

Marginal Integrity Around Bonded Fixed Prosthesis After Instrumentation With Subgingival Scalers And Curettage - A Review

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Abstract: Marginal adaptation is a critical property of treatment. These summaries marginal fit in the light potential disrupting factors And underlying mechanisms in provisional fixed prosthesis treatment. Marginal gap at tooth restoration and should be sealed properly. Microbial leakage is the most important factor influencing long term success of restoration and causing interfacial contamination of bacteria through ingress of oral fluids. Complications of marginal integrity can cause micro/nano size gaps resulting in plaque accumulation, sensitivity, and secondary caries. marginal integrity remains an important predictive tool for clinical outcome at restoration margins. ultrasonic instrumentation for root debridement, on changes in periodontal clinical parameters. Microleakage is a cause of restorative treatment failure and allows the passage of bacteria, oral fluids, molecules from the restoration and cavity walls. The vibration of scaler tips is the main effect to remove the deposits from the dental surface and there will be a constant flushing activity of the lavage used to cool the tips and cavitation activity which cause disruption of the weak and unattached subgingival plaque.

Key words : Curettage , Fixed prosthesis , marginal integrity , marginal leakage , ultrasonic scaler ,

1. INTRODUCTION

The longevity of fixed prosthodontics depends on the condition of the marginal adaptation to the abutment teeth. Marginal gaps can form a favorable condition for biofilm deposition, thereby contributing to the development of caries and periodontal diseases. Moreover, regardless of the sort of cement, large gaps increase the wear of the cement regardless of its kind. Fixed partial dentures are critical part of fixed prosthesis treatment optimum inter fixed restoration protect underlying preparation , pulp and gingiva [1] . ensure the return to health of any traumatised soft tissue definitive restoration fabricated by laboratory . Gap

measurements along margins are usually used to assess the quality of single crowns. However, the number of gap measurements required for clinically relevant results in laboratory studies is not known and rapid increase of standard errors clinically relevant information about gap size regardless of the measurement sites are selected systematically or randomly [2]. aesthetic factor marginal fit , tissue compatibility should posses The importance of Marginal adaptation of fixed Prosthodontics is to determine the minimum number of gap measurements on margins of single crowns to create consistent results for gap analysis .The importance of Marginal adaptation of fixed Prosthodontics is to determine the minimum number of gap measurements required to create consistent results for gap analysis; 1 and 90 for custom-made crowns [3] . The study of the Marginal adaptation of fixed prosthodontics can determine the accuracy of interim crowns fabricated technology and the materials used for this purpose and the evaluation of the crowns by measuring marginal discrepancies and dye penetration. Custom fabricated materials should be used for fixed prosthesis poly methyl methacrylates are used in fixed prosthesis [4].

2. MATERIALS AND METHODS:

By reviewing various available articles , data were collected through search engines like Pubmed, Google Scholar with period consideration from 2000-2020. Number of articles were collected based on study setting in both prospective and retrospective study or case study .

Inclusion Criteria:

- Treatment planning
- Function of Fixed partial denture
- Marginal integrity

Exclusion Criteria:

- RPD and other prosthesis

MARGINAL INTEGRITY :

Marginal gap is the perpendicular measurement from the marginal surface of the restoration to the axial wall of the preparation [5]Internal gap , marginal gap , over extended margin , above marginal , discrepancies are hypothetical preparation setup with clear cut margins [6]measuring marginal adaptation includes sectioned or embedded specimens visualisation by stereo microscopy and clinical examination [7]. marginal gap and marginal micro leakage should be treated before and after manual mechanical periodontal maintenance [8].

MARGINAL DISCREPANCY

It is the closest distance between retainer and tooth preparation to avoid over extension of retainer poor marginal adaptation of restoration and microflora leads to periodontal disease , micro leakage can cause pulpal inflammation [9] they are not visible in naked eyes .

FACTORS THAT AFFECT MARGINAL ADAPTIONAL

Adaption of Dental crown , finish line , geometry of the tooth preparation, fabrication technique, crown material , porcelain veneering , aging and cementing

FINISH LINE

Better marginal adaptation with round shoulder finish line by deep chamber which can be larger volume of tooth structure in round shoulder margin With increasing insistence on conserving the integrity of remaining tooth structure, it's the responsibility of the clinician to contain restorations only to the extent of lost tooth structure. Intracoronal bleaching of discoloured intact pulpless anterior teeth with 3%–30% hydrogen peroxide is taken into account as a perfect option to refurbish esthetics also to preserve the structural integrity of the tooth [10] . It indeed reduces the need for invasive procedures like veneers and crowns. During bleaching, hydrogen peroxide ionizes to release free radicals and nascent oxygen, which break down the larger chromogenic pigments to smaller less intensive ones thereby lightening the colour of the tooth. However, the clinician faces multiple challenges when

composite restorations are to be done immediately following bleaching. HP causes deleterious effects on the enamel by oxidizing the organic and inorganic components of the latter. Studies have shown that HP causes micro- to nano-morphological changes on the enamel surface, depending upon its concentration and exposure time, resulting in cracks and craters [11].

