This article presents a review of the history of the dental-operating microscope and how it experienced slow acceptance. Following its introduction in 1982, it wasn't until 1997 that microscopy training became mandatory for Advanced Specialty Education Programs in Endodontics. Undoubtedly, microscopic enhanced endodontics ultimately reshaped clinical practice and created a potential for a higher standard of care.

It is surprising how long it sometimes takes for a new technology to take hold. The dental-operating microscope (DOM) is a good example of a technology that experienced slow acceptance.

The historical development of operating microscopes provides an instructive perspective. In 1953, the Carl Zeiss Company of West Germany marketed the first commercial binocular-operating microscope. The pioneering work of Carl Nylen at the University of Stockholm preceded Zeiss by approximately 31 yr with the development of a monocular microscope for ear surgery in 1922 (1, 2). From this beginning, microsurgery has spread to literally all the surgical disciplines.

It wasn’t until 1978 that Apotheker, DMD, and Jako, MD, pooled their efforts to produce a DOM (3, 4). Their designs were incorporated in 1981 into the first commercially available DOM (Dentiscope, Chayes-Virginia Inc., Evansville, IN). The two developers, in conjunction with Chayes-Virginia, offered the first course in the clinical hands-on use of the Dentiscope at Harvard Dental School, Boston, Massachusetts, on September 25, 1982. The meager attendance of only 4 to 5 dentists (only one endodontist) was a disheartening indication of potential interest. It was immediately apparent that the scope’s visual enhancement, achieved with a fixed amplification of approximately ×7 and supplemented with adjustable built-in fiber-optic lighting, would be of significant clinical value in endodontics. Even with this somewhat prototypical instrument, incorporation into an endodontic practice produced significant changes. Microscopy enhanced both surgical and nonsurgical treatment.

In those early years, interest among endodontists in the DOM seemed to have been spotty at best. As a result of disappointing sales, Chayes-Virginia stopped selling the Dentiscope by 1986.

Published accounts (5–10) on its effective use were relatively few during the 1980s and early 1990s, considering that eventually the DOM would reshape clinical endodontics. In March of 1993, 11 yr after the introduction of the Dentiscope, the first symposium on microscopic endodontic surgery was held at the University of Pennsylvania School of Dental Medicine. This heralded the beginning of serious attention to the DOM.

By 1995, there was an obvious increase in DOM use by endodontists, which was sparked in large measure by the proliferation in the 1990s of numerous commercially available scopes suitable for office use. These new scopes offered the advantage of the choice of multiple steps of magnification, as well as other sophisticated features. This led to a workshop for endodontic program directors, sponsored by the American Association of Endodontists (AAE), on teaching microscopy. This preceded an anticipated ruling to mandate the scope’s inclusion in program standards by the Commission on Dental Accreditation (CODA) of the American Dental Association. The wheels of change started to move rapidly in 1995 as the AAE formally recommended to CODA that microscopy training be included in the new Accreditation Standards for Advanced Specialty Education Programs in Endodontics. At the Commission’s January 1996 meeting, the proposal was agreed upon. The new standards, making microscopy training mandatory, became effective in January 1997 (personal communication, Irma S. Kudo, executive director, AAE, November 23, 2000).

SURVEY

A survey was recently sent to the 49 accredited advanced-endodontic programs with two brief questions:
1. Does your program include experience in the use of an operating microscope in endodontics?
2. If it does, can you indicate to the best of your recollection when microscope training was added to your program?

SURVEY RESULTS

Of the 33 responses, all reported to be in compliance as expected, but the onset of microscopy training varied widely. The
following is the number of advanced-endodontic programs that started microscopy training in each year:

1991: 1
1992: 2
1993: 3
1994: 8
1995: 8
1996: 8
1997: 3

Heightened interest in the DOM by 1996 is evidenced by the 30 advanced endodontic programs that had already initiated microscopy training, 1 yr before it was mandatory. It was also most revealing that a few survey respondents took the opportunity to add unsolicited comments about their microscopy training programs, e.g. citing number of scopes, how this new technology had enhanced teaching, and expressions of pedagogical philosophy in regard to its use—expressions of genuine enthusiasm.

DISCUSSION

The eventual dramatic change from casual interest in microscopes to fevered involvement heralded a new era in endodontics. Undoubtedly, the current wide-employment of DOMs in endodontics speaks to their obvious advantages. Microscopy in endodontics has certainly come of age, but its gestation period was surprisingly long.

References