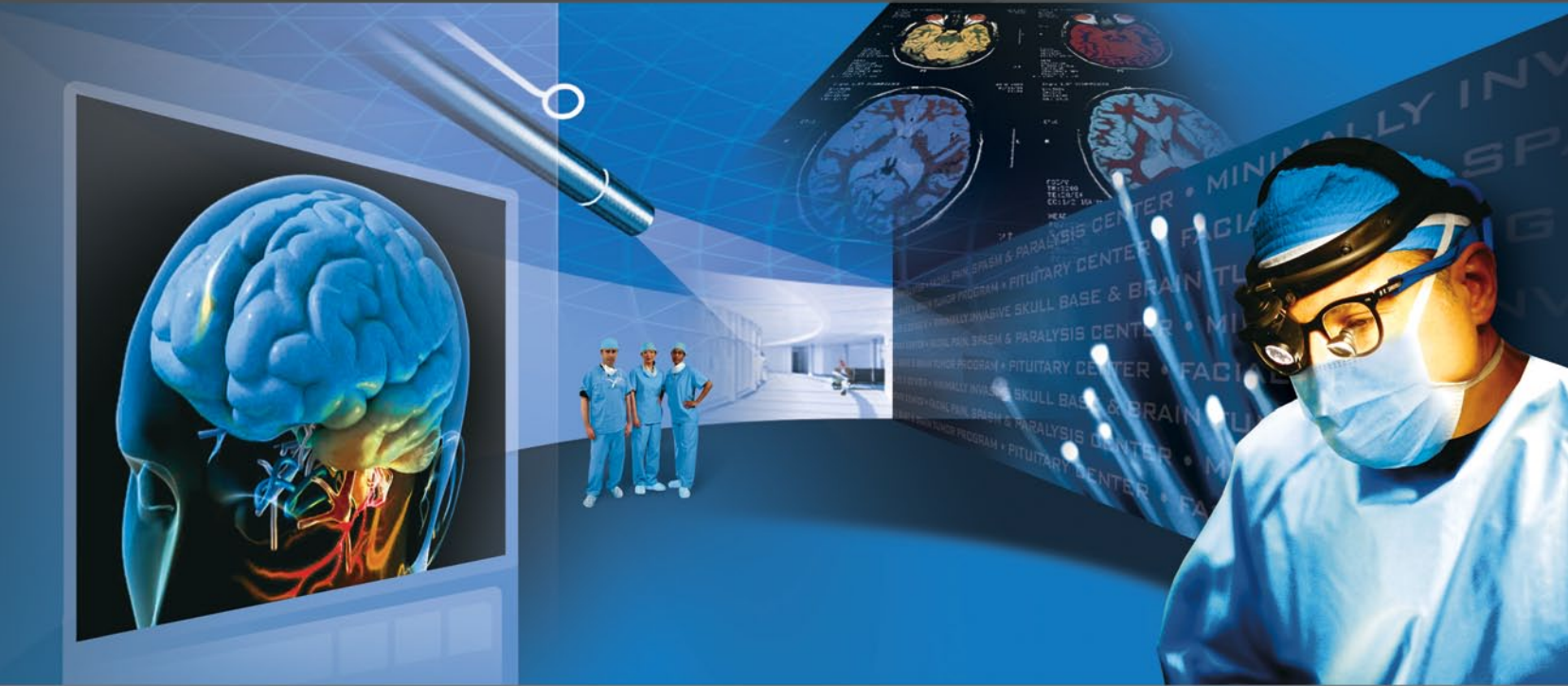




**SURGICAL**  
*Innovation*

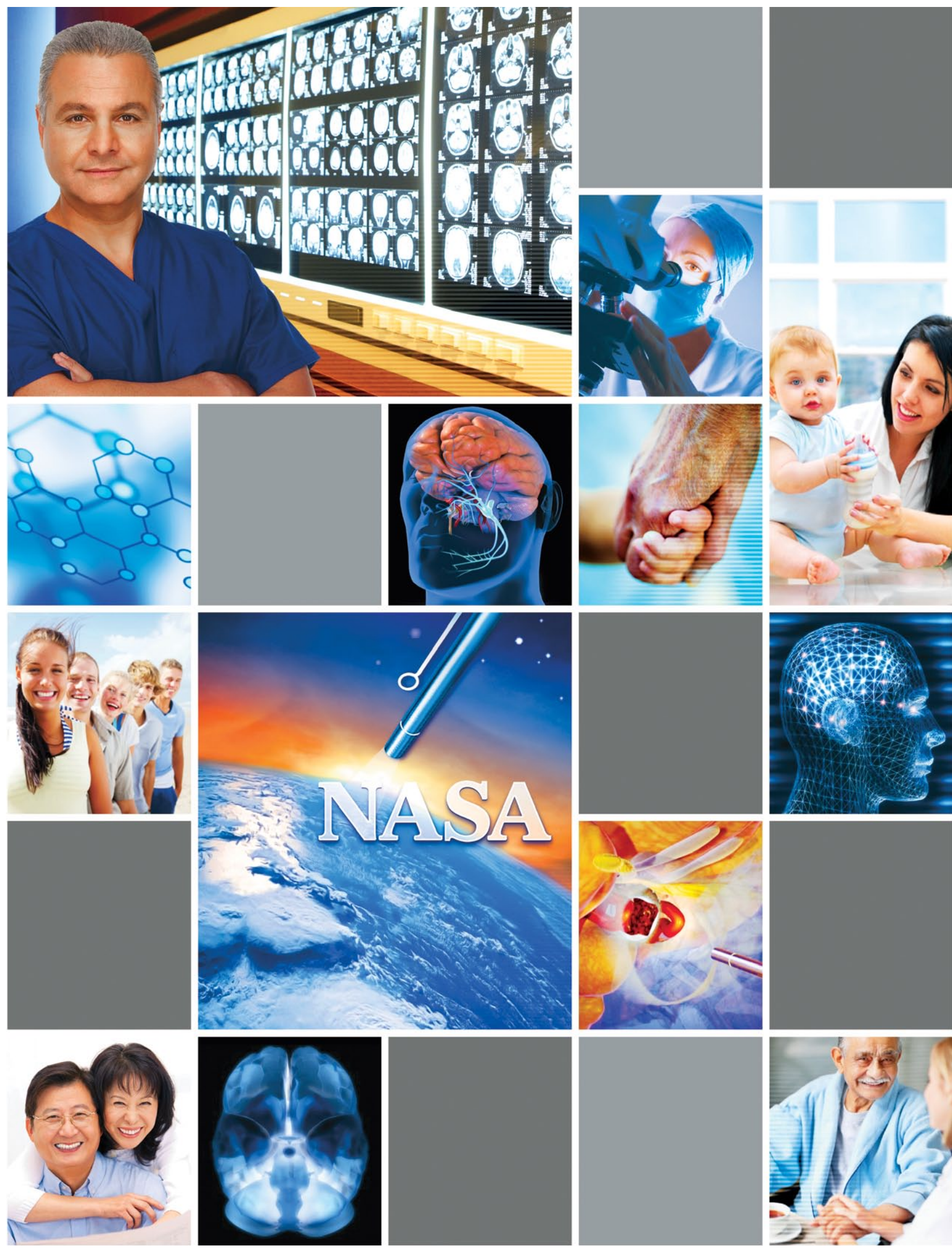


**SKULL BASE**<sup>®</sup>  
I N S T I T U T E

**“THIS IS NOT JUST A JOB.  
NOR IS IT A PROFESSION.**

**Passion**  
**THIS IS A PASSION.”**

**HRAYR SHAHINIAN, MD, FACS  
LOS ANGELES, CA**



# Skull Base Institute Introduction

Dr. Hrayr Shahinian and his team revolutionized brain surgery in 1994, when they developed a groundbreaking procedure to remove skull base brain tumors in a minimally invasive way. Their approach, the use of a thin, precise endoscope inserted through the right nostril, eliminated the need for medical science to resort to a barbaric, centuries-old method known as the craniotomy, which peels away the face and makes large openings in the skull.

Today, many of America's leading hospitals and surgical centers have adopted Dr. Shahinian's minimally invasive methods. Yet, few surgeons can claim his experience of having successfully performed more than 4,500 of these endoscopic procedures.

Now, Dr. Shahinian and the Skull Base Institute (SBI) are on the forefront again. Using a variety of minimally invasive procedures, SBI is the only surgical center in the world using fully endoscopic techniques to treat such a broad array of brain-based conditions. From acoustic neuromas, meningiomas and trigeminal neuralgia, to craniopharyngiomas and pineal tumors, SBI performs every procedure endoscopically, which results in fewer complications, faster recovery times and less pain than traditional approaches.

An innovator in the specific discipline of skull base surgery, Dr. Shahinian is currently working with NASA's Jet Propulsion Laboratory to develop the next breakthrough in endoscopic instruments. These new tools promise to revolutionize the field yet again. What else would you expect from a surgeon who has set the standard for more than 16 years?

Throughout this brochure, you will learn what distinguishes SBI as a world-class leader in innovative minimally invasive skull base surgery and hear from the patients themselves, many of whom turned to Dr. Shahinian when their own doctors offered a dim prognosis or no hope at all.

We invite you to find out more about this extraordinary center of excellence and to contact SBI at (866) 266-9627.



## Hrayr K. Shahinian, MD, FACS

Pioneer. Innovator. Leader.

