

Original Research

Matrix systems in dentistry- A review

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ABSTRACT:

The restoration of proximal surface cavities is a fundamental objective for the dental practitioner. In cases where one or more of the tooth's walls are absent, matrices are employed to prevent the gingival overhang. Depending on the level of tooth destruction, they might range from a simple metal or plastic strip to a circumferential ring of metal surrounding the entire crown. This article focuses on use of different types of matrices used to restore the walls of the tooth efficiently.

Keywords- Dental matrices, Mylar strips, Teflon tape.

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INTRODUCTION

Developing multifaceted approaches to proficiently manage all aspects of their clients' care has been the responsibility of dental professionals since ages. This scenario involves different cognitive and psychomotor applications for the purpose of qualitative diagnosis and treatment decisionmaking objectives. The learning pursuits should include expertise and specialized knowledge in the field in which one is practicing; excellent manual dexterity and practice

skills; quality work in services, research, and administrative endeavors.

MATRICES

A dental matrix band is defined as "a properly shaped piece of metal, or other material, inserted to support and to give form to the restoration during placement and hardening of the restorative material," with the recreation of natural tooth shape and interproximal contact position as the ultimate objective¹(Figure-1).



FIGURE-1

FUNCTIONS OF DENTAL MATRICES

- Preserve the restorative material, preventing it from spilling over.
- Restore the anatomy of the tooth, helping to reconstruct its contact relationship and the lost contour.
- Restore the biological function of the tooth and protect the supporting tissues, avoiding injuries.

- Contribute to the surface finish, achieving a non-retentive surface for plaque or food debris.
- Reduce the probability of secondary caries.
- Increase the useful life of composite restorations.
- Protect the neighboring tooth during a cavitary preparation procedure.

IDEAL REQUIREMENTS

1. It should have ease of application.
2. Ease of removal.
3. Provide proper proximal contact and contour.
4. Should be cost-effective and confine the restoration.

