Revitalizing Restorations in Seniors

How new materials help address a new segment of aging patients

by Dr. Robert Rosenfeld

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America's population is aging; a 2016 study predicted that by the year 2030, there will be 74 million Americans aged 65 or older (or 19% of our population). That's an increase of 46% in that segment of the population in just 20 years.[1]

Geriatric dental care can be defined as the diagnosis, treatment and prevention of dental and oral diseases for all older adults.[2] The characteristics of this new generation of seniors are different from those of the past, when geriatric dental care was largely "denture care." The prevalence of edentulism in 1957–58 was 18.9%, while by 2012 that statistic had declined to 4.9%.[1]

Treating this segment of the population has become more challenging. Dentists are less comfortable suggesting—and patients are less receptive to the idea—of tooth removal and replacement by removable prostheses. Summed up nicely by a report from the AGD: "Baby boomers are retiring with basically a full complement of teeth, and there are two main reasons for that: better preventive care and workplace dental insurance. It's much more common nowadays to see a 65-year-old wearing braces instead of dentures."[1]

Seniors still face challenges, such as diminished dexterity or xerostomia (often from medications), which can contribute to an increase in caries. Dentists need to be equipped to diagnose and treat carious lesions for these patients; the use of the Diagnodent or other caries-detecting technologies, for example, may assist in the early detection of decay.