Author of more than 100 peer-reviewed articles and senior author of the definitive textbook on endoscopic skull base surgery, Dr. Hrayr Shahinian is director of SBI and a true trailblazer. He has spent more than 16 years of his life tirelessly crusading for a better approach to removing brain tumors and resolving other conditions and abnormalities of the skull base region. He has taken his message outside the operating room, educating like-minded surgeons, lecturing at conferences and symposia and being the standard-bearer for this bold new way of thinking in the medical community. As SBI's representative, Dr. Shahinian has appeared on CNN, The Today Show, The Ellen DeGeneres Show and The Doctors and has been profiled numerous times on news programs for innovative approaches that change lives.

### Stories of healing: David Dingman-Grover

When David Dingman-Grover was only eight years old, he was diagnosed with an incredibly aggressive brain tumor called a rhabdomyosarcoma that had grown to the size of a grapefruit. David named the tumor "Frank" after Frankenstein, who represented one of his greatest childhood fears. Even with a traditional (and dangerous) open craniotomy, **David was given only a 10 percent chance of survival by his doctors.**

Using minimally invasive endoscopic techniques, Dr. Shahinian was able to completely remove "Frank" in only two hours. The story was so miraculous that it was covered by major media outlets, including two appearances on The Ellen DeGeneres Show. David's parents, Brýn and Tiffini, credit Dr. Shahinian's skills for saving their son's life when, as they say, "...no options were available and doctors had thrown in the towel."

"Dr. Shahinian's skills, compassion and drive to heal are hallmarks of his personality. That commitment, combined with his compassion, has earned him the undying loyalty, respect and love of his patients and their families...and ours is top among them."

For more information on David and his incredible story, go to:  
[www.skullbaseinstitute.com/childrens\\_ambassador.htm](http://www.skullbaseinstitute.com/childrens_ambassador.htm)

## About Dr. Shahinian

Dr. Shahinian's extensive specialized training includes in-depth fellowships in skull base, craniofacial and microvascular surgery.

- Bachelor of science with distinction (The American University of Beirut) and medical degree with distinction (The American University of Beirut and The University of Chicago).
- Surgical residency (Vanderbilt University Medical Center - Nashville, TN).
- Plastic and reconstructive surgery residency (NYU Medical Center - New York, NY).
- Skull base surgery fellowship (University of Zurich - Switzerland).
- Craniofacial surgery fellowship (NYU Medical Center - New York, NY).
- Board-certified by the American Board of Surgery.
- Fellow of the American College of Surgeons.
- Lead author - Endoscopic Skull Base Surgery: A Comprehensive Guide with Illustrative Cases.
- Pioneer of the next generation of endoscopic surgical tools in conjunction with NASA's Jet Propulsion Laboratory.

