



Prosthodontics: Have We Misjudged the Cause and Lost Direction?

“The time has come,” The Walrus said,
“To talk of many things...”
—*Through the Looking Glass*, Lewis Carroll

I first encountered prosthodontics in a meaningful way when, as a young dentist, I came upon a group of elderly patients undergoing “treatment” for caries with ascorbic acid. Yes, vitamin C was promoted for many things then, from prolonging life to preventing caries, but for me use of the vitamin lacked credibility. I asked around for more supportable solutions to the distress and damage afflicting this small group of elders, and eventually heard “Go into C&B, young man.” I went on to enrich my brain and hone my skills in a graduate prosthodontic program where I was fortunate to meet excellent mentors whose feet were planted firmly in reality. They reached beyond the myths of vitamin C and the limitations of C&B by systematically introducing me to the full world of prosthodontics; a world based on a wide swath of subjects, including C&B, yet focused on the very core of oral health and dentistry.

At that time, prosthodontic organizations spoke quietly and ominously, as they do now, about their future. The attitude of “What if nobody comes and we cannot build it,” abounded. Periodontics, in contrast, beamed with optimism. “Gum disease” was rampant, or so the science of the time implied. Almost everyone had gingivitis, which was considered unquestionably to be the precursor of periodontitis and the major threat to teeth. Solve the scourge of gum disease and the dental profession would take its rightful and respected place as “physicians of the mouth.” Periodontists occupied the highest ranks in the dental force of town and gown. A consummation of microsurgery and microbiology appealed to young hands and minds, and promised an effective weapon against all dental disease. Who could ignore the call to victory? An auxiliary profession of dental hygiene was organized for the front line. The strength was formidable and aligned admirably to fight the decisive battle against tooth loss; identify the microorganisms that terrorize the periodontal attachment, and then bring in sophisticated ordnance to eradicate

them. Granting agencies recognized and acknowledged the dawn of the new era with money for search and destroy missions undertaken by universities worldwide. Manufacturers of health-care products bolstered the supply lines with an explosive supply of therapeutic agents. And in the midst of all this compelling excitement, there was little need, according to the granting agencies and curricular committees, for prosthodontic art and technique. Prosthodontics was passé when surrounded by such an optimistic scientific and corporate enterprise geared for inevitable success. The days of tooth loss and replacement seemed numbered.

But what happened? How did the bacteria escape such a skillfully conceived and promoted plan of containment? We still wrestle with gingivitis, although periodontal disease is not quite as prevalent as first thought. Now we read, “advanced adult periodontitis, leading to severe loss of supporting periodontal tissues and tooth loss, does not exceed a prevalence of 10–15% in most populations.”¹ Was the battle won before it really started simply by changing the descriptive characteristics of the enemy? In a word, yes. We moved from germ theory to molecular and genetic biology and, more recently, to other potential causative and risk factors. However, can this search at the microbiologic extreme yield results that help our patients, or are we simply spellbound by the illusion and mystique of micro minutia? This question, though ignored by many, remains.²

Caries—that rampant dental disease that had all but succumbed to fluoride in the 1970s—along with its dental sequelae of endodontic death and dental destruction, have resurfaced as a major health challenge. Consider the startling report that treatments for caries were the



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most common hospital-based surgical procedures, mostly with general anesthesia, for children in British Columbia, Canada, in the 1990s.³ Clearly, this is a very serious health concern, especially in an era where caries is meant to be a disease of the past. The majority (52%) of children aged 5 to 9 years in the United States during the mid-1990s had at least 1 carious lesion or filling, while nearly everyone (85%) in this population had, by age 18, a decayed tooth.⁴ Moreover, about one-quarter of children account for more than 50% of the caries,⁵ and a similar pattern emerges for older adults.⁶ Worse still, consider the reality of older adults in the United States, who, on average, get 1.3 new carious surfaces per year, which is comparable to the 1.4 surfaces found in children without access to fluoridated water during the 1980s.⁷ Even more astounding, many communities are currently defluoridating their water. Where is the outrage we heard and saw in response to caries in children? Have prosthodontists voiced their concerns about this burgeoning disease in their older patients, or is ageism in the air? While on the "Consumers and Patients" section of a Web site produced by a prominent national organization representing prosthodontists, I was dismayed to see a large emphasis on restoring "optimum function and esthetics to your smile," and references to TMD-jaw joint problems, traumatic injuries, snoring and sleep disorders, but only one reference to "decayed teeth" and no specific reference to caries. Have we lost our way, or are we consciously going down the path of consumerism?