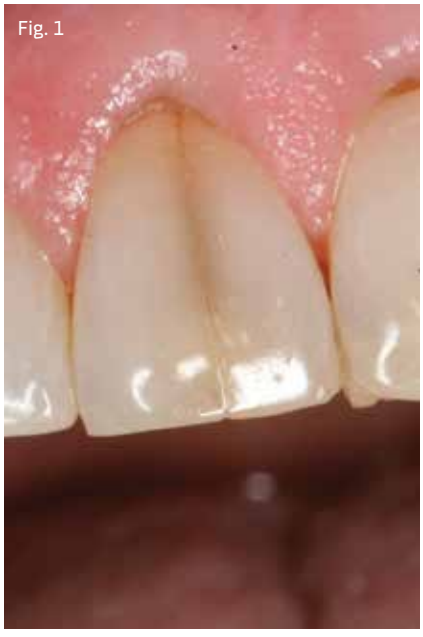


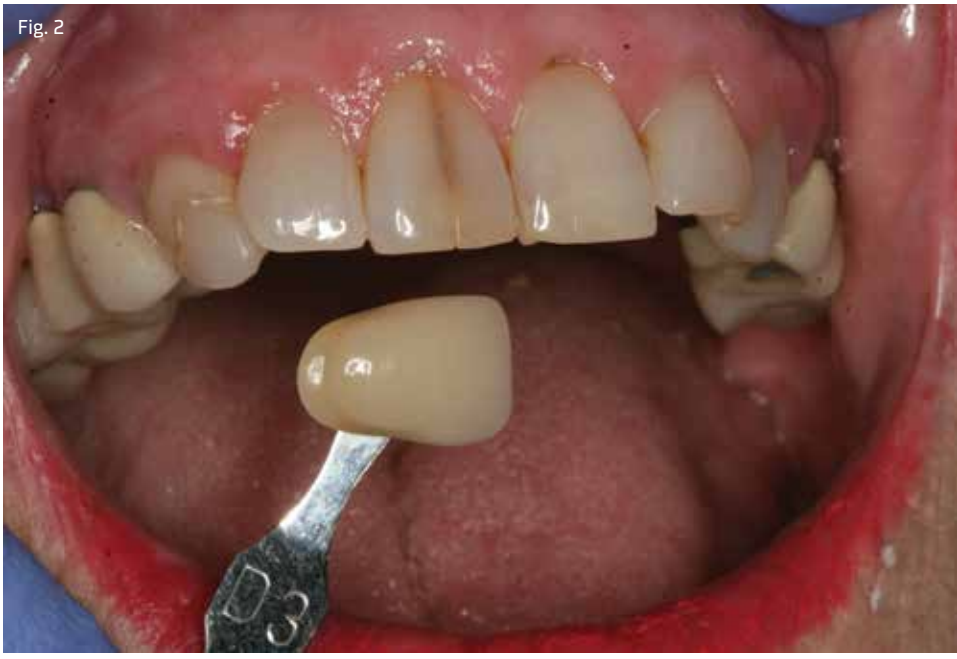
Fig. 1

It may be useful even to divide this group of patients into three subsets. There are some patients limited by medical conditions. Their mobility is compromised and so their office visits become more complicated. Some need transportation to and from the dental office, and once there may need wheelchair lifts or ramps and an office equipped to deal with their physical limitations.

Those with cognitive difficulties may rely on others to help with their oral home-care. Extensive root caries can be a common finding for this population. It may be appropriate to modify treatment plans for these patients. The use of glass ionomer restorations may be appropriate, because they are less technique-sensitive and inherently release fluoride. I sometimes describe such care as "rescue treatment."

A third subset, in my experience, are baby boomers who show few signs of slowing down. They are very active, traveling extensively, participating in sports and actively socializing. To a degree, they are "older" only as defined by the calendar. Their expectations for their dental care are unchanged: They seek high-quality, aesthetic restorations. Sometimes, treatment of these teeth can be made more complicated because of the darkening of teeth as they age.

Most composite resin materials are keyed to the Vita Classic shade guide, but many times senior patients present with teeth darker than A-4. Finding composite resins in our usual inventory to match such teeth can be an issue. Even when not excessively dark, a tooth's shade may fall between several near-miss shades, necessitating the mixing, layering, trial-and-error approach to shade matching. The following clinical cases show a simplified method to successfully treat several such teeth.

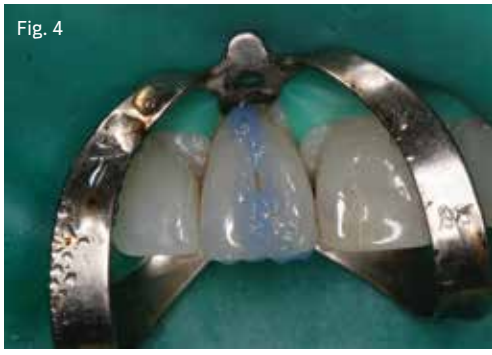


Case #1

An 86-year-old patient of long standing had for some years been displeased by the appearance of her upper right central incisor. A surface crack running the inciso–gingival length of the tooth had, over the years, acquired a considerable amount of stain. While not frankly decayed, the tooth's appearance had become a concern (Fig. 1).

Numerous times the patient had mentioned her concerns, but each time we discussed treating the tooth, she would hesitate to proceed because of uncertainty about how the finished product would look. As time passed, she also began to fear that treating the tooth could result in the tooth fracturing. I had taken to bypassing the conversation at semiannual exams; I did not want her to feel pressured by my recommendations to address the tooth's appearance. To my surprise, at her most recent visit, the patient once again broached the topic and this time decided that she wished to treat the tooth.

To allay her fears of tooth fracture, we began by taking a polyvinyl siloxane impression of the teeth, which could be used to fabricate a provisional crown should one ever be needed. After administering local anesthetic, I tried matching the tooth's shade, which was close to D-3 on the Vita Classic shade guide (Fig 2).