### Something To Think About

More than 90 percent of SBI's patients are referred by former patients who sing Dr. Shahinian's praises or through self-referral by the Internet. All surgeries at SBI are performed personally by Dr. Shahinian and assisted and supported by a world-class team of surgeons, anesthesiologists, neuroradiologists and other experienced medical professionals.



The benefits of fully endoscopic surgery. The base of the skull is the most complicated part of the human anatomy. With vital blood vessels and major cranial nerves passing through the area, the skull base is difficult to reach and even more challenging to navigate. The complexity of this delicate region requires a commitment to finding better methods and better outcomes, a commitment SBI continuously fulfills.

# SURGICAL APPROACHES

## ENDOSCOPIC VS. TRADITIONAL

Traditionally, brain surgery has meant large scalp incisions, peeling down the face, drilling huge holes in the skull... and that's all before the doctor even gets close to the tumor! This approach, called an open craniotomy, has been the norm in medicine for centuries.

SBI's revolutionary endoscopic treatments start with far less invasive methods, such as accessing openings like the nose or making small "keyhole" openings strategically placed within the hair of the eyebrow or behind the ear.

And since brain retractors are never used during the endoscopic procedures, there is less chance of injuring or disturbing the brain.

As Dr. Shahinian says, "You want to go in and out without the brain knowing you were there."

As a result, the brain remains virtually untouched, except for the tumor that's been removed or the condition that has been resolved.

SBI's methods yield fewer complications, quicker recovery times and

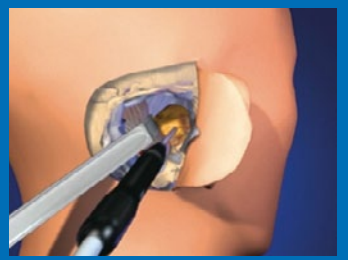
less scarring. Typically, patients are able to go home to their loved ones and their lives 24-48 hours after surgery.

Although all of the procedures at SBI are performed fully endoscopically, Dr. Shahinian and his team use a wide range of access points to pinpoint the best "route" to remove the tumor or correct the condition. These access points are covered in greater detail on the following pages.

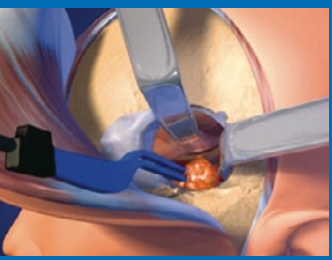
### OLD TRADITIONAL APPROACHES



BIFRONTAL CRANIOTOMY

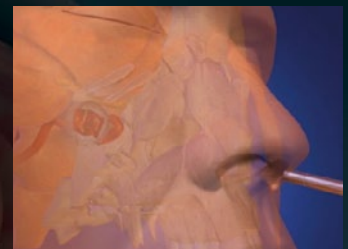


TRANSLABYRINTHINE

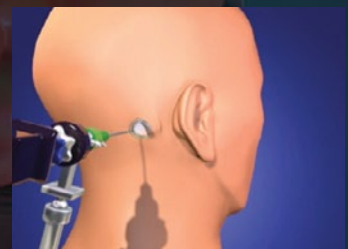


PTERIONAL CRANIOTOMY

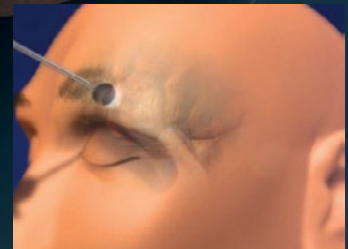
### SKULL BASE INSTITUTE FULLY ENDOSCOPIC APPROACHES



ENDONASAL



RETROMASTOID



SUPRAORBITAL

### THE RIGHT TOOLS FOR A BETTER JOB.

Even the smallest generic microsurgical instrument has proven to be too thick and bulky for the kind of endoscopic surgery SBI routinely practices. For example, microscopes, which are crucial to traditional brain surgery, require a relatively wide opening in the skull so surgeons can see and properly illuminate the area on which they need to operate.

On the other hand, a thin endoscope mounted with a tiny camera makes its way through a natural opening or small keyhole incision to precisely reach the targeted area. To put it in layman's terms, your doctor can see the key area of the brain better with an endoscope than with a microscope.

Recently, the SBI team has been advancing the practice of endoscopic surgery even further by using longer, more slender shafts and even smaller microtips. Combined with major improvements in cutting-edge, high-definition cameras and fiber-optic "cold-light" sources, these new tools set the standard for patient care.

And, not surprisingly, Dr. Shahinian is helping lead the way yet again: working with NASA's Jet Propulsion Laboratory to develop new endoscopes and other tools that will allow a precise 3D view from virtually any angle. (See page 28 for more information on these revolutionary instruments and the effect they are likely to have on the medical community at large.) These new tools on the horizon promise to continue the mission of performing less invasive, more successful surgeries with even better outcomes for patients.

The original endoscopic approach, still saving lives. Although not right for every type of tumor, endonasal surgery is the least invasive approach to certain skull base conditions, because it takes advantage of the body's natural opening, the nose. Since 1994, Dr. Shahinian has been a leader in practicing and perfecting this technique. Today, other surgeons and hospitals may use their own endonasal procedures, but few can match SBI's experience and expertise.

