

First, high-speed drills and local anesthesia took the pain out of dentistry, and now computerized automation promises to take away the waiting.

So what's left? A bunch of happy dentists, and, they expect, even happier patients.

Next to the pain that old-fashioned drilling once caused, the biggest complaint patients have is spending days or weeks wearing temporary crowns while they wait for the lab to make permanent crowns or bridges. Within a few years, dentists predict, such inconvenience will be a memory. In one session of 90 minutes or less, a patient will be able to walk in with a cracked tooth and walk out with his new crown permanently in place.

This development, which many dentists say will revolutionize their profession, was demonstrated to thousands of dentists attending the Chicago Dental Society's annual midwinter meeting, now in session.

Most adults are familiar with chipping or cracking a tooth so badly that refilling it is impractical. The dentist grinds the tooth down to a stump of strong hard tissue suitable to anchor a crown, which is an artificial tooth that is glued over the stump.

Traditionally, crowns are made at commercial dental laboratories by technicians who work from plaster models of the mouth made in dental offices. Producing these plaster models requires the patient to sit quietly with a lot of goop in his mouth.

At least two dental visits are necessary—one to grind the tooth and make the mold and one to install the crown after it has been made at the lab.

Several researchers around the United States and abroad are working on computerized systems that make measurements of a patient's teeth and then use the information to run a milling machine automatically to make a new crown, cap or bridge on the spot.

The one unveiled at the Chicago meeting was developed in France by Dr. Francois Duret of the University of Marseilles, who came to the city to demonstrate his brainchild personally to colleagues.

The key to Duret's system is a small laser-camera that a dentist puts into his patient's mouth. This camera collects laser light reflected off the surface of teeth and gums and produces a television picture of the mouth's inside that is displayed on a video screen.

The dentist causes the computer to take individual "snapshots" of the mouth's interior, catching a tooth from several angles.

Laser information taken by the camera is fed into a computer that digitizes and stores it. Several different views of a stump and the teeth around it are averaged together so that the computer can then recon-

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Tempo

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A crowning mix of teeth, computers

By Jon Van

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struct images of the mouth on a screen.

After the dentist has made the new tooth's computer screen image just the way he thinks it ought to look, he pushes a few buttons and the computer causes an automatic milling machine to grind out a crown that matches the image.

This crown is taken back to the patient and glued over his stump. The whole process takes 90 minutes or less and eliminates the need for temporary crowns or caps. What patients will be charged has not been determined.

"My patients tell me that eliminating extra visits and temporary crowns is worth a lot to them," said Dr. Omer Reed, a Phoenix dentist who has worked with Duret's system.

Besides reducing the waiting

time and inconvenience, the computerized system also enhances dental flexibility, Reed said. Dental labs may use only materials that can be cast to make a crown, but Duret's system can use anything that may be milled, and this includes many materials that are much stronger and more durable than those now available.

Jean-Claude Haas, the Los Angeles-based representative of Hennson International, which is developing Duret's system commercially, said it probably will be available for dentists to purchase in about two years.

This system and others under development may usher in a day when dentists routinely make a computerized record of how each patient's entire mouth bites and chews. These records, like X-rays of mouths made today, could be used for reconstruction.

"Suppose you visit Australia and break a tooth chewing something," said Reed. "You could see a dentist there who could call your dentist at home to send your computer data by telephone. Within an hour, your tooth would be fixed."

Dr. Edward Bonk, a Park Ridge dentist who is president of the Chicago Dental Society, said that even at prices around \$180,000, these automated systems are something a practicing dentist may find very attractive.

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