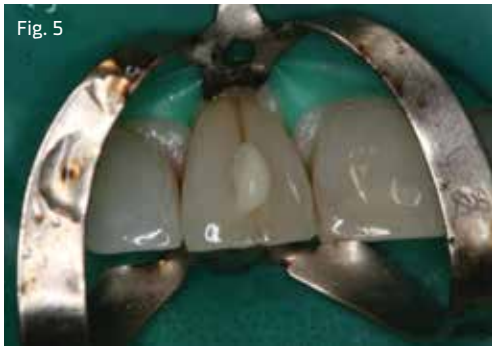


Fig. 6

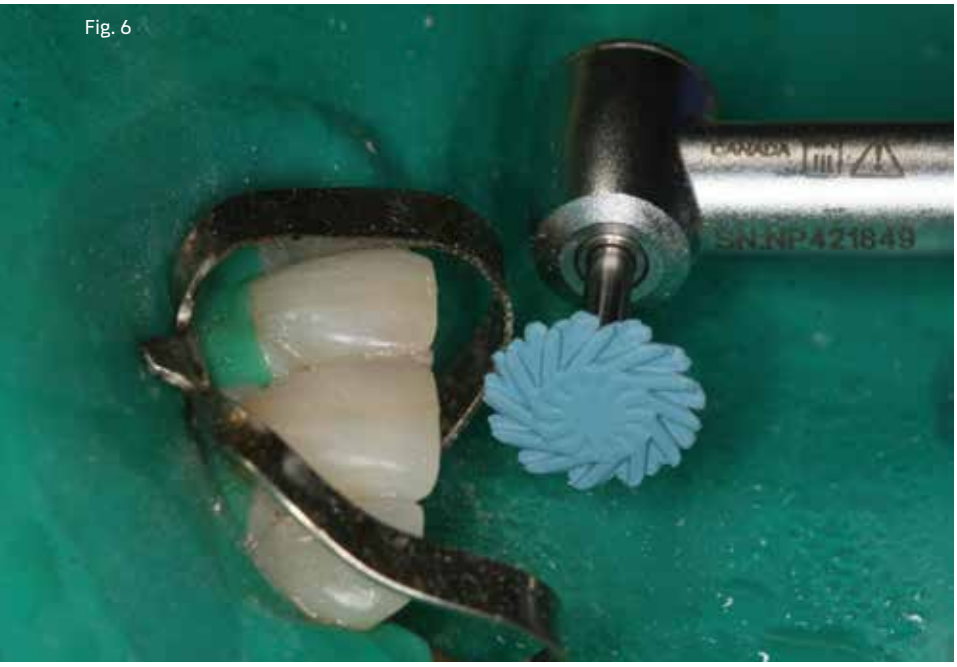


Fig. 7

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But having discussed the treatment for so long, I really wanted the patient to be pleased with the result; I didn't want to just be "close." I had been experimenting with a new material from Tokuyama Dental called Omnichroma, a composite resin that's said to have the ability to match all tooth shades. Rather than using filler particles dyed to match a variety of shades, it derives its shade-matching quality by reflecting the color of the surrounding tooth structure.

I isolated the tooth with a rubber dam, then proceeded to prep away the discoloration. This was conservatively performed with a thin tapering diamond bur. I was surprised that, in some areas, the depth approached 0.75mm (Fig. 3, p. 29). I also roughened the linguo–incisal area, where much of the enamel had worn away.

Then, using a selective-etch approach, I etched the enamel around the prep with phosphoric acid (UltraEtch, Ultradent Products, Fig. 4, p. 29). This was followed by a two-step self-etch adhesive (Clearfil SE Protect, Kuraray America).

As shown in Fig. 5 (p. 29), uncured Omnichroma is opaque white. It requires a certain leap of faith to imagine that, once cured, this will blend seamlessly with its surroundings. After placement, the material was polymerized with a Valo cordless curing light (Ultradent Products). I trimmed the restoration with Esthetic Trimming burs (Brasseler), and then polished with silicone brushes (Alpen Polishers, Coltene, Fig. 6). Both the patient and I were very pleased with the outcome (Fig. 7).

Case #2

A-61-year-old patient was found to have mesial decay on tooth #5. His imperfect home care was responsible for a history of decay (Fig. 8). Evaluation of the patient's tooth color revealed that the closest shade was Vita A-4 (Fig. 9).

After administration of local anesthetic, I proceeded to prepare the tooth for a mesio–occlusal composite resin restoration with a 330 carbide bur (Fig. 10). Using a sectional band, wedge and separating ring (ComposiTite 3D, Garrison Dental), I isolated the area for restoration (Fig. 11). This would ensure excellent contour and contact with the adjacent tooth.