Learn more about our endonasal approach at [SkullBaseInstitute.com](http://SkullBaseInstitute.com)

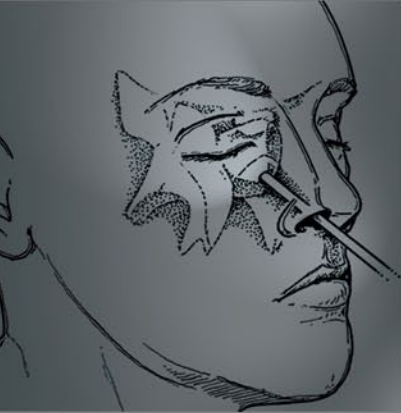
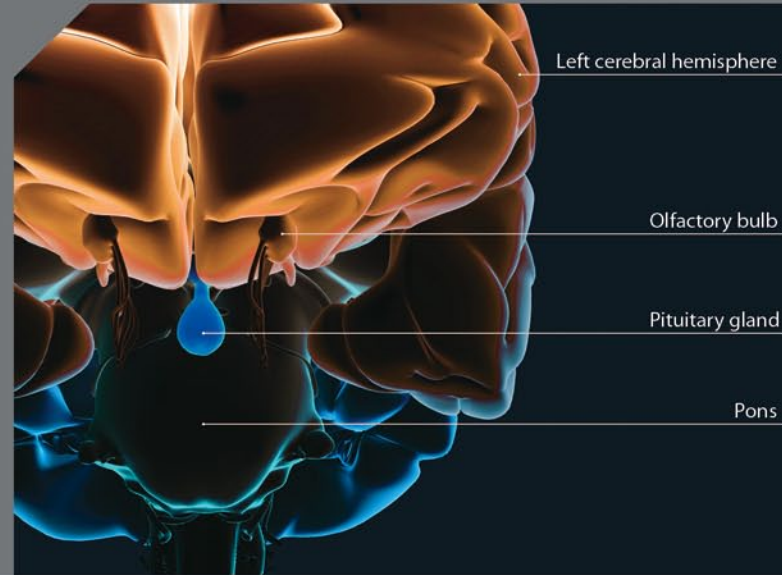
## SURGICAL PROCEDURES ENDONASAL

### Advantages to endoscopic surgery include:

- A more panoramic view of the area, along with the ability to look around corners, which increases the likelihood of removing the entire tumor.
- Fewer surgical complications.
- Elimination of unnecessary steps. No incisions, no drains, no nasal packing, no retraction.
- Shorter hospitalization and recovery times.
- A less traumatic experience overall.

In fact, after endonasal surgery, patients are up and out of the hospital the very next day, instead of days later when more traditional methods are used.

Because of all of these advantages, a fully endoscopic approach is particularly well-suited for children, elderly patients and those with other complicating risk factors.



But young or old, people in the know call this the "gold standard" in pituitary surgery. To date, Dr. Shahinian has performed more than 2,000 of these procedures with the skill and success rate that you would expect from a true master in his field.

Please note: Depending on the location of the tumor or condition, a transoral procedure (in which Dr. Shahinian accesses the area through the mouth) may be recommended instead of an endonasal approach. As always, the team will discuss all options with each individual patient.

### CONDITIONS THAT CAN BE TREATED USING AN ENDONASAL OR TRANSORAL APPROACH INCLUDE:



#### PITUITARY TUMORS

- Cushing's disease
- Acromegaly/gigantism
- Prolactinomas
- Non-functioning tumors
- Rathke's cysts



#### OTHER TUMORS

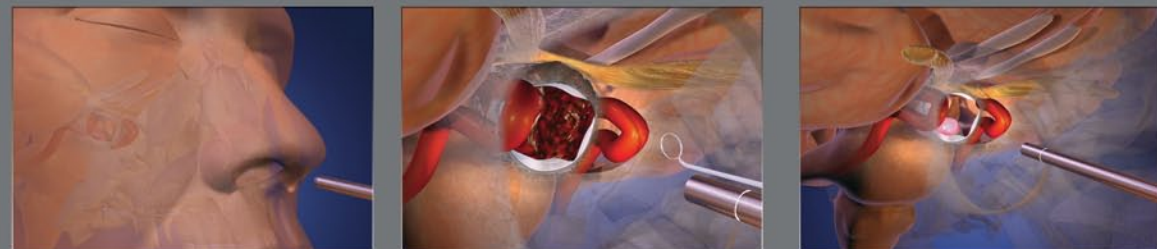
- Rhabdomyosarcomas
- Chordomas
- Craniopharyngiomas (for more information, see page 18)
- Meningiomas (for more information, see page 18)



"I HAVE DR. SHAHINIAN'S SUPERB SKILL AS A SURGEON TO THANK, NOT ONLY FOR GETTING THE ENTIRE TUMOR, BUT ALSO FOR ALLOWING ME A QUICK RECOVERY. I TELL EVERYONE ABOUT THE MIRACLE HE PERFORMED FOR ME."

- LAURA M-S., COSTA MESA, CA *PITUITARY TUMOR SUCCESS STORY*

SBI extends its endoscopic techniques to more conditions than any other center in the world. Here are just a few examples.



### Functioning Pituitary Tumor: Cushing's Disease

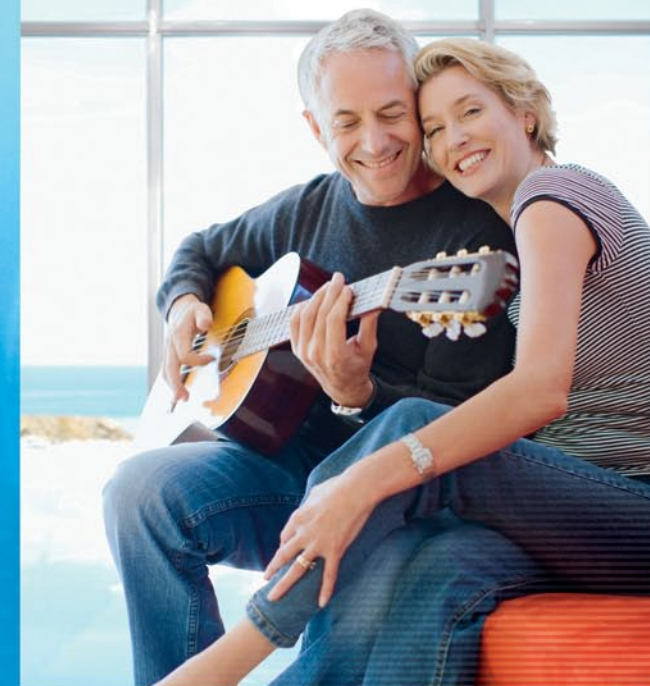
Representing approximately 70 percent of all pituitary tumors, functioning tumors are also called "secretory" tumors because they secrete additional hormones that can throw off the body's hormonal balance. Cushing's disease, for instance, occurs when a pituitary tumor causes the body to overproduce ACTH (adrenocorticotropic hormone) and too much cortisol shows up in the blood. Signs of Cushing's disease include a build up of fat in the face, back and chest, high blood pressure, diabetes, facial hair, acne and a pronounced thinning of the arms and legs.

