Those Magical Medical Glues!

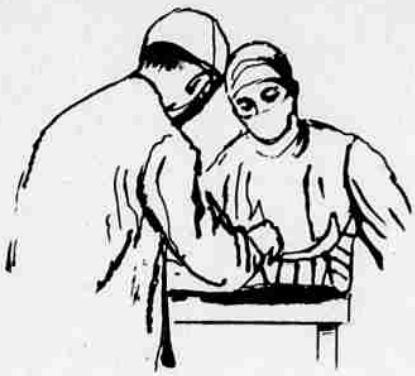

ILLUSTRATION BY GEORGE KUMMER

Amazing new adhesives have been developed which promise great health benefits in the mending of broken bones, filling of teeth cavities, and in delicate heart surgery

By FRED WARSHOFSKY

STICKY SUBSTANCES that look much like ordinary household glues may cause a revolution in medicine.

Known generally as "medical glues," they are made from a wide variety of plastic and animal bases. Some are still in the experimental stage; others have proved themselves, and medical researchers are hoping that these glues will soon be used widely for such diverse tasks as repairing broken bones, restoring hearing to deaf ears, and opening new techniques of heart surgery.

Today the most widely used of the new adhesives is a glue called Ostamer, which can bind broken bones. Like other polyurethane foaming plastics, Ostamer is still considered experimental, but it has been successfully used on more than 250 patients.

The technique is simple. An incision brings the broken bone into view. The glue is mixed at the operating table and poured directly into the break. The two pieces of bone are pressed together and the incision is closed. So fast-drying and strong is the bond that the bone can bear the patient's full weight in just a few days. No cast is needed; the bone cells continue the process of healing by simply growing together through and around the glue.

Dr. Michael Mandarino, of Philadelphia, one of the developers of Ostamer, used it to treat a 29-year-old man with an acute leg fracture. Ordinary treatment of such a major break would have kept the man on his back for weeks and in a cast for several months—with no guarantee that he would walk normally again. Dr. Mandarino had the patient on his feet in three days. By the end of the third week, the man was back on his job as a moving-van driver.

In Sydney, Australia, Dr. Bernard Block has had highly successful results with a bone glue made from a synthetic resin-adhesive material. He has found that full arm use is restored in three days, and broken legs bear full weight without crutches in four days.

Still another use for the bone glue has been uncovered by an ear specialist, Dr. Joseph Sataloff of Philadelphia. He treated a 14-year-old boy whose hearing had been impaired for nine years as a result of a complication that arose from a mastoid operation. As sometimes happens, the operation left a gap in the bony canal along which sound travels through the middle ear. By using a single drop of bone glue, Dr. Sataloff was able to bridge the gap and restore almost perfect hearing to the youth.

ALTHOUGH the use of glues in heart surgery and dentistry still is in the experimental stage, great hope is held out for them. In Oakland, Calif., Dr. Thomas J. Canty and a team of U.S. Navy researchers have developed a "tooth glue." Thus far the glue has been used solely on dogs, but if it can be used successfully on humans, it may prove to be the greatest boon to dental surgery since anesthesia. "Dental plates, bridgework, and even filling of cavities will be completely revolutionized by the use of medical glues," declares Dr. Canty.

Unlike most of the newly developed medical glues, the "tooth glue" has an animal base. It is made from the materials that comprise bone: calcium, phosphorous, and glycogen. The glue serves to hold the tooth firmly in place until natural bone grows around it to clutch it securely and permanently. In the Oakland laboratory, one dog has been using a glued-in tooth for two years. The glue set so quickly that the dog ate its dinner a few hours after the tooth was inserted.

IN AN EAST COAST laboratory, Dr. B. D. Halpern has been working on a medical glue with the tongue-twisting name of methyl alpha-cyanoacrylate. Dajac's Adhere, as it is more familiarly known, is being used experimentally in major surgery to bind severed arteries.

"One of the glue's chief advantages may be in the field of heart surgery," says Dr. Arnold Seligman of Baltimore. He and others have been experimenting with it as an adjunct to sutures in delicate heart operations. "The glue will simplify techniques that until recently have been performed by only a very few of the most skilled surgeons," Dr. Seligman said.

One such operation is the reaming out of blocked coronary veins. These blood vessels of the heart are too small to hold any but the most delicate sutures, and it requires an infinitely long time to complete the operation. But with the arterial glue, the technique is greatly simplified and its quick-setting properties allow the operation to be performed in a minimum of time. Thus arterial glues will open the door for hundreds of surgeons to perform operations once limited to a handful of specialists.

The amazing bonding qualities of these various new glues promise to make them an increasingly useful tool of medical science. Someday part of your body may be literally glued together!

COVER:

A pair of collie puppies brings sheer delight to this little charmer photographed by L. Willinger. For the story of what a dog can teach your child, *turn to page 12.*

Family Weekly / November 25, 1962

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