I then selectively etched the peripheral enamel, rinsed with water, removed most water, leaving a moist dentin surface, and applied a self-etch two-step adhesive (Clearfil SE Protect). I decided once again to employ Omnichroma composite resin, which, as usual, was layered in 2mm increments, and light cured (Valo).

After initial shaping, the occlusion was checked and adjusted as necessary. The restoration was then polished with a silicone point (Enhance, Dentsply-Sirona), followed by a polishing brush (Groovy Diamonds, Clinician's Choice). The restoration was a very acceptable match to its surroundings (Fig.12).

Conclusion

The treatment of senior's teeth can pose a variety of challenges. Matching their darker shades is just one of them. Instead of stocking a full range of composite resin shades, many a dental office opts to keep only a minimum number of composite shades in their inventory.

However, those offices may find themselves unable to offer a material that is a reasonable match for such dark teeth. Omnichroma, with its ability to shade match with its surroundings, may solve such a dilemma, allowing dentists to restore a broad range of tooth colors with a minimal inventory of materials.

Even a dentist who keeps a broad supply of materials in shades to match the whole Vita Classic shade guide, may not have a material to match shades darker than A-4. Or a patient may present with a shade that is between shades, their teeth being an imperfect match for any of the Vita shade tabs. This material can then become a valuable addition to the dentist's armamentarium. ■

References

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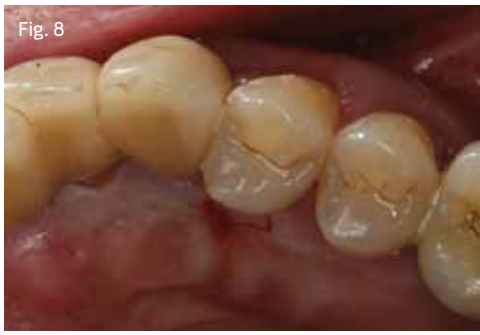
Fig. 8


Fig. 9


Fig. 10


Fig. 11

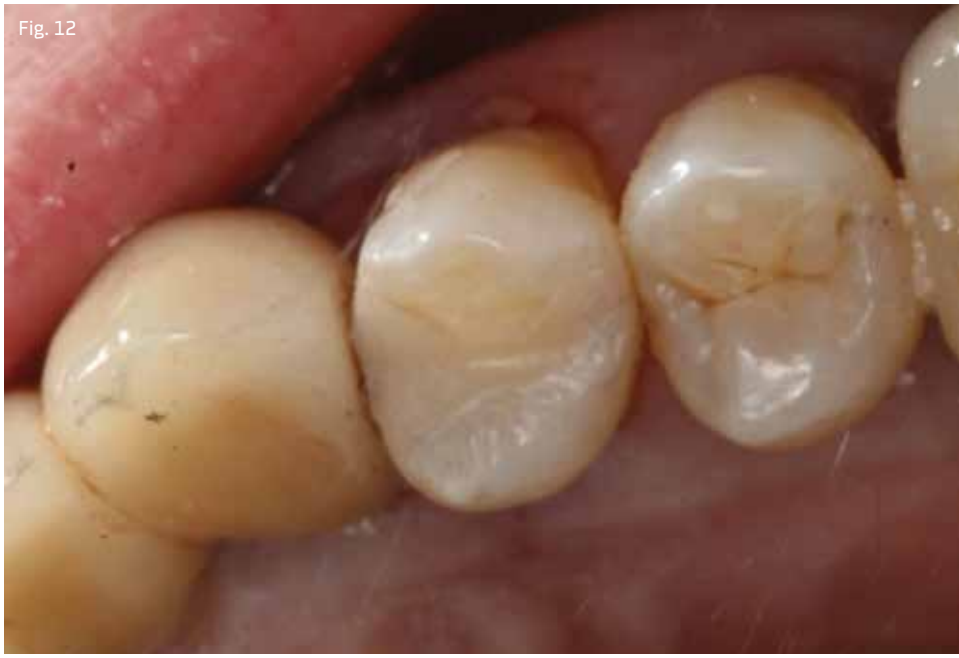
Fig. 12