

MMS Modified Matrix System

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Description of the Problem

Empathizing with patients and our colleague orthodontists where Orthodontic treatment can be a lengthy process, and if oral hygiene is neglected, patient will develop Caries, especially interproximal caries during this time.

- The incidence of newly developed dental caries lesions during orthodontic treatment was 45.8%. In another review article, the authors reported orthodontic treatment to be a risk factor for dental caries, especially in younger patients.*
- Distal surfaces of maxillary canines and of the first and second premolar teeth showed the highest caries rates, with 74.5%, 68% and 59.4%, respectively. Likewise, the highest prevalence of caries experience was observed on the distal surfaces of mandibular canines and the first and second premolar teeth (67.6%, 67% and 64.1%, respectively)**
- Traditionally, these interproximal caries treatment necessitates the usage of matrix band to aid in restoring a normal contact & contouring area and to prevent extrusion of the restorative material into the gingival tissue , which require the removal and subsequent replacement of orthodontic wires, extending treatment time and complexity.

*Relationship between orthodontic treatment and dental caries: results from a national survey
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9379177/>
**Prevalence of Caries on Individual Tooth Surfaces and its Distribution by Age and Gender in University Clinic Patients
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2897860/>

Implementation of the Idea

MMS offers a practical and time-saving solution for managing such cases without disrupting the orthodontic process.

- MMS tools , equipment and resources are attainable .
- MMS technique is integrated & easily implemented in our system as we are already using a matrix band for interproximal caries restorations
- Ongoing training of 5-10 dentists .

Description of the Idea

Plan: is to create a pathway in the routinely used matrix and allowing the orthodontic wire to pass through.

Execute : Applying the idea on a study model with ivory teeth and proximal caries (#44 distally)

Test: cutting the matrix band with (2 V shaped slots) allowing the wire to pass through.

Result : A fitted matrix band to properly perform the needed restorative procedure without any evident damage to the orthodontic wire.



Cost Benefit Analysis of the Idea

1-No additional cost is needed

(the same available routinely used matrix and a scissor)

2-Saved dental appointments lead to saved costs associated with it (the operation of the unit, the payment for the dentist and the assistant)

3-Less orthodontic wire disposed.

4-Saved additional costs not only for the institution but also for the patients by minimizing the additional orthodontic visits in between restorative visits (car driving or travelling from another city)

Estimated cost saving:

(150 R.S cost of one visit, 85 R.S cost of orthodontic wire)

By minimizing the number of visits from 3 to 1 visit .

385 R.S cost saved / tooth in need.



Sustainability of the Idea

MMS is easy to be sustained after staff training , as it doesn't need any new material. Available resources are used in the method.



LEADERSHIP SUPPORT AND ENCOURAGEMENT



MULTIDISCIPLINARY INVOLVEMENT IN THE PROTOTYPE FORMATION.



CULTURE OF IMPROVEMENT: BY SEEKING EFFICIENT SOLUTIONS, THE STAFF IS ENCOURAGED TO INNOVATE AND OPTIMIZE PROCESSES.



FOR TRANSPARENT FEEDBACK PEER REVIEW CAN BE DONE.

Impact of the Idea

MMS technique has the potential to improve patient experience & satisfaction by the following:

1-Providing treatment for the patient : Managing patients complain or detecting caries and delivering adequate care is the core for improving patient experience .

2- Reduced appointment burden: By allowing dental restorations to be performed without removing the orthodontic wire, patients will require fewer appointments, saving them time and effort.

3-Enhanced scheduling flexibility: With more vacant appointments available due to shorter treatment time, all patients in need will have more options when scheduling their visits, leading to greater convenience.

4-Accelerated treatment: The potential to speed up the orthodontic treatment process can reduce the overall duration of discomfort and inconvenience associated with braces. The current baseline number of appointments for each orthodontic patient with interproximal premolar caries management is 3 appointments.

After training to use MMS it targets to be for such patient to one appointment .

Novelty of the Idea

Credible Resources	Implementing the Proposed Technique
Dental Research Databases: academic databases like PubMed or ScienceDirect articles	×
Dental Journals (American JADA , European EJdent)	×
Dental Associations: American Dental Association (ADA) or the American Association of Orthodontists (AAO).	×

This newly developed method is not being indicated in the available literature.

Risk of the Innovation

- While this analysis highlights potential benefits, training sessions are required for Restorative Dentist and General Practitioners to ensure Proper implementation.
- We are collecting enough sample size to distribute a survey with a transparent feedback to have a proper analysis .