Editorial
Adopting Technology

The future will continue to bring innovation and technology to our profession and expand the therapeutic options for delivering dental care. The digital age has had a heavy impact on imaging for diagnostics and dental impressions and the use of computer-aided design/computer-assisted manufacture (CAD/CAM) technology. The practicing dentist is challenged today with questions of how, when, and to what extent to implement these new technologies. Which of these new options can change everyday delivery of care, and which would be better used for individual dental solutions on an occasional basis? Which are paradigm shifters, and which will add risk with limited reward? We must identify technology that will allow less experienced clinicians to improve their results versus those with the potential for unforeseen complications or limitations that may not be thoroughly explained in the marketing materials.

The commercial impact on the integration process is significant. The majority of software solutions today are closed systems, perhaps with options for shared data sets such as DICOM data or STL files. It is certainly feasible for single practitioners and technicians to select by necessity a single example from among the available software for each area of potential need, such as reformatted cone beam computed tomography (CBCT) analysis and planning, digital diagnostics and laboratory procedures, and CAD/CAM procedures. As the field develops, improvements continue to be made in the various systems that are available. Consolidation in the dental industry will lead to more bundling of software packages, requiring that practitioners commit to chosen systems. Currently the fear and challenge for many is that the software-dependent equipment being purchased today may become obsolete before it has been installed and operators have been trained to use it and worked through the learning curve.

Areas of technology such as surgical guides manufactured using three-dimensional printing planned with CBCT-obtained data have been commercially available for more than 12 years. This technology allows for surgical simulation to be translated into a functional guide for surgical placement of implants. The accuracy of the technology is not as serious a challenge as the ability to place and maintain these guides in the absolutely correct clinical position while performing the procedure. If a guide is stabilized with pins in the wrong position, this can lead to implant malposition and related complications. If there is extensive prolongation and a narrow ridge, will the bur enter the bone or slide to the buccal aspect? Such complications must be anticipated to maintain the goals of treatment.

The next critical aspect to evaluate is quality control and risk-reward benefit. We must identify areas of technology that will be cost effective and will improve the delivery of care, and we must discriminate between those technologies that ease the therapeutic process and those that improve quality. There may be difficult choices between decreases in cost versus quality control. The profession requires technology, and it will be exciting to see the way we deliver dental care continue to develop.

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