### Functioning Pituitary Tumor: Acromegaly and Gigantism

Both acromegaly and gigantism result from a pituitary tumor that begins secreting HGH (human growth hormone). Acromegaly occurs from a tumor that grows in adulthood while gigantism starts from childhood or adolescence. Classic symptoms of both include abnormal growth of the facial bones, hands and feet, as well as heart disease, diabetes, hypertension, colonic polyps and excessive sweating. Patients with gigantism are extremely tall because the condition occurs before the growth plates of long bones have closed. Because of the extreme size of patients with this condition, SBI has had experience commissioning custom-made, extra-long instruments that help reach and remove the tumor.

### Functioning Pituitary Tumor: Prolactinoma

The most common type of pituitary tumor (about 30 percent of the total), a prolactinoma causes excess secretion of prolactin, the hormone that produces breast milk, and can interfere with sex hormones like estrogen and testosterone. The condition is diagnosed more often in women, and symptoms can include problems with the menstrual cycle, libido, painful intercourse and infertility. Men with prolactinomas may experience erectile dysfunction, enlargement of breast tissue, reduced libido and, in certain cases, the production of breast milk.



### Non-Functioning Pituitary Tumor

Unlike functioning tumors – where symptoms arise due to excess hormones — non-functioning tumors are simply taking up precious space in the cranium. In many cases, these tumors become "macroadenomas" (larger than 1 cm) before discovery, exert pressure on surrounding nerves and blood vessels or interfere with pituitary function. By pressing up against neurovascular structures like the optic nerves, these tumors can cause impaired vision or severe headaches.

### Rhabdomyosarcoma

Sarcomas are cancers that develop in the connective tissue, like fascia, muscle and certain membranes. Rhabdomyosarcomas (or RMSs) are a particular kind of sarcoma made up of primitive muscle cells called rhabdomyoblasts and usually affect younger children and older teens. Although rhabdomyosarcomas comprise five-to-eight percent of childhood cancers, their causes are unknown. Survival rates depend on the tumor's size/location and whether the disease has metastasized (or spread) to other parts of the body. As with many skull base conditions, endoscopic techniques have led to more positive outcomes.

### Chordoma

A chordoma is a bone cancer that arises from the remnants of the notochord, a precursor to the spine that appears in fetal development. It is rare, slow-growing, malignant and can occur anywhere along the spine and the skull base, more specifically along the bone of the clivus. Symptoms can vary based on location and size and can include double vision, headaches and difficulty swallowing. Sometimes symptoms develop slowly and worsen gradually; in other cases, they can be crippling and immediate.

Please contact us today at **(866) 266-9627** to begin discussing your specific case and placing you ever-closer to the road to recovery.

**“MY SURGERY WITH DR. SHAHINIAN WAS  
A RESOUNDING SUCCESS.**

**I FOUND DR. SHAHINIAN TO BE PROFESSIONAL,  
THOROUGH, CONFIDENT, A PERFECTIONIST,  
CARING AND PERSONABLE WITH HIS PATIENTS  
AND THEIR FAMILIES –**

**ALL QUALITIES ONE LOOKS FOR  
IN A BRAIN SURGEON.”**

*Success*

**- CAROL B., BOZEMAN, MT**

*PITUITARY TUMOR SUCCESS STORY*

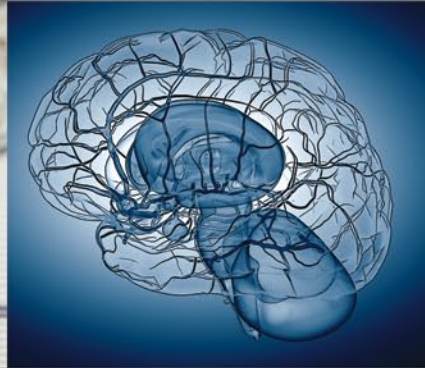


A better way to access the front of the skull base. In the supraorbital and translabellar approaches, Dr. Shahinian and his team access the brain via an area above the eye socket or between the eyebrows. Of course, the procedures are performed endoscopically, which allows for less pain, fewer complications and a shorter road to recovery.

## SURGICAL PROCEDURES SUPRAORBITAL

Traditionally, tumors that affect this pivotal area of the brain have meant a large-scale frontal craniotomy, a very invasive and extensive procedure in which doctors remove a large skull cap, "pull" the frontal lobes back

with retractors and expose the patient to needless complications. Instead, the fully endoscopic approaches SBI pioneered and perfected are far less invasive and are helping patients achieve better outcomes every day.



In this approach, a small incision is made either within the hair of the eyebrow itself or hidden in the skin crease between the eyebrows. From there, an endoscope with a tiny camera is easily maneuvered through the natural space underneath the frontal lobes and above the base of the skull. Unlike a microscope, which requires a large opening in the skull to be effective, an endoscope advances directly to the location of the tumor itself, giving Dr. Shahinian and his team a panoramic view of the brain. This method gives Dr. Shahinian the advantage of being able to see around tiny bends and corners.

