

Although matrix bands are a relatively common and uncomplicated tool used in dentistry, they do pose some hindrances. During typical filling procedures--particularly filling cavities on interproximal surfaces--dentists must fill one tooth at a time since matrix bands cannot be placed adjacent to one another, as the thickness of two bands exceeds the contact gap distance between the teeth. The resulting process of placing matrix bands for both teeth is cumbersome and time inefficient. One current, but infrequently used device that solves this issue is the Walser Matrix band. It allows the user to perform two fillings simultaneously, however, it has not become widespread due to its inability to create a tight contact and its complexity.

In light of the fact that restorative procedures are routine in dental offices nationwide, the demand for a dental tool to assist in making these procedures more time efficient is very high. Furthermore, traditional bands that currently dominate the market (i.e. tofflemire bands or sectional matrix bands) are functional and have long been regarded as reliable tools, however, dentists are seeking a modified version which consistently yields solid contacts between the teeth while saving time. Our design is founded on the shape and functionality of existing tofflemire bands, but it is slightly modified to address all the issues dentists currently face with the existing tools. The proposed design alleviates the need to repeatedly place bands by employing a dual band system which is thin enough to securely and comfortably fit in between the affected teeth and able to simultaneously fit the appropriate convex/concave contour of each tooth. The finalized product also maintains the tensile strength, malleability, and space efficiency of current matrix bands. To verify that these properties are maintained, functionality and mechanical testing will be performed. If the tensile strength is similar to the force used on a tofflemire band during a procedure, the design will meet the mechanical standards. Functionality testing will evaluate whether using the band is efficient and simple, which will verify if procedure time can be reduced with this design. Both tests need to produce promising results in order for this design to meet the problem and operational requirements. If commercialized, this design will cut production costs as procedure time will be decreased. Patients will also see shorter appointment times.