Meet The Surgeon

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Positions:

- **Director**, Pediatric Neurosurgery
- **Co-Director**, Cerebral Palsy Clinic
- **Co-Director**, Pediatric Brain Tumor Program

Education:

- **Medical School:** Universidad Nacional de Buenos Aires, 1977
- **Internships:** Foreign Medical Education, Universidad Nacional de Buenos Aires
- **Neurosurgery Resident:** Hospital de Ninos, Buenos Aires; 1979-83
- **Chief Neurosurgery Resident:** Hospital Juan Fernandez, Buenos Aires; 1983-84

Subspecialties:

- Chiari Malformation
- Spina Bifida
- Pediatric Hydrocephalus
- Pediatric Brain Tumors
- Cerebral Palsy

Editor's Note: Dr. Lazareff's passion for his work and dedication to his patients were readily apparent, even though we spoke by phone and were separated by 3,000 miles.

Definitions

cauterize - burn away with heat

cerebellar tonsils - portion of the cerebellum located at the bottom, so named because of their shape

cerebrospinal fluid (CSF) - clear

Surgical Technique May Minimize Trauma In Children

Undergoing Chiari surgery is tough enough for adults, but for children and their parents, the surgical trauma and recovery can be especially difficult. The goal of decompression surgery is too create more room around a malformation in order to alleviate any direct compression of tissue and to allow cerebrospinal fluid to flow unimpeded from the brain into the spinal area. This is accomplished by removing a piece of the skull, removing part of the top one or two vertebrae, sewing a patch into the covering of the brain, and for some surgeries, removing part of the malformation itself, the cerebellar tonsils.

In an attempt to reduce both the surgical trauma for pediatric patients, and the risk of later complications, a group from UCLA, led by Dr. Jorge Lazareff, has devised a new surgical technique which focuses only on the malformation itself. Dr. Lazareff and his colleagues reported on the success of their technique in the November, 2002 issue of the Journal of Neurosurgery.

According to Dr. Lazareff, most Chiari symptoms can be directly attributed to the displacement of the cerebellar tonsils into the spinal area. This fact, combined with the risk of slumping of the cerebellum if too much bone is removed, led Dr. Lazareff to focus his attention on the tonsils themselves. "Many pediatric neurosurgeons currently remove part of the cerebellar tonsils together with a craniectomy and laminectomy. We wanted to see if a tonsillectomy alone would be sufficient," notes Dr. Lazareff.

In the study, the surgeons treated 15 pediatric patients, ranging in age from 2 to 18 years, who all suffered from symptomatic Chiari malformations. The most common symptom, as to be expected, was headaches. Other symptoms included scoliosis, numbness in extremities, weakness in upper limbs and failure to thrive. Eight of the patients had syringomyelia.

All of the children underwent surgery to remove the cerebellar tonsils without removing any bone. Dr. Lazareff and his colleagues first exposed the tonsils, then cauterized them to create more space. In cases where this was insufficient, they would resect the tonsils.

After the surgery, symptoms improved for all patients; with headaches disappearing 1 week to 2 months post-operatively, significant weight gain for the children who were not thriving, and a syrinx reduction in 7 out of 8 patients. Although he doesn't have objective data, Dr. Lazareff also believes that recovery was easier for his patients because of the reduced surgical trauma.

Because the average follow-up time was only 7 months, it is too soon to see if this technique has a lower rate of recurrence. This doesn't bother Dr. Lazareff however, for the goal of the study wasn't to prove that this technique is superior to others, just that it is a viable alternative. "I am not dogmatic about this technique," says Dr. Lazareff. "It is up to each individual surgeon and patient to decide the best approach in each case."

In addition to evaluating the success of the surgery, the study also examined the resected tonsils post-operatively. In every case, upon microscopic analysis, the tissue was revealed to be abnormal. It is not yet clear if this result is associated with Chiari, or a result of the displacement and compression of the tonsils. The functional role of the cerebellar tonsils is not yet known, and Dr. Lazareff points out, "In Chiari patients, the tonsils may not be as important because they are abnormal ... they may not be working for the Chiari patient."

Dr. Lazareff's technique is not without its critics. In the same journal issue that the study was published, Dr. Oldfield, a Senior Investigator at NIH (National Institute of Health), wrote an editorial expressing concerns with the procedure. According to his editorial, Dr. Oldfield believes the procedure proposed by Dr. Lazareff violates the basic principal of neurosurgery, which is to preserve neural tissue like the brain, at the expense of other tissue, like bone. In addition, Dr. Oldfield believes that the scarring that may result from this procedure has the potential to block the flow of cerebrospinal fluid and cause syringomyelia in and of itself.

Dr. Lazareff responds to this criticism by pointing out that the tissue being removed is abnormal. He also cites a survey of pediatric neurosurgeons, published in Pediatric Neurosurgery, which shows that more than 30% of pediatric neurosurgeons favor some type of tonsillar manipulation. Dr. Lazareff believes that the basic principal of neurosurgery is to benefit your own patient, and while he evaluates each case individually, the tonsillectomy without bone removal remains his first choice.

As for future research, Dr. Lazareff would like to further explore the abnormal nature of the tonsils in Chiari patients to determine whether it is associated with Chiari or a result of it. He is also interested in why Chiari manifests sometimes at a young age, and sometimes not until adulthood.

liquid in the brain and spinal cord, acts as a shock absorber

craniectomy - surgical removal of part of the skull, or cranium

laminectomy - surgical removal of part (the bony arch) of one or more vertebrae

resect - to remove by cutting

scoliosis - abnormal curvature of the spine

tonsillectomy - surgical removal, or reduction, of the cerebellar tonsils