A Difficult task calls for strong Fiber

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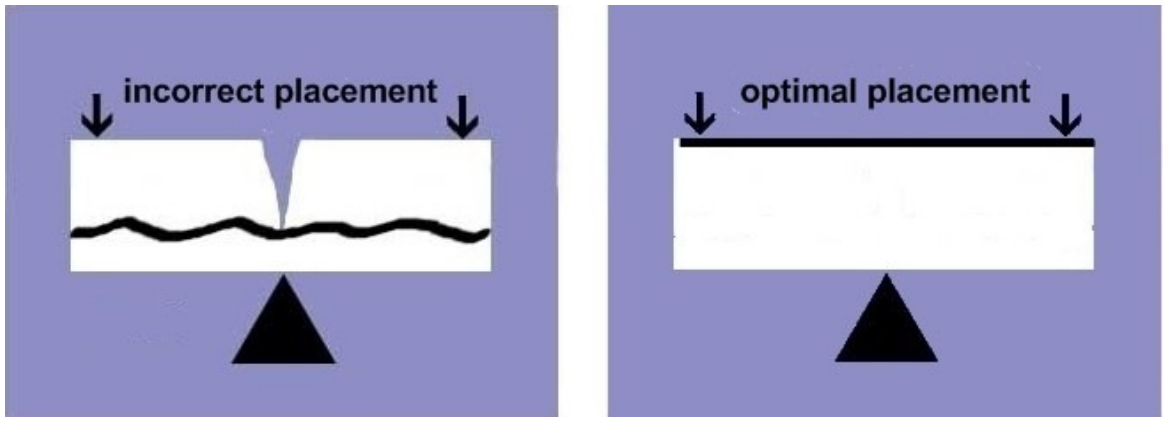
A challenge for Dental Professionals is fabricating an esthetic, yet strong and functional prosthesis when there is limited vertical space. This case presentation details a patient who fractured a new mandibular overdenture yet was unwilling to compromise on esthetics with the repair.

The patient had limited space to place denture teeth, acrylic, and attachments over the implant superstructure. After reviewing the options, the dental team chose to remake the denture with eFiber fiber reinforcement in order to provide strength but not compromise esthetics. The patient presented with a fractured mandibular overdenture retained by three Locator attachments on a CAD-CAM implant supported titanium bar. Rather than repairing the fractured prosthesis, the decision was made to fabricate a new stronger prosthesis utilizing reinforcement.

The challenge to the dental team was to increase prosthesis strength while maintaining esthetics in minimal acrylic and interocclusal space. Woven fibers or metal compromise denture esthetics and require thicker areas of acrylic to hide the reinforcement. The material chosen needed to be translucent for esthetics while allowing optimal positioning to resist fracture forces and provide strength.

eFiber and Perma Mesh were chosen to strengthen the overdenture. Unidirectional eFibers are stronger than multi-directional fiber or metal yet is translucent to maintain maximum esthetics. eFiber does not require special tools or expensive equipment and is easy to use. The fiber uniquely bonds to denture base acrylic and both acrylic and composite denture teeth to allow for esthetic and optimal placement of the reinforcement, ideally perpendicular to the fracture forces.