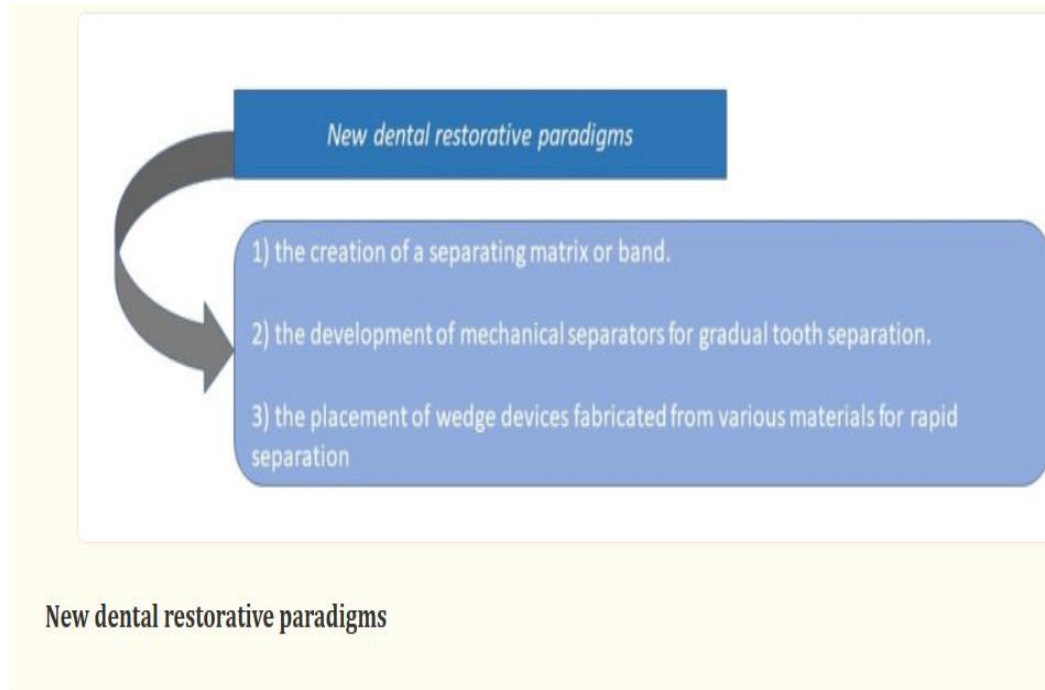


FIGURE-2

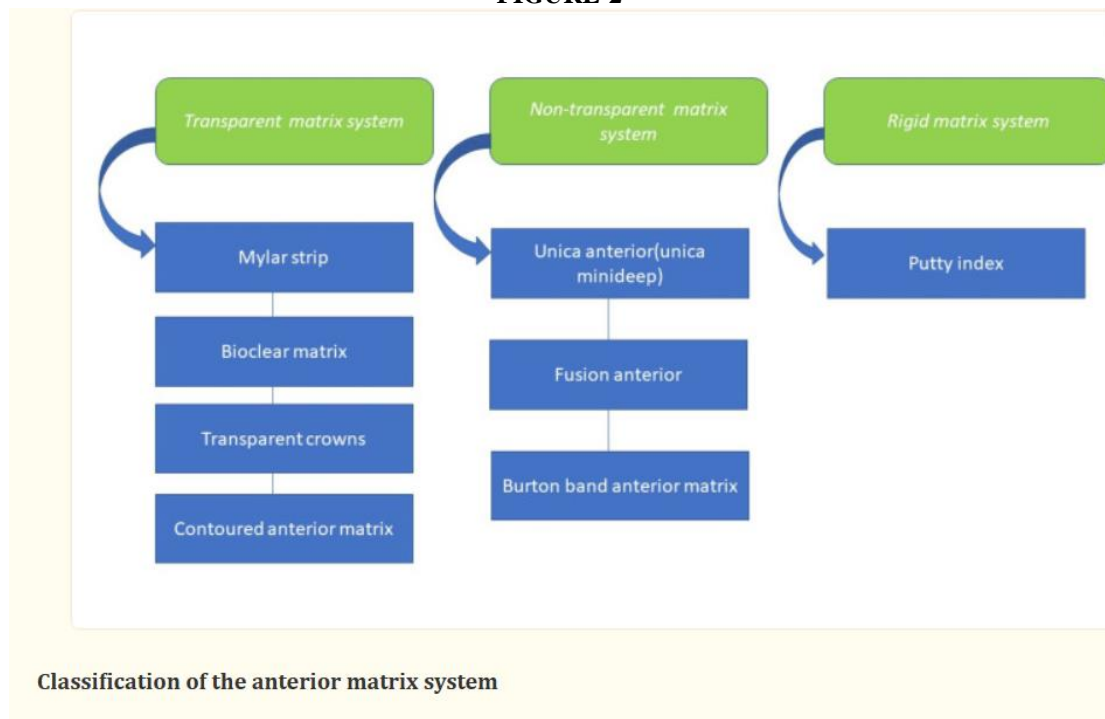


FIGURE-3

MYLAR STRIP

The Mylar strip can be applied using a pull-through technique, when the adjacent tooth has a flat contact region. Multiple surfaces of the same tooth and

numerous adjacent lesions must be restored, which is time-consuming and difficult. None of these matrices can be employed effectively while treating Class V cervical defects as well².(Figure-4)



FIGURE-4

TEFLON TAPE

Clear Teflon and cellulose acetate strips are typical interproximal matrices. These strips are useful because the resin can be photoactivated through the transparent matrix. When stretched, polytetrafluoroethylene (PTFE) tape they act as a thin interdental barrier and create a restorative contact area that is reasonably accurate. It can be used as a separating medium when placing composite restorations³.(Figure-5)



FIGURE-5

MODIFIED PUTTY INDEX USING MYLAR STRIP

When the defect to be corrected in incisors teeth is built up using direct technique or indirect technique,putty index of the incisors is made.The index is created using either addition or condensation silicone putty materials.(Figure-6)



FIGURE-6

The putty index is placed on the palatal surface for composite insertion after acid-etching and bonding agent application on the tooth surface to be repaired. An alternate option is to use a clear silicone index. Since silicone is sticky, it might be challenging to construct, with which several direct composite resin restorations can be placed successfully.

ADVANTAGES

1. It creates the correct contour and length of the incisal edge, when a rigid matrix is utilized to restore the palatal surface thereby used to guide and support the labial surface composite buildup.
2. It helps with palatal surface moisture control.
3. It can be used in multiple tooth restorations, crowded teeth, and severely defective restorations.

