

## A LITTLE MATERIAL SCIENCE

Resin based composites were first introduced to dentistry by Bowen in 1962. Initially they were made up of two separate pastes that would polymerize together once mixed. These had a short working time, so light cured composites were introduced in the 1970s.

Modern composites are made up of a **resin** matrix, **filler** particles, and other components such as **coupling agents** to help the filler and resin bond together, **photo-polymerization agents** to allow the material to harden when exposed to the curing light, **stabilizers** to prevent discoloration over time, and **pigments** to give the tooth shade desired.

The resin is the 'glue' holding the filler particles together and is most commonly made of acrylic. The fillers add strength and durability, and can be made of glass, quartz and silica.

Filler particle size is important. The first filler particle sizes were relatively large. With wear and over time, the particles would come out and leave defects in the resin resulting in poor esthetics and finish. The newest composites have fillers that are in the nano-size making them wear more evenly for greater strength and esthetics. Filtek universal is a nanoparticle composite used in the cases below.



## COMPOSITE AND PERIODONTICS?

Why is a periodontist writing about composite?

Composite has a role in basic things a periodontist might do, like bonding a chain or eyelet to a submerged canine that needs to be moved orthodontically. Composite is used to splint teeth together such as mobile lower anterior teeth. Composite hybrids such as resin modified glass ionomer are used for repairing root resorption subgingivally. Prior newsletters have touched on tooth uncovering and managing root resorption and can be found on our website.

Composite has played a role in my practice in caring for friends and family, as well as my own mouth. I've split the topic of composites into two newsletters:

This first **ProbeTips** newsletter will highlight a few cases of more traditional dentistry that I performed for my family or staff, as well as managing anterior tooth transplantation cases. In the cases presented below, the composite used was Filtek universal packable in layers of dentin or enamel shades with follow up time up to 7 years. A putty matrix of a wax-up or digital printed wax-up was used as a guide, filling the matrix with an enamel composite shell palatally, then layering dentin shades with a final enamel shade.

The second newsletter will delve into the role of composites in restoring dental implants and in managing endodontically treated teeth with little remaining restorable tooth structure.

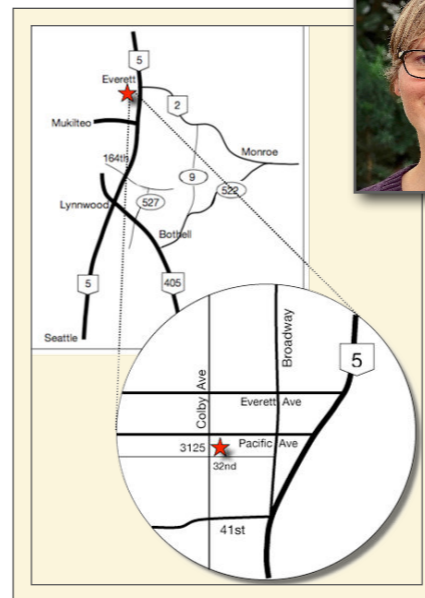
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PERIODONTOLOGY IMPLANTOLOGY ORAL MEDICINE

Pamela Nicoara is a Board Certified Periodontist practicing in Everett since 2007. She is a UW Perio graduate, and a transplant from Dallas, Texas.

She is driven to achieve esthetic and predictable outcomes, particularly for anterior implant cases, and is always looking to improve processes and results. You can email her directly below with questions, comments, or suggestions for future newsletters.



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# PROBE TIPS

## A QUARTERLY PERIODONTAL NEWSLETTER

BY PAMELA NICOARA DDS MSD

## I Love Composite Part 1



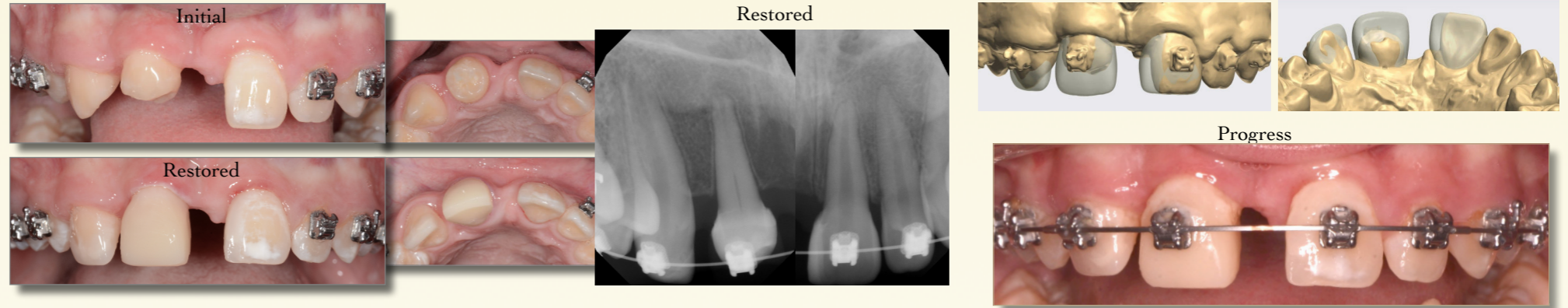
VOLUME 18, No. 2

AUGUST 2025

# Anterior Composite Restorations

## CASE 1

In this transplantation case, the patient lost both #7 and 8. The lower premolar replaces #8, and #6 will be substituted for the lateral. #9 was also narrow, so #7 and 9 were build up in pack-able Filtek in layers of colors, trying to mimic the fluorosis and mottling of the teeth. #8 was a PMMA shell made by the lab that was bonded to the premolar with flowable composite. The premolar was not prepared in anyway as this can lead to endodontic failure of the transplant.



## CASE 2

As a wedding gift for my assistant, I built up her fiancé's central incisors for their special day. His occlusion had clearly contributed to his condition. I reduced the lower incisors and lengthened the upper incisors with the same putty matrix technique of the wax up as shown below, and also used above. I made an Essix as a retainer hoping the restorations would last as long as possible. After 1 year, the Essix was lost, but now at 2 years, everything remains stable!



## CASE 3

In 2014 I performed a full mouth reconstruction on my dad. He had significant wear on his teeth with failing full coverage restorations of the posterior teeth. All teeth received full coverage restorations except for #21-27 which were built with Filtek composite in layers. After 7 years, you can see staining of some margins and occlusal wear from the maxillary zirconia restorations which obviously will win the fight in a wear competition!

