# Are Teeth Meant to Last a Lifetime?

As I attend a number of professional meetings throughout the country, recurring clinical and research themes appear. Treatment of edentulism is prominent. Dental implants have effectively replaced missing tooth sites, engaging the most contemporary materials and techniques. Presenters have showcased hundreds of terminal dentitions as edentulous sites enter the 3D digital workflow, restored with dental implants. While I appreciate the enormous progress dental implant treatment has achieved, with lives positively impacted, my question is: Are teeth meant to last a lifetime, or "'til death do us part"?

Tooth loss throughout one's lifetime is due to many unfortunate reasons, some elected. In the past, as early as 1772, teeth were a coveted possession, and many beautiful teeth commanded a high price. In the recent BBC1 movie production of Victor Hugo's 1862 novel, *Les Misérables*, many fans were disgusted as Fantine sold her hair and extracted two central incisors for 50 francs to provide funds for her illegitimate daughter, Cosette, after repeated demands for money from the foster family, the Thénardiers. The scene is quite repulsive and difficult to watch, imagining the pain of extractions without anesthetic of two beautiful central incisors. (Fortunately, this movie scene is not repeated in the musical.) In the 1800's, teeth and hair were commonly sold; for example, George Washington's dentures were made of teeth from slaves who received payment as they reliquished their natural teeth.

Other teeth are lost for different reasons. I incurred a vertical longitudinal fracture of a maxillary molar that required endodontic treatment but still failed. Subsequently, I submitted to my first extraction. What could I have done to prevent this?

A few years later, a radiolucency appeared at the apex of a mandibular lateral incisor, perfect with no restoration. How it became nonvital is a mystery, but endodontic therapy again was recommended. Could it be that the overzealous scaling during my regular dental hygiene appointments over decades contributed to the pulpal death of my nonrestored mandibular lateral incisor? Hopefully this tooth will survive the test of time and not require an extraction.

As prosthodontic faculty to graduate residents, I recently worked with a resident to treatment plan immediate dentures with two mandibular implants retaining the mandibular overdenture for a clinic patient. The 90-year-old patient raved about the great care she has been provided at the school. She has been visiting the school for dental care since her 20s, when she received her first restoration and amalgam. Later, in her 30s, she received several crowns; in her 40s, she required endodontic treatment; and after several teeth failed and were extracted, in her 50s, she received her first removable partial denture. Now, in her 90s, the immediate dentures will be her reason to visit the dental school as she uses her walker to maneuver through the halls. Is this the story of the human dentition; that is, by age 90, the hopes of retaining all teeth are questionable? This is especially concerning after knowing the patient was a compliant dental patient.

The emergency extraction clinic at the dental school is abundant with patients as they await the opening of the school, standing in a line beginning at about 6:30 A.M., rain or shine, hot or cold, for the first-come, first-serve appointments with residents. I observed that the number of young patients with acute tooth pain, diagnosed from large nonrestorable carious lesions (usually first molars), is astounding. We continue to extract teeth in staggering numbers.

You may think the patients seeking dental care at a dental school are socioeconomically disadvantaged; however, many highly educated, financially secure, and compliant patients also suffer the dental challenge of recurrent caries subsequent to xerostomia. With age and the physical challenges of performing effective oral hygiene, caries and periodontal disease are as prevalent today as ever. We do not have a cure yet.

As lifespans increase, perhaps other body parts tend to deteriorate and require "extraction" and replacement with titanium implants. We may also ask the question: Are joints meant to last a lifetime? Hip and knee joint replacements are clearly on the rise. In an article by Singh et al,[1] the conclusions predict a large increase for both joint replacements. An increase of 284% for total hip replacement and an increase of 401% for total knee replacement by 2040 are predicted. Our lives are outlasting our joints.

Edentulism is on the decline, according to an article by Slade et al,[2] who researched five decades of edentulism trends in the US population. So again, the question is: Are teeth meant to last a lifetime? The US Healthy People Objective for 2020 is to reduce edentulism in those 65 to 74 years of age to 21.6%, a 10% reduction from the baseline prevalence of 24%. This information doesn't support the prediction in 2002 from Feine et al,[3] who suggested that the overdenture supported by two dental implants will be on the rise. Nor does the

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projected decline in edentulism through 2050 support plans for corporate dental practices to increase operations globally, opening offices to replace teeth with full-arch dental implant restorations.

Recalling the classic article from Devan[4] provides hope that there is still value in his words for our modern days. Devan's statement resonates with me; that is, "Perpetual preservation of what remains is more important than the meticulous replacement of what is missing." Although Devan's lifespan may not compare to the lifespan of today, the preservation of what we have remains important to most. While edentulism may be treated with dental implant therapy, caries, periodontal disease, and access to care are still modern-day concerns among many populations, according to the World Health Organization as stated in the FDI Symposium on Oral Health in San Francisco, September 2019.

Contrary to our hopes and expectations, teeth, emerging and residing in the oral environment, have not lasted a lifetime, as revealed from examples I have given of tooth loss occurring from multiple etiologies. Acquired (trauma or neoplasms) and congenital defects of the maxillary and mandibular arches will always require the skill of surgical and prosthodontic specialists. Dental implant therapy will continue to be a sound and successful solution for the single, multiple, and fully edentulous patient. With lifespans increasing, our natural, valued enamel and dentin have a longevity defined by biomechanics, restorative materials, bacterial infiltration, chemical insult, genetic parameters, trauma, neoplasms, and last but not least, iatrogenic insult.

If I could use my enamel crystalline ball to view our best future, it would be one where open-minded dental professionals practice a personalized and preventive medicine approach to patient care based on knowledge of genetic data with etiologies and predictors of tooth loss. Based on risk factors, an evidence-based action plan may be implemented to affect the longevity of one's valued possession—their dentition. Increased collaboration, communication, and shared knowledge with patients is needed to assist them in preserving teeth for a lifetime. It is our professional duty.

The Tortoise and the Hare fable may serve as an analogy: "Slow but sure wins the race." Indulging our hip and knee joints in the extremes of running and overzealous exercise may place undo strain and wear on joints, resulting in joint failure within a lifespan. Similarly, our dentition may require a "slow but sure wins the race" approach to ensure we outlive our teeth. As we live beyond our biologic imperative, we, as dental professionals, must continue to explore the ways to retain teeth through the extended life offered by medical advances. As we enjoy the magnitude of our wealth through dedication to our professions, I am reminded of the phrase "you can't take it with you." I have candidly suggested to my patients that the added benefit of dental implants and teeth, maintained for a lifetime, is that yes, you "can take it with you," or, "'til death do us part." The philosophical question makes us all contemplate, would you prefer to take your dental implants or your natural teeth?

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