

High-tech teeth

Implants offer possibility of eliminating dentures

By Larry Tye
Boston Globe

For 50 years, dentists have been searching for a way to permanently anchor false teeth to the jawbone.

By the late 1960s, they had developed a system for attaching the denture to a thin metal wedge planted in the bone—

DENTISTRY

and it sometimes worked. But too often infection set in or the teeth came loose, and the public became disenchanted with the expensive procedure.

Now, however, dentists claim the

problems that dogged permanent dental implants have been largely solved by a technique developed in Sweden for surgically implanting metal screws and posts in the jawbone, then attaching the bridgework.

Recent Swedish studies found that such implants typically held dentures firmly in place for more than 15 years. Last September, the Swedish system became the first to win provisional approval of the American Dental Association, and since then thousands of U.S. dentists have been trained in the technique.

The Swedish experience also has given
Please see IMPLANTS on Page 9D.

Dentists wield new arsenal of weapons against cavities

By Margie Patlak
Special to The News

Advances in tooth technology are giving people something to smile about.

Tooth decay—which has afflicted humanity for ages—is now on the verge of extinction.

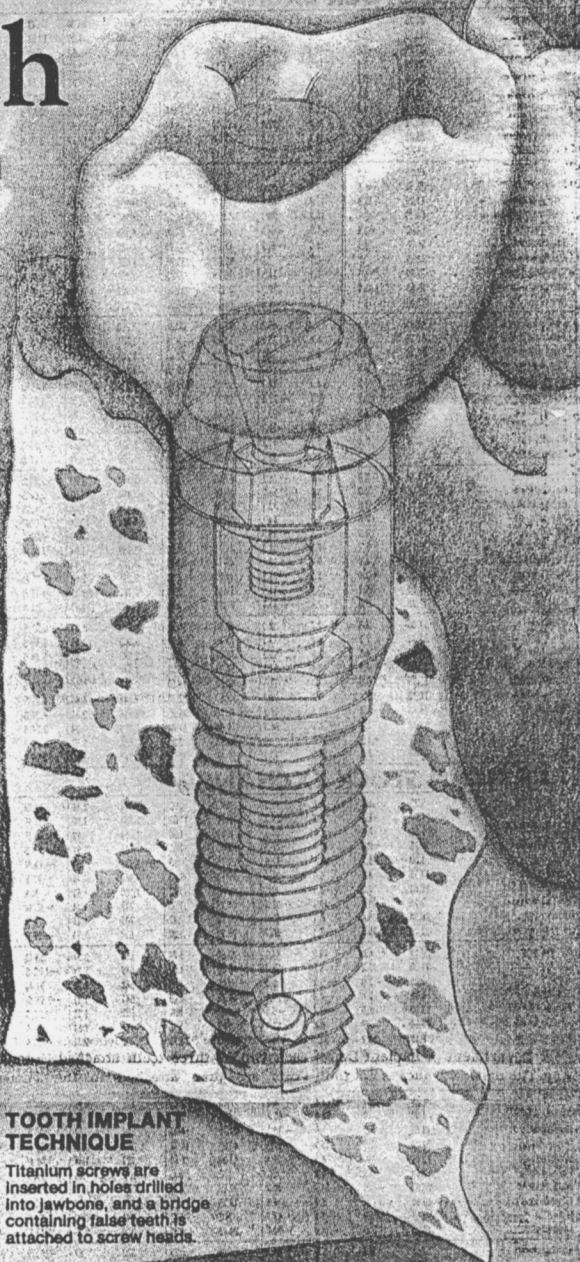
Thanks to revolutionary advances in dentistry, cavities are rapidly becoming a thing of the past and dentures an antique oddity.

"The accomplishments of preventive dentistry have been dramatic," says Dr. Harald Loe, director of the National Institute of Dental Research. "Tooth decay had been on the increase throughout mankind's history until the last 20 years or so, when its prevalence was remarkably cut in half."

Now that tooth decay is on the decline, dentists are offering a variety of new techniques to improve a smile, including tooth-colored fillings, clear plastic braces, and plastic coatings that hide discolored or chipped teeth. And if

any structural dental work must be done, dental phobias can be put to rest thanks to painless laser drills, compounds that eat away tooth decay, and needleless injections.

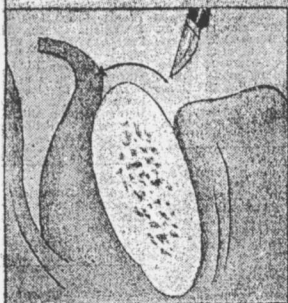
The turning point in dentistry came in the 1950s, when many communities
Please see TOOTH on Page 9D.



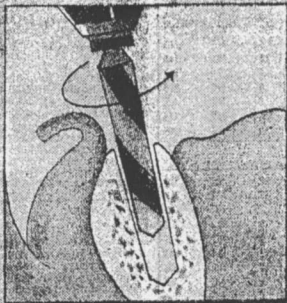
TOOTH IMPLANT TECHNIQUE

Titanium screws are inserted in holes drilled into jawbone, and a bridge containing false teeth is attached to screw heads.