MICROLEAKAGE

The residual peroxide radicals interfere with the polymerization of composite resin, as well as reduce the penetrating ability of resin adhesives into enamel which is essential for micromechanical retention. The marginal integrity of composite restorations is additionally compromised once they are used immediately as permanent restorations in access cavities of teeth subjected to intracoronal bleaching. Loss of marginal integrity opens up a microscopic gap between the tooth and the restoration, leading to a cascade of events that ultimately result in failure of the restoration

It is the function between cemented restoration and tooth more accurately restoration adapted to tooth, lesser is the chance [12]. It is the seepage of oral fluid containing bacteria and debris between tooth and restoration remaining in the pulpal tissues that affect the tooth cement with crown restoration as tooth foundation [13]. They are the cause of dental restoration failure. Between the fluid restoration and tooth structure cement seals the margin and prevents leakage. Gap created in marginal restoration becomes a repository for microorganisms to release the toxic products they cause gingival and pulpal inflammation leads to secondary caries formation [14]. Marginal fit and marginal leakage of the dental restoration are the important measurements of clinical success.

FIXED PROSTHESIS

Importance of marginal adaptation of fixed prosthesis number of gap measurement on margin of single crown for gap analysis. Finish line is the factor that influences the marginal adaptation of crowns [15]. It should provide provisional coverage for teeth from the time of initial preparation until the placement of definitive prosthesis and to enhance esthetics, stabilisation and limited period of time [16].

ULTRASONIC SCALER

Mechanic stimulation of sonics and ultrasonic scalers effective tooth for plaque and calculus removing from the tooth and root surfaces, they have effect on surface roughness of restoration of restorative materials which cause microleakage at the margin of composite restoration [17]. which develops heat and discomfort by instrument in the root surface, active tips of the ultrasound may come in contact with the border of denture, altering the bond strength [18]. ultrasonic speakers are a common instrument used for debridement of root surfaces for periodontal therapy causing consequent roughening high risk of secondary caries. Efficient adhesives become ineffective due to greater hardness of restorative material [19].

CURETTES :

Using plastic cures have the effect of sealing or scaling in the prosthesis, this produces least amount of Damage than metallic, stainless steel and titanium alloy the vertical micro groves are effective in removing mature carelessness. Titanium and stainless steel cures are contraindicated [20].

COMPLICATIONS OF FIXED PROSTHESIS

Treating a completely edentulous patient one of the main objectives in selecting and arranging artificial teeth is to produce a prosthesis that defies detection [21]. missing teeth have been replaced by fixed or removable prosthetic appliances [22].

Studies have reported lower microgap and misfit values for pre machined abutments than with cast abutments [23]. microbial resistance has increased leading to due to the development of more potent antimicrobial agents from the micro leakage .Discrepancy in marginal fit facilitates, salivary infiltration and microleakageresulting in dissolution of the luting cement; thus, increasing the susceptibility to caries, eventually leading to pulpal damage [24]. Increasing incidence of periodontal diseases and many research developed antibiotic resistance against disease [25] . food debris around the exposed margins which subsequently initiates periodontal breakdown in abutment teeth[26]. spreading bacterial infection affecting the dermis and subcutaneous layer characterized by local findings of tenderness, erythema, increased warmth, swelling, and regional lymphadenopathy [27]. clinical longevity, the condition of the periodontium and systemic condi- tions are not the only determining factors [28].

CHARACTERISTICS OF FIXED PROSTHESIS

Fixed prosthesis either restored taking support from teeth or using implants. Replacing the anterior teeth with good aesthetics is a complex procedure[29]. It includes fit, shade matching, tooth form and strength[30] . Prosthetic rehabilitation is done to regain function, speech and esthetics[31][32] trauma, tumor and can cause severe disfigurement and facial impairment.For teeth requiring crowns or replacement in the form of fixed dental prosthesis, gingival retraction becomes a mandatory procedure which aids in recording the prepared and unprepared surfaces of the abutment tooth incidence of dental diseases like gingivitis and may even contribute to low salivary pH, thus in turn leading to increased incidence of dental caries[33][34]. Even Masticatory forces adversely affect the retention of the prosthesis [35].

3. CONCLUSION

Evaluation of marginal integrity is the important tool to predict fixed restoration margins 90degree shoulder and chamfer preparation provide viable option for fabrication and Beverley 90 degree shoulder and feather edge is not recommended. Curette produced a rougher root surface than two ultrasonic devices .

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AUTHORS CONTRIBUTION

Author 1 Mathivathani.V , carried out the study , Author 2 Dr.Venkatesh aided in conception of the topic , has participated in the study review design and supervised in preparation of the manuscript . Author 3 LakshminarayananArivarasu did the drafting of the manuscript . All the authors have discussed among themselves and contributed to the final manuscript. Author 4 Dr. L. KeerthiSasanka participated in the conception of study design and supervised in preparation of the manuscript.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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