dure is contemplated, a prophylactic EC-IC bypass to the appropriate vascular territory should be considered. Infective or traumatic intracranial aneurysms occasionally require excision (including a segment of the parent vessel). In these instances, an EC-IC bypass can maintain the viability of the tissue in the distal vascular bed of the sectioned parent vessel.

Deciding which procedure to do—anterior versus posterior circulation revascularization—is based on individual anatomic and pathologic factors, with the bypass directed at the ischemic region of greatest need. The techniques of these procedures have been well described. The formation of an anastomosis between the extracranial and intracranial circulation is a low-risk procedure, and long-term patency rates are high—90% to 98% in major studies. Venous interposition grafting has been described with good results but slightly lower patency rates—80% to 85%.

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Brain Tissue Transplantation

SINCE THE EARLY 1970s when neuroscientists began to describe the connections formed by fetal rat neurons transplanted to neonatal or adult rats, interest in the transplantation of mammalian neural tissue has been growing. Early experiments showed the potential of using fetal tissue transplantation techniques to study patterns of neuronal development, synaptic plasticity, and neural regeneration after injury. In the late 1970s, scientists in Scandinavia and the United States found that fetal dopaminergic neurons and adult adrenal medullary tissue could be transplanted to the brains of adult rats that had undergone nigrostriatal lesioning with 6-hydroxydopamine. Recipients of these transplants showed improvement in motor abnormalities. These results raised the exciting possibility that the transplanting of brain tissue might eventually be used to treat neurologic diseases in humans.

After extensive experimental work in rodents and limited experimental work in lower primates, Swedish surgeons began to implant autologous adrenal tissue stereotactically into the caudate nucleus or putamen of patients with advanced Parkinson's disease. None of the patients experienced more than transient benefit. Surgeons in Mexico City, however, have reported persistent improvement after transplanting adrenal medullary tissue to the caudate nucleus. The patient selection and the operative procedure used by the Mexican surgeons were different from those of the Swedish team. The patients treated by the Mexican group were much younger than those in the Swedish study, who were more typical of patients with Parkinson's disease. The Mexicans used an open craniotomy and placed the adrenal grafts at the head of the caudate nucleus in contact with the cerebrospinal fluid, which may contain trophic factors that promote transplant survival. Two of the patients operated on by the Mexican group died within 45 days of causes apparently unrelated to the operation.

Although highly experimental, the adrenal-to-brain transplant must now be considered of possible clinical significance. Similar transplantation programs have been started at centers in the United States, but the more recent reports from several of these centers suggest no benefit from such transplants, and the authors urge caution in expanding ongoing human research.

Parkinson's disease is not the only neurologic disease in human which brain tissue transplantation may eventually play a role. Neuroendocrine disorders, including genetic deficiencies of vasopressin and gonadotropin-releasing hormone in rats, have been ameliorated by fetal transplants. Fetal septal grafts can functionally reinnervate the hippocampus and dentate gyrus of adult rats after septal-hippocampal lesioning. The potential application to Alzheimer's disease has intrigued many researchers. Experimental work with animal models of traumatic and ischemic brain injury is also in progress. The development of brain tissue transplantation as an experimental therapy for a variety of neurologic diseases must await further basic research in rodents and lower primates.

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Lumbar Stenosis in the Elderly

PERSONS 60 YEARS OF AGE or older are susceptible to lumbar stenosis caused by degenerative disease, hypertrophied articular facets, thickened ligaments, and herniated discs. This elderly population tends to have associated medical problems that potentially increase their surgical risks, but with the ever-increasing number of elderly people, more will be referred to neurologic surgeons for help.

Characterized by low-back pain with distal radiation, lumbar stenosis causes poorly localized pain that mimics intermittent claudication of an ischemic origin. Pain may be well lateralized in the lateral recess syndrome. Walking or standing usually increases the pain; flexion of the lumbar region, however, may alleviate it. The common differential diagnosis is vascular claudication, which causes severe calf cramping that can be relieved by standing and decreased exercise.

Several recent studies have shown that elderly patients who are medically stable do well after surgical decompression by laminectomy. Surgical intervention is indicated when pain hinders a patient's mobility. Absolute indications for an operation are weakness and bowel or bladder dysfunction. Conservative therapy, including bed rest and flexion exercises, can be tried if pain is not intolerable and no other