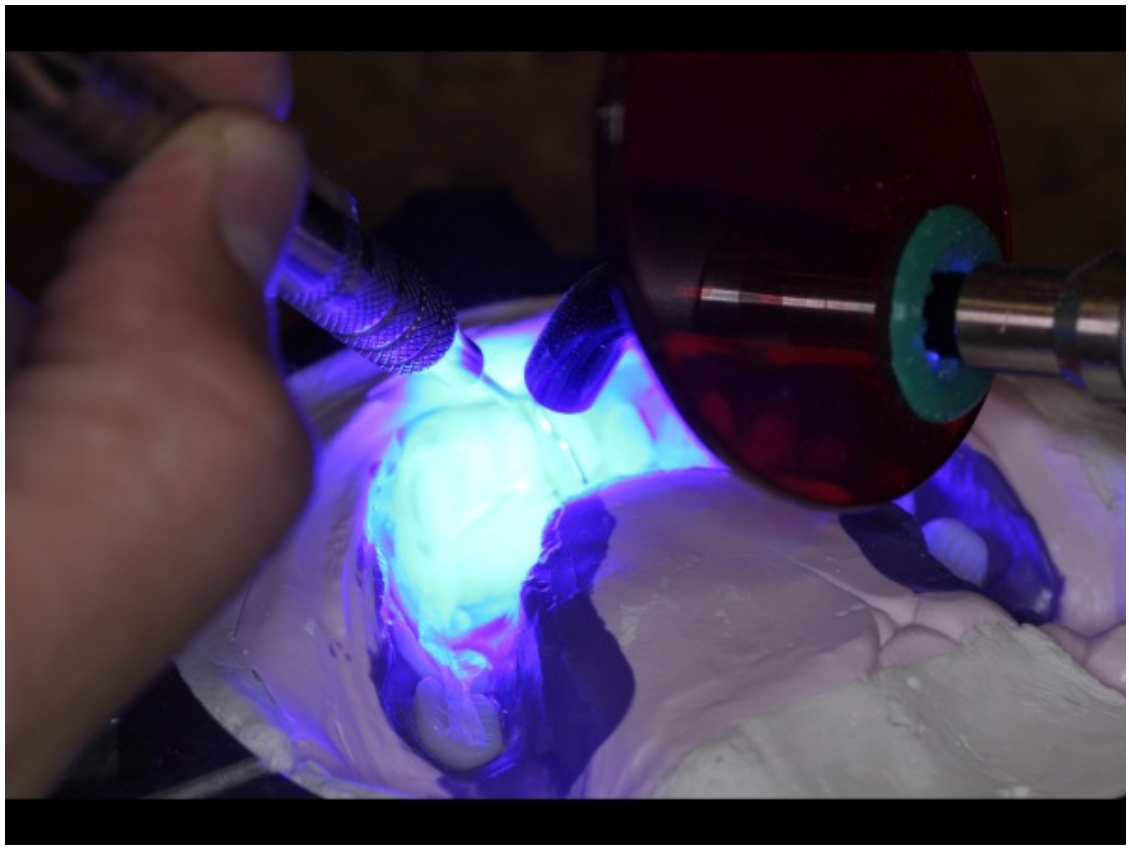
The Dental Team chose to bond the strong unidirectional eFiber to the denture teeth, placing the strongest (unidirectional) fiber at the optimal (junction of denture tooth and acrylic) position, perpendicular to the masticating fracture forces.

After the diagnostic set-up was approved, the denture was flasked and boiled out. The composite denture teeth were primed with eFiber Bonding agent (Figure 1).

The Dental Team decided that the entire prosthesis—and not just the anterior—would be reinforced with eFiber to reduce chances of future prosthesis failure. A length of wax rope was placed on the teeth and used to measure the length of eFiber needed. The fiber was cut to the desired length.

Starting with posterior teeth, the Technician bonded eFiber to the composite denture teeth by light curing the fiber onto each tooth for 3-5 seconds (Figure 2). Because eFiber is the only fiber impregnated with both

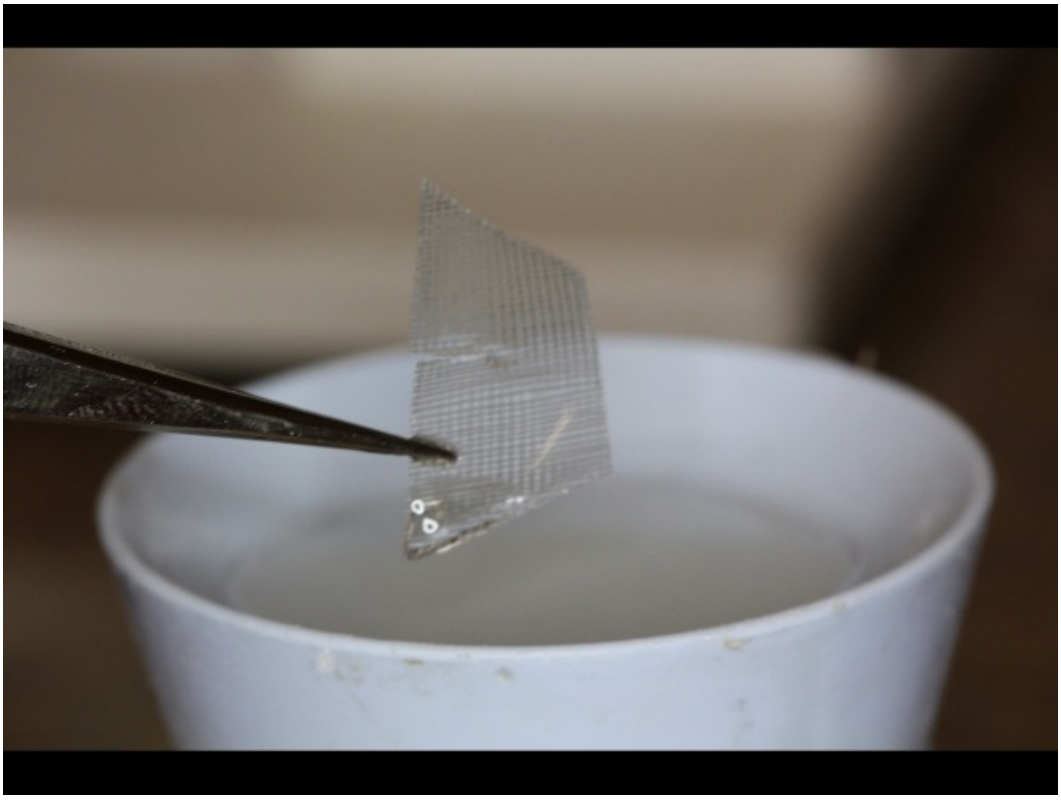
acyrlic and composite, eFiber may be used with all resin denture teeth.