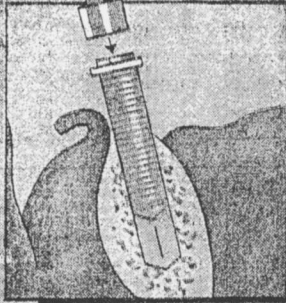
Tissue grows back around screw, holding it in place.



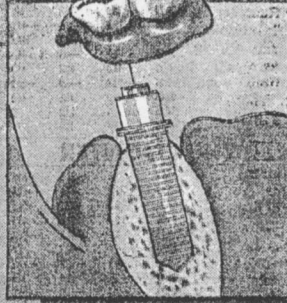
1. Soft tissue is cut away, exposing the bone.



2. Holes are drilled in bone and screws inserted.



3. Posts are attached to the screws.



4. False teeth, strung along a bridge, are secured to posts.

Tooth decay may fade away

Continued from Page 8D.

began fluoridating their water supplies. Fluoridation can cut the tooth decay rate among children by as much as 65 percent, according to the National Institute of Dental Research. The institute's 1981 survey showed that more than one-third of Americans under the age of 17 have never had a cavity.

To further push decay into obsolescence, dentists have begun to coat the teeth of their pediatric patients with plastic sealants. These sealants exclude bacteria and food particles from lodging in the pits and cracks of teeth — areas particularly susceptible to tooth decay. In a recent study by Dr. Stanley L. Handleman and his colleagues at the Eastman Dental Center in Rochester, N.Y., sealants not only prevented tooth decay from occurring in healthy teeth, but also stopped the progress of tooth decay in teeth with small cavities when the sealants were applied.

"I offer my patients with small cavities two choices," Handleman says. "I can either drill and fill the cavity or seal it up. They usually opt for the latter."

Sealants generally last five years or more and cost about \$6 to \$10 a tooth to apply. Fluoride-releasing sealants in the making may soon offer double protection from tooth decay. The National Institute of Dental Research currently recommends that sealants be applied to the back baby and permanent teeth of most children as soon as they surface.

As an alternative to sealants, dental researchers are experimentally using laser beams to smooth out the rough surfaces of teeth where bacteria collect and promote decay. Lasers may also replace drills in the near future because they can effectively vaporize decayed portions of a tooth in preparation for a filling.

The trauma of drilling can usu-

"Nobody needs to experience pain during a dental procedure. A trip to the dentist can now be a sheer joy."

— Harald Loe,
director,
National Institute
of Dental Research

ally also be minimized with the compound called Caridex, which made its market debut last spring. Caridex chemically softens the decayed portions of a tooth so they can be scraped away with ease.

Both laser and Caridex treatments are generally considered painless procedures because they discriminate between decayed and healthy portions of the tooth and leave sensitive nerves in healthy tissue untouched. Both treatments may therefore help the 12 million Americans who the American Dental Association estimates are dental phobics and the 35 million Americans who avoid dental procedures because they are afraid of pain.

And for people afraid of needles, dentists now can do needleless injections with a device that uses a jet of air to shoot anesthetic into the gums. It won't reach deeper nerves but numbs the gums sufficiently for minor dental procedures.

"Nobody needs to experience pain during a dental procedure," says Loe. "A trip to the dentist can now be a sheer joy."

For people with cosmetic rather than structural problems with their teeth, dentists offer a variety of solutions. They can whiten yellowed or stained teeth, for example, with a procedure appropriately called bleaching. With this technique, the dentist paints a chemical bleaching

agent onto the discolored tooth or teeth and then activates the compound with heat and sometimes light. Bleaching is painless; the only drawback is that the color of a tooth after the procedure may not exactly match that of its neighboring teeth.

Bonding, also painless, is more precise than bleaching. To bond teeth, dentists first swab them with a mild acid solution and then paint a tooth-colored plastic onto their surfaces. This plastic is then hardened by chemicals or brief exposure to a special light. Bonding can not only improve the color of teeth but their shape as well; it is frequently used to repair cracked or chipped teeth or to remove gaps between teeth.

Although bonding costs about half that of a conventional crown, its average life is only about half or less than that of a crown.

To prevent smiles overly glittered by silver or gold fillings, dentists can use new stronger plastics to make tooth-colored fillings for teeth. And now that researchers have identified one of the four genes responsible for the production of human tooth enamel, there's hope that in the future, via fillings made of cloned tooth enamel, dentists can provide a tooth with almost exactly what it lost to decay.

Other smile-improvers are teeth-straightening braces with brackets that are tooth-colored or made of clear plastic so that the only visible metal is the wire that connects the brackets. Even less obtrusive are the newly developed "lingual" braces that hide behind teeth. Because they are placed on the back and not the front of teeth, linguals are nearly invisible, even when the wearer smiles. But linguals cost 50 to 75 percent more than conventional braces — an increased cost that might be worth it to adults in the limelight.