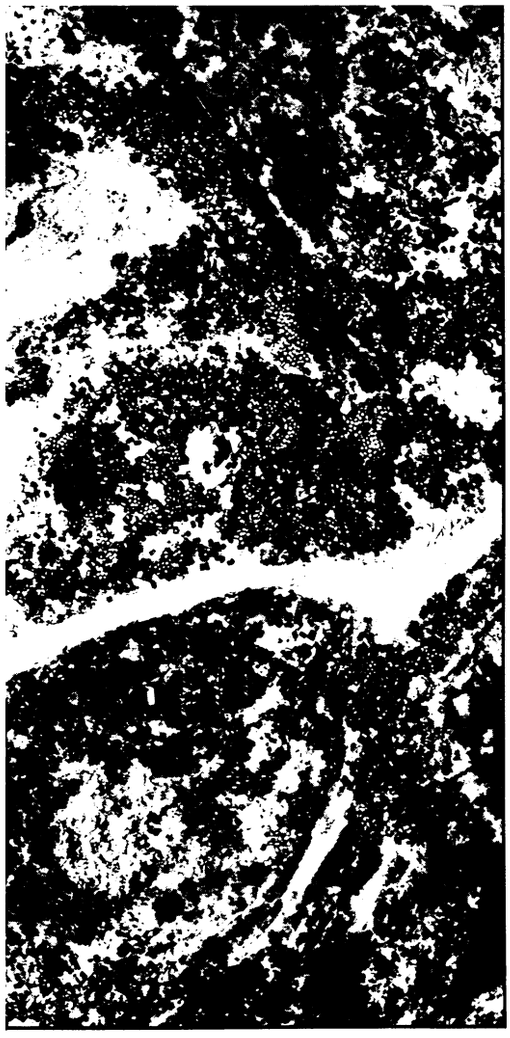
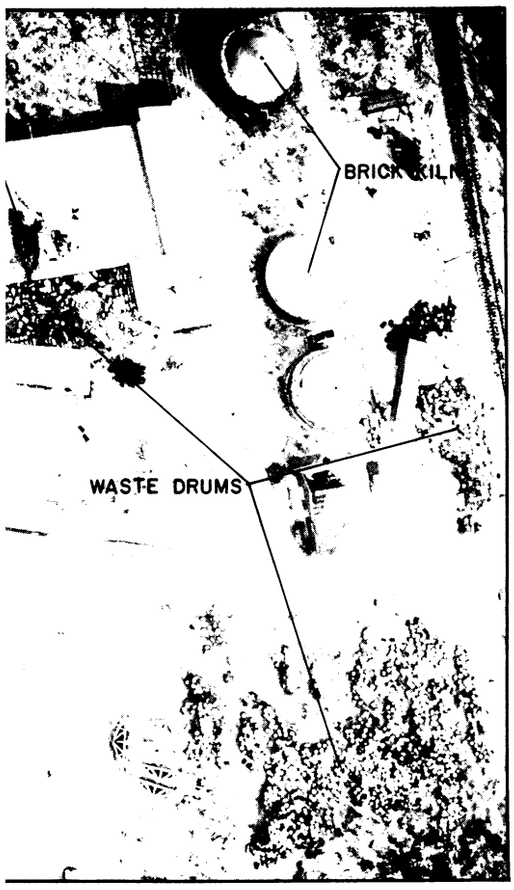




Photos: EPA

Microsurgery for strokes and visual disorders

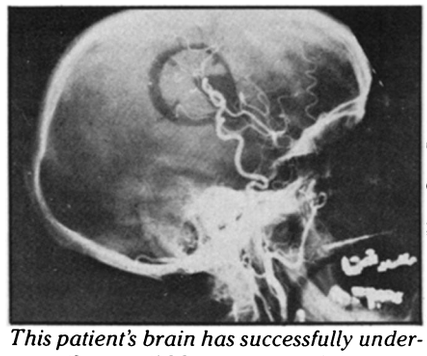
A new microsurgical technique, which is being performed with increasing frequency on persons who aren't getting enough blood to their brains, can not only prevent strokes but can also counter visual disorders that result from such blood obstruction. So report neurosurgeon Duke S. Samson and his colleagues at the University of Texas Health Sciences Center in the Jan. 26 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and ophthalmologist Thomas P. Kearns and his co-workers at the Mayo Clinic in the January MAYO CLINIC PROCEEDINGS.

