient did not complain of any food lodgement.



Fig. 4(A): Pocket depth-7 mm



Fig. 4(B): Administration of LA

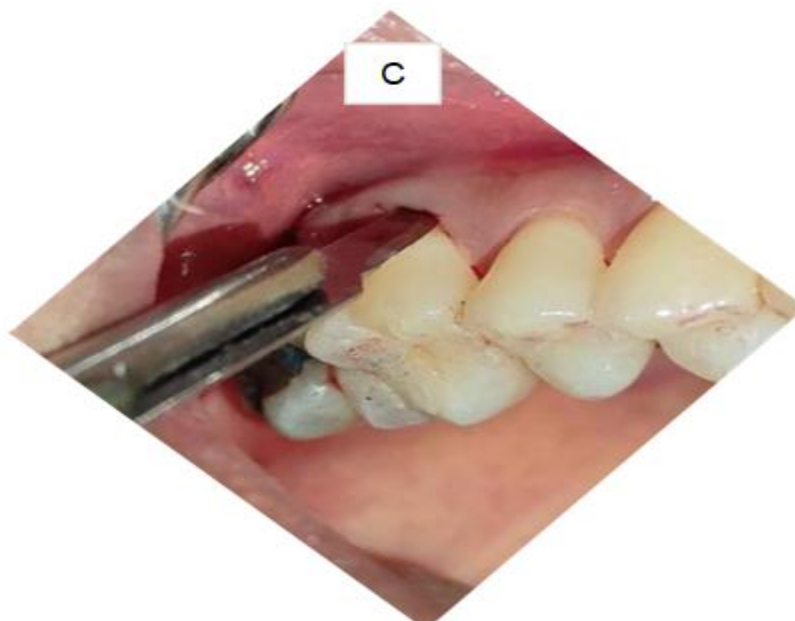


Fig. 4(C): Sulcular incision with no.15 blade



Fig. 4(D): SFA (Buccal flap elevation)



Fig. 4(E): Degranulation



Fig. 4(F): Suture Placed



Fig. 4(G): Periodontal Pack



Fig. 4(H): 1 WK Re-evaluation



Fig. 4(I): 3month Re-evaluation PPD-3mm

V. CONCLUSION

Food Impaction often makes a feeling of urgency to dig into an affected area. Very often it is seen that patient momentarily feels relief of pain after using tooth pick in gingivo-occlusal direction. But this does not solve the problem of subsequent food impaction and its sequelae. Also, just merely restoring the contact area without evaluating any non harmonious occlusal contacts does not relieve Food Impaction. Hence it is very necessary to find the factor responsible for Food impaction. The ultimate goal of any treatment modality is resolution of the disease with regeneration of the lost tissues, if possible producing minimum post-operative morbidity. Minimally invasive surgery is one such treatment modality that is giving promising results in terms of reduced surgical trauma, increased wound stability, excellent primary closure of the wound with minimal patient's discomfort and side effects.

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