A Stepper tool was used to block out adjacent teeth and eliminate premature curing of the fiber (Figure 3).

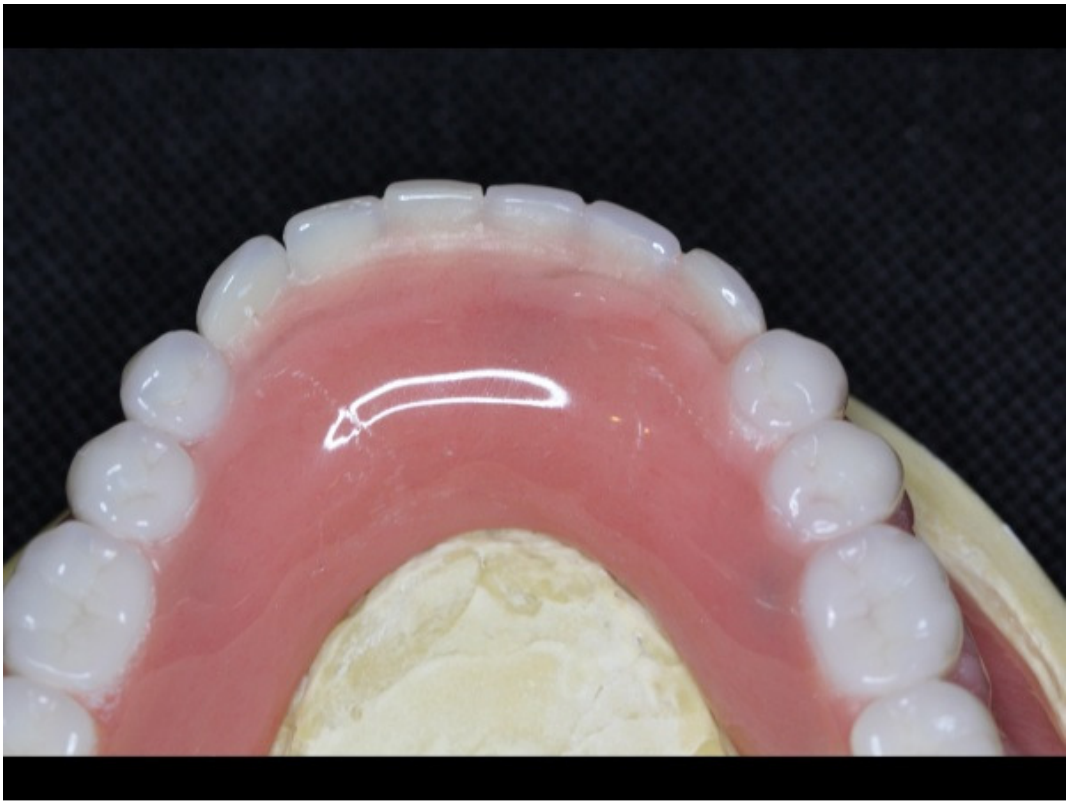
The bar was blocked out, and the Locator metal housings with yellow processing males (Figure 4) were seated into position.

The denture was processed and finished (Figure 5).



The thin areas of acrylic surrounding the Locator Male attachments concerned the Technician (James Davidge, James Dean Prosthetic Arts, Grover Beach CA), so multidirectional invisible Perma Mesh (Figure 6) was utilized.

Multi-directional fiber is ideal if the direction of the fracture forces vary or are unknown. The area to place the Mesh was lightly scored (Figure 7) and then painted with monomer. Because the fiber bonds both chemically and mechanically, there is no "minimum thickness" requirements when using Perma Mesh. Mesh maintains maximum esthetics while allowing optimal placement!



The polymer inside the Mesh was activated with a thin mix of methyl methacrylate, and the invisible Mesh was placed onto the surface of the denture. A second small rectangle of Mesh was placed offangle to provide fracture resistance in multiple planes. The Mesh and acrylic were polymerized and finished. (Figure 8).

The patient was presented with a light, strong, esthetic fiber reinforced prosthesis. (Figure 9).

Special Thanks to:

James Davidge
James Dean Prosthetic Arts
Grover Beach, CA
805-245-8397

jamesdeandlt@gmail.com