



INN-ovative Treatments for Cerebral Aneurysms: The INN at Beth Israel

The sudden and unexpected diagnosis of a cerebral aneurysm is a frightening event. Aneurysms, which are dangerous weaknesses in the walls of a blood vessel in the brain, occur in as many as five percent of individuals. While cerebral aneurysms are far more common in adults between the ages of 30 and 60 years, and in women rather than men, they can occur at any age. If left untreated, they can be life-threatening.

Cerebral aneurysms are generally discovered in one of three ways: they can be discovered incidentally during a routine MRI or angiography; they can present with neurological symptoms (e.g. dizziness, nausea, vomiting, vision impairment, and loss of consciousness); or they can rupture causing a subarachnoid hemorrhage (SAH) in the brain.

In the last case, when bleeding occurs in the fluid spaces surrounding the brain or into the brain itself, the patient often describes the headache caused by a rup-

tured aneurysm as the "the worst I ever had in my life". Half of those experiencing this pain never make it to the hospital in time.

Because even unruptured, asymptomatic aneurysms can be associated with high rates of neurologic injury or death, the treatment of a cerebral aneurysm is always considered a medical emergency. For this reason, patients and their families are advised to seek surgical treatment as soon as possible.

A Center of Excellence

At the Hyman-Newman Institute for Neurology and Neurosurgery (the INN) at Beth Israel Medical Center in New York, a unique multidisciplinary medical team brings together an unparalleled blend of endovascular and neurosurgical expertise to manage these and other complex cerebral vascular problems. This center of excellence has attracted patients from all over the globe.

Alejandro Berenstein, M.D., is the

Director of the INN at Beth Israel Medical Center. He is also Director of the Center of Endovascular Surgery, a center dedicated to interventional neuroradiology within the INN. With Dr. Pierre Lasjuanias, Dr. Berenstein co-wrote the five-volume definitive work in the field surgical neuroangiography.

Eugene S. Flamm, M.D., Chairman of the Department of Neurosurgery, heads up the team that specializes in the microsurgical treatment of aneurysms, tumors, and curable lesions of the brain. Dr. Flamm, one of the most experienced aneurysm neurosurgeons in the nation, is a diplomat of the American Board of Neurological Surgery and a fellow of the American College of Surgeons and the New York Academy of Medicine.

At the INN, Drs. Berenstein and Flamm, each world-class pioneers in their respective fields, team up with other health professionals to diagnose and treat complicated vascular problems of the brain, head, face, spine, and spinal

cord. At the onset of care, a series of tests are conducted and each case is reviewed by the team to determine the least invasive treatment strategy. Then, based on the extent and location of the aneurysm, the person's age, general health, and neurological condition, an individualized treatment plan is determined for the patient.

There are two potential methods for treating aneurysms. Dr. Flamm and his team of neurosurgeons specialize in an "open" surgical procedure. Under microscopic dissection, a small vascular clip is placed across the neck of the aneurysm, thereby excluding it from the circulation. Dr. Berenstein and his team of endovascular surgeons specialize in a "closed" approach. A tiny catheter, as soft as a hair, is navigated from the femoral artery in the groin into the cerebral vessels. This allows for the placement of specially designed coils into the dome of the aneurysm. Under x-ray guidance, the coils are packed into the

Viewing a cerebral angiogram with special glasses, Dr. Alejandro Berenstein rotates the 3-D image of the cerebral vessels for precise guidance during minimally invasive brain surgery.

aneurysm, filling up its volume and thereby preventing blood from entering.

Sometimes both approaches are suitable for the same individual, and the patient is involved in making a choice of procedure, based on the relative risks and benefits of each.

Technology Coupled with Compassion

The endovascular service has a uniquely designed suite, the first of its kind in the country that combines a rotational CT scanner with angiography. "We have the capability of seeing the angiogram on a monitor with 3-D glasses and we can rotate images in all directions," says Dr. Flamm. Interactive, computerized, image-guided systems are

used by surgeons for precise orientation and guidance during surgery, allowing smaller, more precise incisions. The surgical service has the most advanced monitoring support systems to safeguard patients.

"The great advantage of the minimally invasive endovascular technique is that you don't need to cut skin, muscle, bone, or the lining of brain," says Dr. Berenstein. "We go through the inside to reach the target."

Equally important, is the human aspect of care at the INN. Drs. Flamm and Berenstein are acutely aware of the profound psychological impact of brain surgery on the patient and their family. The innovative program treats whole persons, not just bodies or brains. "I've always had a large room with many chairs", says Dr. Flamm. "When people come to talk to a neurosurgeon about brain surgery, they bring the whole family." The approach at the INN respects the sensitivities and fears of individuals facing brain surgery and

allows sufficient time to answer questions and allay concerns. There is no recovery room; instead patients are closely monitored in their own rooms. There also are no set visiting hours; family members can stay overnight and sleep with the patient.

