Dr. Francis Mouyen ushered in the modern digital era in dental radiography with his seminal 1989 paper describing radiovisiography. Since then, interest in dental digital radiography has increased significantly (Figure).

The pundits were quick to claim that dental digital radiography was revolutionary or a new paradigm of imaging. Well, it is more than a fad, but it is less than a revolution. It is not a new paradigm or a paradigm shift, certainly not in the true sense of the term. The rotary telephone was revolutionary and defined a whole new way of communicating; the touch-tone, push-button telephone was a technological improvement. The television was revolutionary and created an entirely new entertainment medium; color television and even high-definition television are mere technological advancements.

Digital technology is a welcome incremental advancement in dental radiography, but it is far from a revolutionary paradigm shift. The combination of dental digital radiography and the Internet makes it possible to send images to anyone, anywhere in the world (provided they have a computer, an Internet connection and the appropriate software).

The transmission of radiographic images—teleradiography—allows practitioners to submit insurance claims electronically, to forward patients’ radiographs to a dentist on the other side of town or across the country, and to obtain specialty consultations from experts wherever they may be. But even this is nothing new. Consider this excerpt from a 1929 paper: “Through the courtesy of the Western Union Telegraph Company, we publish two dental radiographs transmitted by telegraph and photographs of the simple-appearing but most ingenious machines which make this modern wonder possible. Even the filled root canals show up well. This service is available commercially if you should want to consult with a distant dentist.” Teleradiography is an 80-year-old idea.

A significant advantage of digital radiography is having instant, or nearly instant, images that are archivable and retrievable at the press of a button or click of a mouse, all without the mess and bother of a darkroom. Yet to the dismay of the proponents of dental digital radiography, a survey of a simple random nationwide sample of 1,709 general dentists in private practice revealed that only 11.5 percent use digital technology for all of their intraoral imaging (M.K.,
unpublished data, 2004). Are the worries of maintaining a darkroom or automatic processor that much greater than those of maintaining the computer network necessary to view images in multiple operators? A properly exposed and processed radiograph will be viewable for decades using only a simple light box. Will the digital images stored on today’s latest recording medium be viewable in five, 10 or 20 years? History suggests not. As recently as the late 1980s, personal computers used 5¼-inch floppy disks (which were truly floppy). These were soon replaced by 3½-inch floppies (which were not), which were replaced by Zip drives (Iomega, San Diego) and CDs, which have been outdated by DVDs and Universal Serial Bus memory keys. Dentists will need to invest resources to migrate the information from one recording medium to the next, and the next, and the next, in order to ensure that they can retrieve digital images when they are needed (for example, perhaps to defend against a lawsuit). Perhaps the majority of general dentists who have not switched to digital radiography know something that the digital experts don’t.1

Except for endodontics and some surgical procedures for which instant intraoperative images are helpful, dental digital radiography in its current incarnation is not likely to improve your ability to diagnose and treat patients. In the early days of dental digital radiography, film was the gold standard against which digital images were compared.2 It still is. Most of the studies of the diagnostic efficacy compare digital images with film-based radiographs, and they generally conclude that digital images are not statistically different from film-based radiographs.3 That is, digital imaging is as good as film, which tells us that film remains the gold-standard image of dental radiographic diagnosis. Dental digital radiography may improve office efficiency, facilitate filing insurance claims, be useful for marketing your practice and appeal to your inner gadgeteer, but it is not likely to make you a better dentist.

The cover story in this issue provides an optimistic yet well-balanced overview of dental digital radiography that should help practitioners decide whether and when to adopt this technology.4 The author debunked some of the myths that enshroud the topic and discusses some of the technological capabilities, which, should they become robust and stable as well as commercially and widely available, may make digital radiography the preferred imaging modality in the future.

Someday, automatically enabled algorithms may classify a patient’s risk of experiencing osteoporosis based on the trabecular pattern of the alveolar bone or detect carious lesions at an earlier stage of demineralization than is possible with film or current digital technology. These would be advances that make digital radiography worthy of serious consideration. More research is needed to determine which of the currently available image enhancements actually improve diagnostic efficacy. Practitioners cannot simply rely on what looks good to them. “The quality of an image cannot be judged on the basis of a subjective assessment of what the image looks like. A ‘pretty’ image is not always a good image when it relates to diagnostic imaging,” writes van der Stelt.5

Given all of the hype and hoopla about dental digital radiography, it is easy to think that digital is a must-have technology for a modern dental practice. Writing about the paperless office, Sellen and Harper6 made the following trenchant observation: “Change for the sake of change is hugely problematic. Going paperless for the sake of ‘out with the old, in with the new’ is destined to end in failure.” Substitute “digital” for “paperless” and heed their warning. Digital has more bells and whistles and more razzle-dazzle, but film remains an excellent medium for recording radiographic images. No dentist in a film-based practice should feel compelled to switch to digital radiography or be made to feel out of step with contemporary dental practice.

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