EDITORIAL

Professional adaptation

In the biologic sense, adaptation may be defined as the body's ability to acclimate to change, which can be dictated by physical, mechanical, chemical, or even emotional stressors. Adaptation occurs if the stress that induces adaption is applied at a rate equal to or less than the organism's ability to keep up. Occlusal schemes adapt to tooth wear. Masticatory muscles may adapt to changes in jaw posture. We adapt to changes in our environment. However, when called upon to adapt at a rate beyond our adaptive capacity, breakdown and failure result. Based on this premise, we must ask whether dentistry is able to keep up with the evolving sciences in the field. Are our skills reaching a maladaptive state because of an inability to competently learn rapidly evolving techniques and procedures? If not, we can only anticipate that more procedures will be performed with minimal knowledge.

Consider dental implants as just one example. Is it possible that the expansive increase in the placement of dental implants is growing at a rate beyond our ability to appreciate the science and biologic impact that accompanies what to many is a minor surgical procedure? The history of dental implants has been documented for thousands of years: Ancient Egyptians used tooth-shaped shells and carved ivory to replace teeth. The Etruscans, living in what is now Italy, replaced missing teeth with implants and artificial teeth carved from the bones of oxen. The mandible of a young Mayan woman dated to 600 AD was discovered with what is perhaps one of the world's first dental implants: pieces of shell shaped to resemble teeth.

Over the millennia, techniques have improved; surely, the dental implantologist is now adequately trained in the placing of implants. However, are clinicians trained to recognize when things go wrong and what to do when complications occur?

Aside from the occasional infection or failed implant, the most common complication following implant insertion is damage to adjacent nerves. Obvious damage can be due to a direct mechanical injury where the implant violates the inferior alveolar nerve. The patient typically reports an immediate sensory disturbance or even pain. Radiographs can demonstrate an implant near to or touching the nerve; the diagnosis is straightforward.

Procedurally oriented dental practioners have little problem appreciating the cause-and-effect relationship of mechanical nerve trauma and the patient's immediate complaints in the scenario described above. However, what action and thought process ensues when the patient returns days, weeks, or even months later with a similar, yet slower-in-onset problem? Is the dental practitioner prepared to consider inflammation, neural degeneration, compartment syndrome, or the delayed effects of an inflammatory response that affects the surrounding tissue?

Depending on the source, conservative estimates suggest that more than 10% of implant patients suffer from some form of postimplant neurologic symptoms. Most are transient; some are permanent and often disabling. Has the technical and biologic complexity of the procedure exceeded the dentist's adaptive capacity to learn the science behind the technique rather than just the technique itself? Is our dental education too procedural but not cerebral enough?

As dentists, we have three primary goals: improving function, enhancing esthetics, and reducing pain. Patients anticipate that after any dental procedure, they will experience improvement in any or all of these areas. Their expectations do not include the worsening of a problem, posttreatment pain, or sensory distortions.

The example of the dental implant is used herein only to highlight the fact that during the course of any dental procedure, tissue damage and healing occurs. Despite the best techniques and optimal conditions, a small percentage of patients will experience untoward events, even after the most innocuous procedures. While the techniques of our profession require attention to detail and an exceptional degree of manual dexterity, we cannot forget that we are working within areas subject to biologic variables. We must be prepared to perform with a mental dexterity equal to our mechanical skills. Knowledge of pain-producing entities and an understanding of pain mechanisms is as important in the development of treatment strategies as any other factor in treatment planning.

At the end of every tooth or implant is the rest of the patient. We must be ever vigilant in improving not only our technical skills, but also our knowledge of what we do and why. If our technical skills exceed our mental capabilities, we lose our professional ability to adapt. Professional maladaption will ensue. We must strive to improve both our technical and mental skills in order to treat our patients with the highest standard of care.

"Perfection is not attainable, but if we chase perfection, we can catch excellence."
—Vince Lombardi, American football coach

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