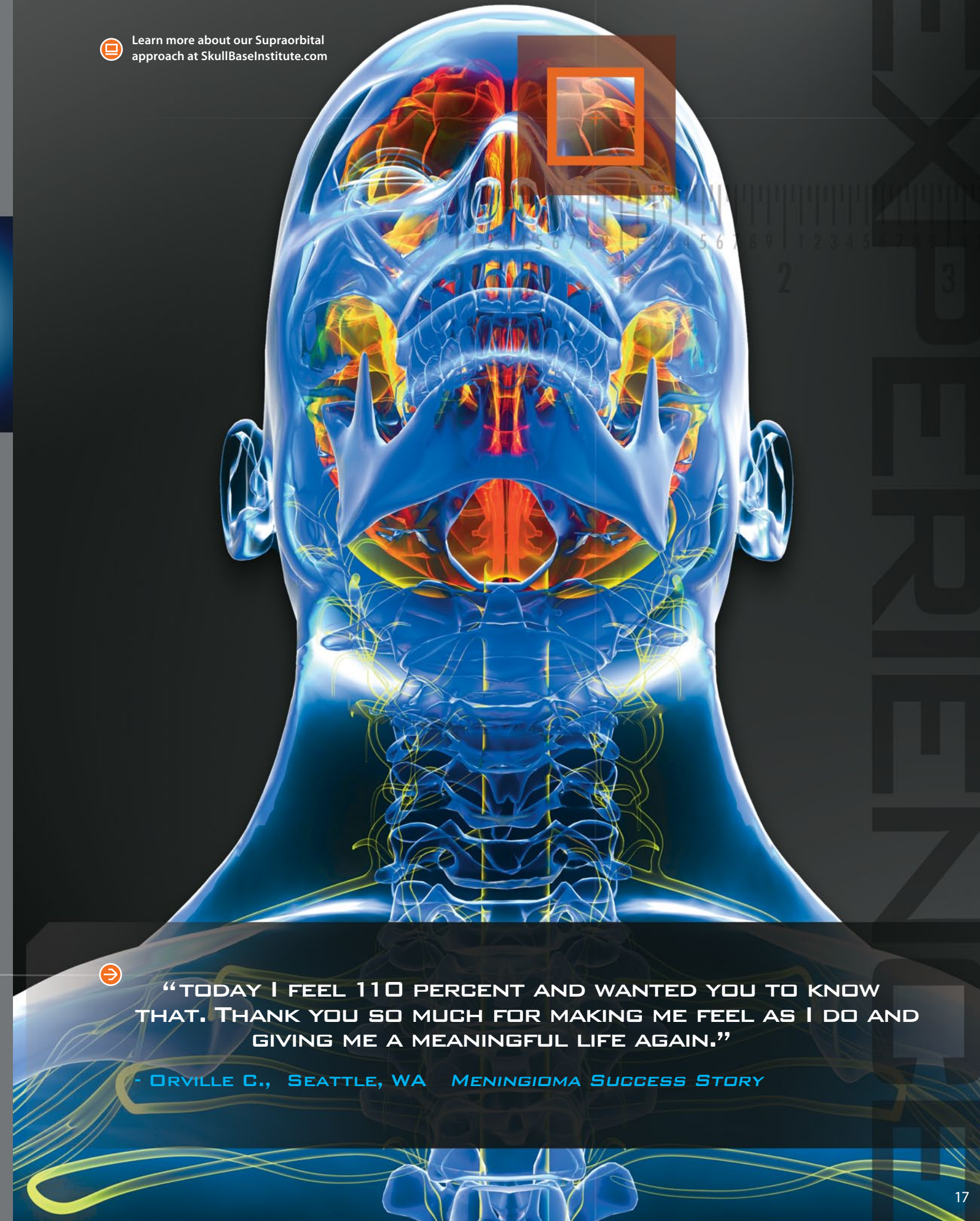
In short, the revolutionary endoscopic approach simply lets the team see the area better, which helps improve the chances of removing the entire tumor. Plus, since the surrounding area is undisturbed, the complications are fewer and recovery is faster. No wonder patients are reporting better outcomes than those who chose a traditional surgical route.



### CONDITIONS TREATED USING ONE OF THESE APPROACHES:

- Craniopharyngiomas
- Meningiomas
- Arachnoid cysts
- Cerebral aneurysms
- Head and neck tumors

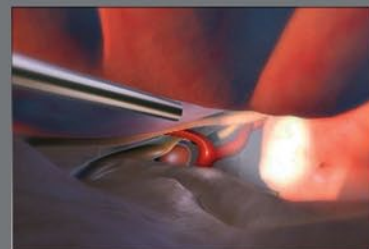
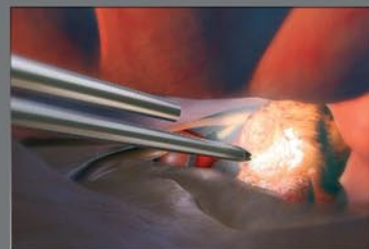
Learn more about our Supraorbital approach at [SkullBaseInstitute.com](http://SkullBaseInstitute.com)



→ "TODAY I FEEL 110 PERCENT AND WANTED YOU TO KNOW THAT. THANK YOU SO MUCH FOR MAKING ME FEEL AS I DO AND GIVING ME A MEANINGFUL LIFE AGAIN."

- ORVILLE G., SEATTLE, WA MENINGIOMA SUCCESS STORY

SBI uses minimally invasive techniques to treat a variety of conditions, including the following.



### Craniopharyngioma

A craniopharyngioma is a benign, slow-growing tumor that develops near the pituitary in a depression (called the sella turcica) located at the base of the skull. It arises when small cells, left over from before birth, grow irregularly over time. Because they grow very slowly, it can take years for a craniopharyngioma to be detected. Symptoms include pressure inside the cranium, damage to the optical pathways and disruption of the pituitary's function.

### Meningioma

Representing approximately 15 percent of all brain tumors, a meningioma is a benign tumor of the meninges, the thick membranes that surround the brain and spinal cord. A meningioma can exist almost anywhere in the meninges, but often occurs at the base of the brain. These tumors are fairly unresponsive to radiation and chemotherapy, which makes an endoscopic approach an excellent alternative for achieving a successful treatment. Symptoms of a meningioma depend on where the tumor is located and how large it is. They usually develop because the tumor is impacting the surrounding nerves or blood vessels. Common symptoms include headache, seizure, vision loss, hearing loss, facial numbness, loss of sense of smell or taste, motor weakness and a change in personality (depending on location).

### Arachnoid Cyst

Fundamentally different from a solid tumor, a cyst is a buildup of fluid in the body that won't drain on its own. An arachnoid cyst forms in the arachnoid membrane – one of three layers (or meninges) that cover the brain and spinal cord. The vast majority of arachnoid cysts have no symptoms, are discovered accidentally on an MRI performed for another reason and need no intervention at all. Symptoms, when they do occur, usually start off as vague and subtle neurological impairment, but, as the cyst grows, symptoms can become more specific and include headaches, facial numbness, nausea, seizures and problems with hearing and balance (depending on location).