One of the greatest advances in stroke research during the past several decades is the realization that transient blood obstruction to the brain occurs in many persons before they suffer stroke (death of brain neurons due to blood insufficiency, which may lead to paralysis of various parts of the body and to death). What's more, these cutoffs of blood to the brain are known to occur often in the internal carotid arteries — two major arteries supplying the head and brain with blood — because they are obstructed by a blood clot. Not surprisingly, surgeons would like to remove a clot from an internal carotid artery before a stroke actually takes place. But such a clot isn't always accessible for removal by conventional vascular surgery techniques, because it may extend too far up in the head.

So in 1967, surgeons at the Medical College of Vermont pioneered a new technique to overcome blood insufficiency to the brain resulting from an obstructed internal carotid artery. The procedure was arterial bypass, along the lines of that used on patients with heart disease. It consisted, essentially, of a surgeon drilling a hole in a patient's skull and, under a microscope, hooking up the superficial temporal artery (a branch of the external carotid artery) to the middle cerebral artery (a small artery in the brain), thus bypassing the obstructed internal carotid. The logic underlying this tack is easy to grasp if one realizes that a carotid artery goes up the neck, then branches into an internal carotid artery (which goes into the head) and into an external carotid artery (which goes into the scalp). So this technique simply forced the external carotid branch to "pinch hit" for the internal branch in getting blood from the neck into the head.

From 1967 to the middle of the 1970s, this microsurgical bypass procedure was tried on a number of patients by various surgeons. And while it seemed to improve the blood flow to their brains, no clinical trial was carried out to confirm that this was really the case, much less to see whether it could also prevent strokes. Samson and his colleagues have now conducted such a test.

Sixty patients with inadequate blood flow to their brains due to an obstructed internal carotid artery were offered the arterial bypass procedure. Fifty agreed to it; 10 declined. All 50 patients were followed up after the surgery for at least 14 months, since various studies have shown that the greatest risk for stroke in such patients occurs within one year after the first attack of blood insufficiency.



Kearns et al./Mayo Clinic Proc.

This patient's brain has successfully undergone the carotid bypass operation.

As Samson and his co-workers report, there were no operative deaths, and major complications from the procedure were experienced by less than eight percent of the patients. Seventy-six percent of the patients no longer suffered blood deprivation to the brain after the operation, and 94 percent of them escaped strokes. As for the 10 patients who elected not to undergo microsurgery and to take medication for their condition instead, two had strokes, and four others continued to suffer blood insufficiency to the brain. Both results suggest that the arterial bypass can help reduce blood inadequacy to the brain in such patients and help protect them from strokes. The real proof that this is the case, however, will only come with a much larger, more scientifically designed clinical trial. Such an investigation began at a number of medical centers during late 1977 and will terminate in 1982.

Two other indications in favor of the carotid artery bypass in addition to stroke prevention, Kearns and his co-workers report, are two eye disorders that can result from carotid artery blockage. One is venous stasis retinopathy, which consists of loss of vision because not enough blood can get through the carotid artery to supply the retina of the eye. The other is orbital pain, which results from not enough blood getting through the carotid artery to supply the orbit of the eye.

Kearns and his colleagues recommend the bypass for venous stasis retinopathy on the basis of 13 patients whose venous stasis retinopathy appears to have decreased following a bypass. They urge the bypass for orbital pain on the basis of only one patient who had a bypass exclusively for orbital pain. However, the procedure dramatically relieved that patient of distress. □