4. When used in the labial surface buildup, flexible matrix Mylar strips help achieve the ideal aesthetic anatomic contour and outstanding labial surface finish⁴.

DISADVANTAGES

In major defect restorations, flexibility can contribute to incorrect contour and contact establishment, unable to achieve exact contour in the palatal aspect of restorations⁵.

TRANSPARENT CROWN

When tooth tissue has been lost from many surfaces, generally as a result of cavities or trauma, they are traditionally used for primary full coronal restorations. They are frequently employed in the development of microdont incisors as well⁶.

Blue View VariStrip™ (contoured anterior matrix)



FIGURE-7

Providing the ideal curvature and band height for practically all anterior restoration from one end to the other, the 0.05 mm thin anatomical strip is tapered. The strip can be placed interproximally and slid until the tooth heights are exactly aligned. The occluso-gingival anatomy is easily recreated with pre-contouring, and flat embrasures are avoided. It is used for Class IV and diastema closures⁷(Figure-7).

BIOCLEAR MATRIX SYSTEM

They are used in restorative dentistry and aesthetic procedures where small areas need to be filled and have less curvature than diastema closure matrices. The matrix can be utilized wedge-free to close narrow areas with a large contact. The papilla stabilizes and minimally seals the matrix once it is put in the sulcus. The anatomically formed matrices from bioclear allow the composite to be injected/placed into the embrasure without the risk of an overhanging margin⁸(Figure-8)



FIGURE-8

It provides cervical adaptation, superior to flat Mylar strips. It preserve the gingival papilla, have easy matrix selection⁹.

BURTONBANDS ANTERIOR MATRIX SYSTEM



FIGURE-9

The proximal wall is helped to develop by the anterior matrix system of the Burtonbands(Figure-9).It allows complete access to the restoration, thereby improving the face embrasures formation and enabling the incisal embrasure to be shaped and positioned correctly. While allowing access to subgingival cavities that are difficult to reach,seal the gingival margin to prevent isolation problems, extra flash, and overhang margins⁷.

FUSION™ ANTERIOR MATRIX SYSTEM

It provides firm seal at the cervical margin, maintaining the ideal anatomy of a tooth, and the

unique "T" design rests deep in the interproximal region reducing the feared "black triangle."The cervical interface provides better adaptation with deep restorations. For deeper restorations, the strong metal matrix bands are substantially thinner than typical plastic strips and can be put through existing contacts and into the sulcus.

Ideal gingival/incisal anatomy and facial/lingual anatomy are pre-built, making sculpting in the crucial anterior area more easier.They smoothly slide along the interdental papilla to sit interproximally, allowing for maximum tooth separation and helping to prevent black triangles¹⁰(Figure-10)

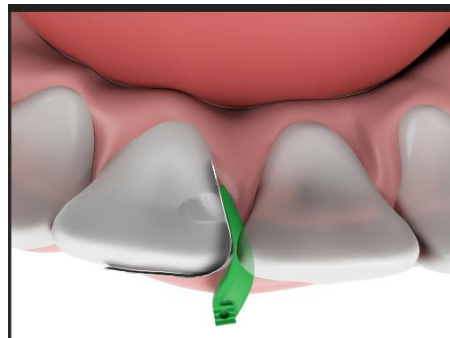


FIGURE-10

INDICATIONS

1. In anterior restorations like Class III and IV crowns and composite veneers.
2. The appropriate anatomical curvature is produced in a gingivo - incisal and facial - lingual orientation when properly inserted.

UNICA ANTERIOR



FIGURE-11

Unica anterior matrix system is indicated in Class III, IV, and V anterior restorations and direct composite veneers. Unica anterior allows restoration of both proximal and cervical margins at once. It anatomically restores the proximal margins to their contoured profile and easily manages the cervical area to the predictability of the restoration and gingival retraction (Figure-11).

CONCLUSION

A significant challenge while restoring anterior teeth is obtaining atight contact. To provide the best contacts and contours, the matrix should be chosen based on how simple it is to use and how effective it is. The individualized matrix technique offers a method to accurately produce controlled, functional, esthetic, and long-lasting outcomes.

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