Please contact us today at **(866) 266-9627** to begin discussing your specific case and placing you ever-closer to the road to recovery.

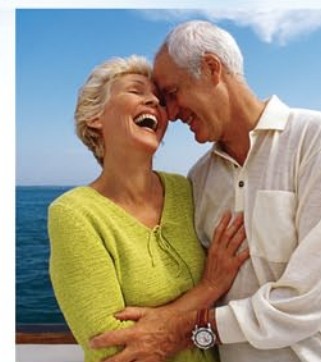


### Cerebral Aneurysm

Another condition that can appear almost anywhere in the brain or skull base, a cerebral aneurysm is an abnormally dilated or "widened" segment of a blood vessel in the brain. Aneurysms arise from a weakened area of the vessel wall and can be caused by infection, trauma, abnormal development or a related tumor. Although an enlarging aneurysm can cause symptoms on its own, problems occur most often once the aneurysm has ruptured and begins bleeding into the brain. After the rupture, time is critical and the patient needs immediate attention. Beyond its use for tumors, endoscopic techniques have changed how doctors treat vascular conditions like aneurysms, as well.

### Head and Neck Tumors

Head and neck tumors is the general term for a variety of tumors that develop in the mouth, nose, sinuses, eye sockets, larynx, pharynx and salivary glands. They can be either benign or malignant. Because the location of the tumor can vary so widely, the methods SBI might take to remove the tumor could vary widely as well, but include the supraorbital and transglabellar approaches. Since these tumors can spread and do not distinguish between where the skull base starts and where the brain ends, they ultimately can extend into the brain. Minimally invasive endoscopic surgery is an excellent option for removing these tumors.



**“NOT ONLY DID I HAVE A SMOOTH OPERATION,  
MY RECOVERY TIME WAS CUT IN HALF.**

**I HAD NO COMPLICATIONS AND  
HEALED UP QUITE NICELY.**

**THESE DAYS NO ONE EVEN KNOWS I HAD  
BRAIN SURGERY UNLESS I TELL THEM.”**

*Recovery*

**- FRED M., PORTLAND, OR  
MENINGIOMA SUCCESS STORY**

A small “keyhole” behind the ear...a big breakthrough in endoscopic surgery. SBI’s revolutionary methods are not limited to access points at the front of the skull. SBI’s latest techniques use the back of the skull, usually behind the ear. They deliver the same benefits, and the same level of success, that other endoscopic surgeries have enjoyed for years.

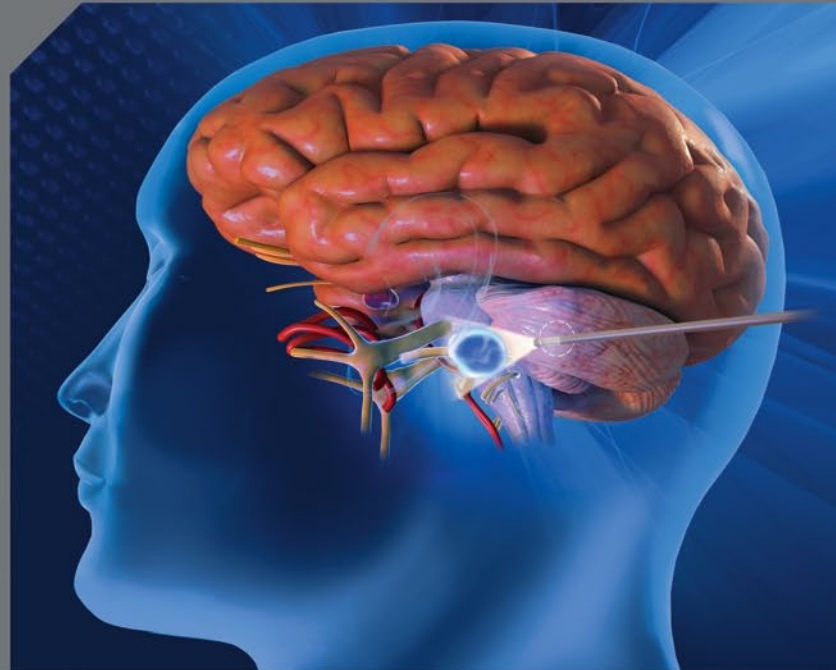
Learn more about our retromastoid approach at [SkullBaseInstitute.com](http://SkullBaseInstitute.com)

SURGICAL PROCEDURES

# RETROMASTOID

Traditionally, when treating conditions that affect the back of the skull base, surgeons have used a procedure called the translabyrinthine approach. It starts with several surgeons drilling a huge hole through the mastoid bone behind the ear to get to the tumor.

Instead, SBI has found a better, safer way – a fully endoscopic, far less invasive technique. Instead of drilling through the mastoid bone and creating a large opening, Dr. Shahinian makes a dime-size hole to get to the area behind the mastoid.



In some other cases, the suboccipital approach is used, which involves a C-shaped incision behind the ear and a large opening in the skull behind the mastoid bone, pushing the brain aside and removing the tumor. Either way, the surgery is incredibly involved, highly invasive and, often, very dangerous.

Then, thin and precise endoscopic instruments slip between the brain and the skull to the site of the tumor or brain condition. The benefits are many, including dramatically faster recovery times, less discomfort and scarring and reduced complications from the surgery itself.



Most recently, Dr. Shahinian and his team have expanded the reach of endoscopic surgery again to the treatment of pineal tumors. Using the supracerebellar approach, tumors once thought to be “unresectable” because of their deep location in the brain are now being regularly and safely removed at SBI.

A healing center known the world over, SBI has successfully treated patients from throughout the U.S. and all over the world. SBI has helped cure people from all 50 states, as far west as Australia and Japan and as far east as France and Italy.

