Omental Transposition to Brain of Stroke Patients

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SUMMARY The intact omentum was transposed to the surface of the brain in three aphasic patients who had stabilized following a dominant hemisphere ischemic stroke. The procedure was found to be safe, causing little physical disfigurement. Subjective and objective improvement in these patients, who are on a strict experimental protocol, has provided encouragement to continue this study in a deliberate and critical manner.

The pedicled omentum has been shown to be effective in preventing cerebral infarction in the dog and in the monkey when the structure is placed on the brain prior to middle cerebral artery occlusion. Based upon this experience, it was elected to offer this operation to aphasic patients who demonstrated considerable physical and cortical speech deficits months, or years, following their cerebrovascular accident. Omental transposition to the brain of these individuals was done, under a strictly controlled experimental protocol, to learn if the procedure was feasible, safe and possibly productive of improved cerebral function as measured by objective progress in communicative ability.

Preoperative assessment included neurological evaluation using computerized tomography and dynamic isotope brain scan examinations. Baseline speech evaluation, neuropsychometric testing and various neurophysiological studies were also done including visual, long latency auditory, and somatosensory evoked responses which were recorded and repeated serially during the postoperative follow up.

Method

Three male patients underwent omental transposition to the brain 8, 30, and 66 months respectively after a severe hemispheric stroke. At laparotomy, the omentum was lengthened by a method previously reported and brought out of the peritoneal cavity at the upper end of the abdominal incision. The elongated pedicled omentum, which was vascularized mainly by way of the right gastroepiploic artery, was then passed through a subcutaneous tunnel across the chest wall, along the side of the neck and brought out behind the ear near the proposed craniotomy flap. With the omentum suitably tailored, a 9 × 6 cm. temporoparietal craniotomy was performed and the dura widely opened. The omentum was then laid directly upon the intact arachnoid overlying the brain infarct and maintained in position by placing tacking sutures around the margins of the dura.

Result

The first patient who underwent omental transposition to the brain was 76-years-old and had sustained a severe dominant hemisphere stroke 8 months previously. His speech was restricted to repetition of isolated words and he required a walking tripod to ambulate with assistance. He is now 14 months after surgery and has shown only minor subjective and objective improvements in mental and physical capabilities. There have been no adverse effects of his surgery.

The next patients, aged 42 and 45 years respectively, had sustained a severe dominant hemisphere ischemic stroke 2½ and 5½ years prior to surgery. Both were severely handicapped by a marked expressive dysphasia. Omental transposition to the brain of these patients was performed without difficulty and both patients remained in the hospital for only a week following surgery. There has been no postoperative or long-term complication to date and a satisfactory cosmetic result was achieved (figs. 1, 2). Six and ten month periods have passed since their operations and both patients have shown encouraging subjective improvement in speech content, fluency and spontaneity which has been confirmed by speech and psychometric examinations. Serial neurophysiological testing has also shown a progressive increase in amplitude of somatosensory evoked responses recorded over the dominant hemisphere. In addition, initial delays in latencies of cortical auditory evoked responses recorded over the dominant hemisphere have shown improvement when compared with the normal contralateral hemisphere.

Discussion

The initial changes seen in our patients who have undergone omental transposition are encouraging, but
they do not allow the conclusion that in some way the operation has improved cerebral ischemic dysfunction. What we have observed raises a question as to why this improvement has occurred so late after the cerebral insult. Placing the omentum directly upon the brain may have the effect of either improving local vascular perfusion or, possibly, exerting some biochemical, or as yet unknown, influence.

References
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