Caries and its sequelae remain the major cause of tooth loss among adults born before 1948.^{8,9} It was the reason for prosthodontics when the Yellow Emperor's Canon of Internal Medicine recommended deer's horn for filling teeth in China during the third millennium BC; when Pierre Fouchard practiced in France during the mid-1700s; when Goodyear introduced vulcanite in the United States for complete dentures in 1858; when Gariot, Bonwell, Gysi, and others patented dental articulators throughout the 19th and 20th centuries; and, more recently, when Brånemark sanctified oral implants. Moreover, caries will remain the primary justification for prosthodontics as we address the challenges posed by the rapidly expanding older populations of most countries. The widespread and almost unchallenged promotion of cariogenic foods and drinks, as well as the prolific use of medications that disturb saliva, almost ensures that caries will remain a very significant public health problem for the foreseeable future, and a potentially devastating disease among elders. This alone is ample justification for the maintenance of a well-educated and accessible specialty of prosthodontics focused wisely on the cause of tooth loss in the aging population.

Readers of this journal will relate easily to prosthodontics as primarily a restorative service, and we know that oral prostheses survive and function most effectively in a healthy environment. We have worked ardently to address the single-agent "germ theories" of disease, but with disappointing results. Now we are urged to construct more complex models of disease involving the triad of host, agent, and the environment. This urging comes from the realization that we deal principally, as clinicians and prosthodontists, with chronic rather than acute or infectious diseases. However, basic science, with its emphasis on the intricacies of "biological mechanisms," exerts great influence in our education and research, whereas population and clinical studies are regarded as poor intellectual cousins.² Yet, we are clinicians working in the population, and that is our strength. Surely, we must ask whether or not the reductionist or scientific perspective on prosthodontic research serves us well. Experiences with periodontal disease suggest otherwise, and it seems more reasonable now that we look for other exploratory approaches to health and disability.²

There is, moreover, a basic problem of assessing service and treatment outcomes that seems to have eluded the dental profession, including prosthodontics.¹⁰ Our ability to predict the outcome of treatment is seriously limited by the absence of a comprehensive theory to explain the consequences of tooth loss. Biological theories of tooth eruption and migration, or of mastication and jaw function, are notoriously unreal. Most people are distressed by the absence of teeth, but we are in a quandary to explain why others are undisturbed by the same impairment. Most researchers associated with oral implants overlook this quandary. Instead, we dwell largely on the negative impacts of tooth loss and the essential need for implant-supported dentures as the minimal standard of care for edentulous mandibles.¹¹ Without doubt, implants provide a solution for patients with chronic intolerance to complete dentures,¹² but predicting those who suffer from this affliction is far from reliable. Similarly, we persistently recommend dentures for partial tooth loss when a "shortened dental arch" might suffice equally well, if not better.

Gratefully, we have come a long way since the days of vitamin C. However, we remain confused about our role in society and, as a consequence, society is confused about us. If we prefer to support the consumerism of beauty, as many industry and professional Web sites suggest, then we must adapt ourselves for the marketplace of fashion and the fickleness of style. But, if our role is to serve the health-related concerns of our patients, we must attend carefully to their health, and to the cause of their distress.

The future of prosthodontics continues, in my opinion, where it began, not with clients who want cosmetics, but with our older patients who need the care that prosthodontists are uniquely educated to provide.

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