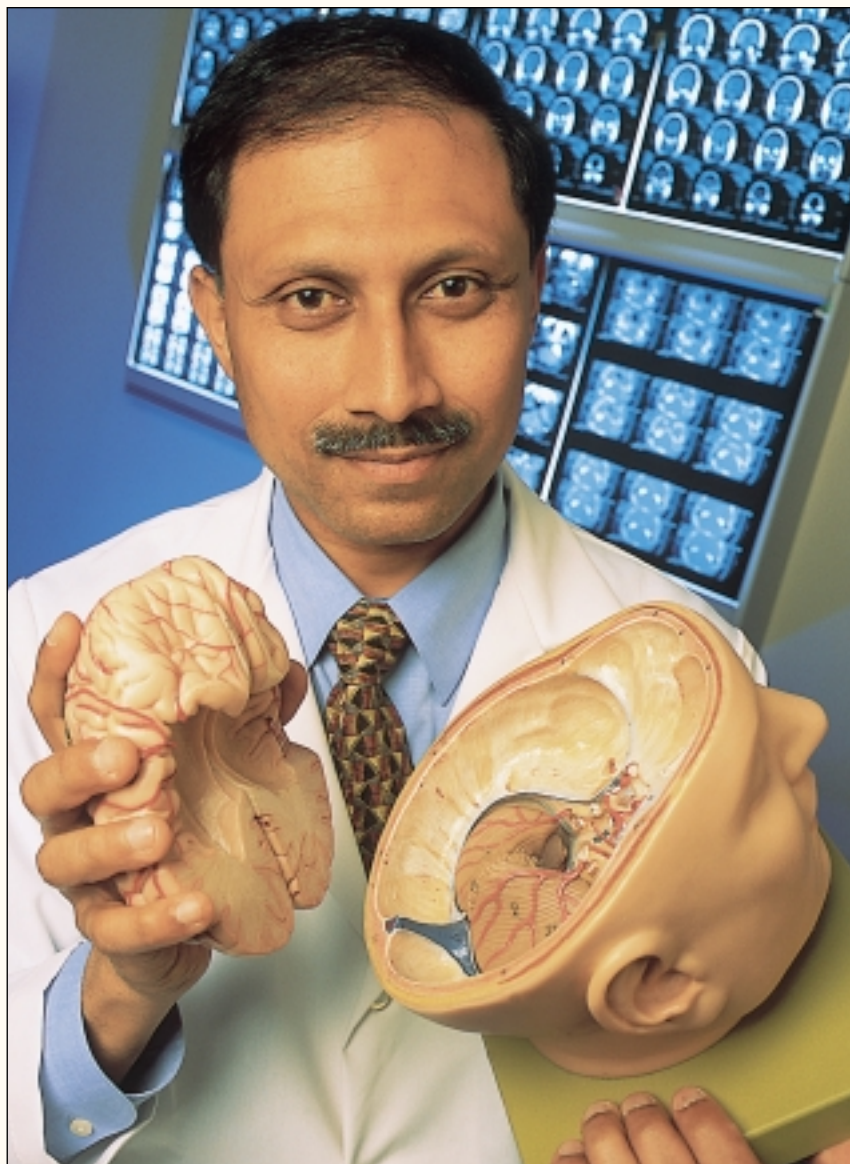
"Of those who present with hemorrhage", says Dr. Flamm, "We try to reassure them that the most dangerous part of the process took place when they had the hemorrhage, not with the outcome of the surgery."

"I venture to say if you come to Beth Israel with an aneurysm, you stand the best chance in the world that your head won't be opened. But if your head needs to be opened, we have the best surgeons to do it," adds Dr. Berenstein. ■

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Dr. Eugene Flamm specializes in microsurgical treatment of aneurysms, tumors and curable lesions of the brain.



Dr. Chandranath Sen identifies the exact location of the debilitating tumors he specializes in treating.

Removing Hard-to-Reach Cranial Tumors

Not too long ago, deep-seated tumors located at the base of the brain, above the nose, or behind the eyes were considered inoperable because they were too difficult or dangerous for doctors to reach. Even now, **Chandranath Sen, M.D.**, Chairman of Neurosurgery and Co-Director of the Center for Cranial Base Surgery at St. Lukes-Roosevelt Hospital, is one of only a handful of physicians in the country performing this intricate, specialized type of neurosurgery.

Patients are typically referred to Dr. Sen by neurologists, neurosurgeons and other patients. With the popularity of the world-wide web as a source of consumer health information, Dr. Sen is also finding an increasing number of patients who "land on his doorstep" after they've conducted an on-line search to find out more information about their tumors. Invariably, they find out about his unique surgical prowess. Dr. Sen performs a couple of hundred skull-base operations each year. He also has experience in surgery for acoustic neuromas and for the treatment of trigeminal neuralgia.

Cranial and hemifacial spasm tumors are generally benign, but they can seriously compromise vision, walking, and hearing. They often occur in young or middle-aged people who are particularly good candidates for surgery. "The symptoms of these tumors are often very silent," says Dr. Sen. "They can include dizziness, double-vision, nosebleeds, and headaches behind the eye. The symptoms start slowly and creep up on you." He recalls that he recently saw a doctor's mother who did not realize she had become blind in one eye. By the time Dr. Sen saw the woman, she had a huge tumor requiring complicated surgery.

Dr. Sen spends a considerable amount of time talking to his patients and trying to explain the intricacies of the surgery. He insists that family members accompany them for the visit and shows them a model of the brain, pointing out the precise location of the tumor. He also suggests that they speak to others who have had similar surgery in the past.

"There are no easy answers," says Dr. Sen. "They may have very few symptoms, but the tumor could eventually cripple or kill them."

"I feel for the patients. I've given them a piece of myself and I have learned so much from these patients and from being close to them. It's a great learning experience and it's very humbling."

Dr. Sen also "gives back" in another way. Two times each year, along with two other ex-patriate Indian doctors from Canada and England, Dr. Sen returns to his native Calcutta to demonstrate his expertise to doctors and to provide free medical services to patients who have no access to the level of care provided in our country.

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