LIST OF CONDITIONS TREATED VIA RETROMASTOID OR SUPRACEREBELLAR APPROACH:



**VESSELS**

- Trigeminal neuralgia
- Hemifacial spasm
- Cerebral aneurysms (for more information, see page 19)



**TUMORS**

- Pineal tumors
- Acoustic neuromas
- Meningiomas (for more information, see page 18)
- Arachnoid cysts (for more information, see page 18)



“HOW DO WE THANK YOU PROPERLY AND SHOW OUR GRATITUDE FOR THIS WONDERFUL GIFT YOU HAVE GIVEN US? IT’S REALLY QUITE IMPOSSIBLE. AND WHAT AN AMAZING GIFT – TO TAKE AWAY THE PAIN FOREVER.”

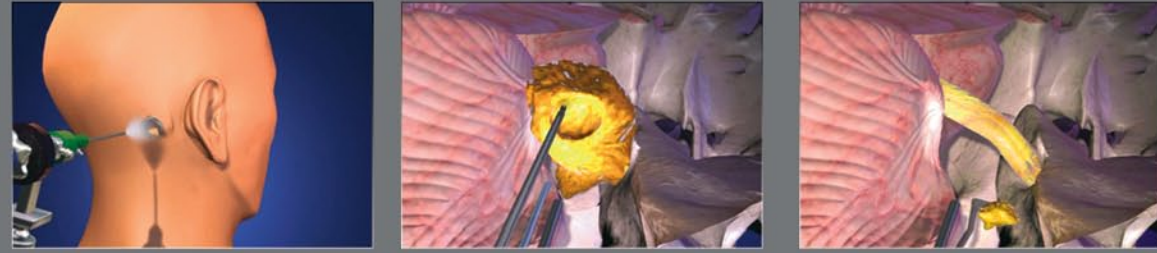
- SAMANTHA AND ROBERT V., SHERMAN OAKS, CA

TRIGEMINAL NEURALGIA SUCCESS STORY



PRESTIGIOUS

As a leader in minimally invasive endoscopic techniques, SBI provides superior outcomes for patients with the following conditions and tumors.



### Trigeminal Neuralgia

Also called tic douloureux, trigeminal neuralgia is caused when a blood vessel comes into contact with the fifth cranial nerve, or trigeminal nerve, as it enters the brain stem. It is generally considered to be the most painful condition that can afflict an adult man or woman — more painful than kidney stones or broken bones. The symptoms consist of an excruciating, stabbing, intermittent pain that feels like electric shocks going down the face on the affected side. To provide relief, SBI employs the keyhole procedure called endoscopic vascular decompression (EVD) to lift the blood vessel off the nerve.

### Hemifacial Spasm

A condition similar to trigeminal neuralgia, hemifacial spasm is quite literally persistent muscular twitches that occur on one half of the face in the muscles controlled by the seventh cranial nerve, or facial nerve. These tics or spasmodic contractions are frequent and involuntary, and may be intermittent or virtually continuous. While hemifacial spasm can also be caused by a tumor or injury to the facial nerve, it is most often due to a rogue loop from a blood vessel that comes in contact with the nerve, compressing and irritating it at the point where it exits the brain stem. The complexity of managing disorders such as trigeminal neuralgia or hemifacial spasms requires a dedicated multidisciplinary approach. Patients can find this special expertise at SBI's Facial Pain, Spasm and Paralysis Center.



Please contact us today at **(866) 266-9627** to begin discussing your specific case and placing you ever-closer to the road to recovery.



### Pineal Tumor

The pineal gland is a small gland that produces melatonin, a hormone that regulates mood and the sleep/waking cycle. Pineal tumors have traditionally been among the most difficult to access because of their location deep within the midbrain area. They are more common in children than adults and can lead to the early onset of puberty in children younger than 10. In general, symptoms vary in severity and may include headaches, double vision, memory problems and seizures. SBI is the only center in the world currently performing fully endoscopic surgery for pineal tumors, resulting in shorter surgeries, faster recovery times, less pain and fewer complications than traditional open brain surgery.



### Acoustic Neuroma

An acoustic neuroma is a benign tumor that develops on the eighth cranial nerve, or the vestibulocochlear nerve, which is located near the inner ear. This nerve controls hearing and balance. The tumor results from an overgrowth of Schwann cells, a type of cell that makes up the nerve's covering. Most acoustic neuromas occur spontaneously in adulthood and grow slowly over the years. As it gets larger, an acoustic neuroma displaces normal brain tissue and causes symptoms like hearing loss, tinnitus (ringing in the ears), headaches and occasionally vertigo. Since these tumors are also located close to the seventh cranial nerve, or facial nerve, which is responsible for facial movement, surgeons must be particularly careful to avert permanent facial paralysis. SBI is the only center of its kind treating acoustic neuromas with fully endoscopic resections and has successfully performed more than 500 of these procedures.



**“DR. HRAYR SHAHINIAN IS OUR HERO  
AND INSPIRATION.  
HE HOLDS A PRICELESS TALENT AND HAS  
AN OUTSTANDING ABILITY TO INSTILL HOPE IN  
HIS PATIENTS AND THEIR FAMILIES.  
HIS PROFESSIONALISM AND COMPASSIONATE  
NATURE NEVER WAVER.**

**I HAVE NEVER MET SUCH A HUMANITARIAN  
AND FUTURIST.”**

**- MARINA V., ROCHESTER, NY  
ACOUSTIC NEURDMA SUCCESS STORY**

*Inspiration*

## A Joint Venture For The Future Of Endoscopic Brain Surgery

Dr. Hrayr Shahinian is again at the forefront of research and development in the next phase of minimally invasive brain and skull base surgery. The only surgeon working with NASA's Jet Propulsion Laboratory in Pasadena, CA to develop the next generation of endoscopic tools, he is creating "super instruments," revolutionary tools that will bring together sweeping advancements in digital imaging, 3D endoscopy, tactile feedback, heads-up displays and smart micro- and nanotechnology. Dr. Shahinian's goal is to develop the most state-of-the-art tools for the least-invasive and most effective outcomes possible. While others embrace endoscopic surgery, Dr. Shahinian and SBI continue to take the field to the next level by innovating with newer tools, broader applications and a focus on patient recovery.

### It's called **MARVEL**: Multi-Angle Rear-Viewing Endoscopic Tool

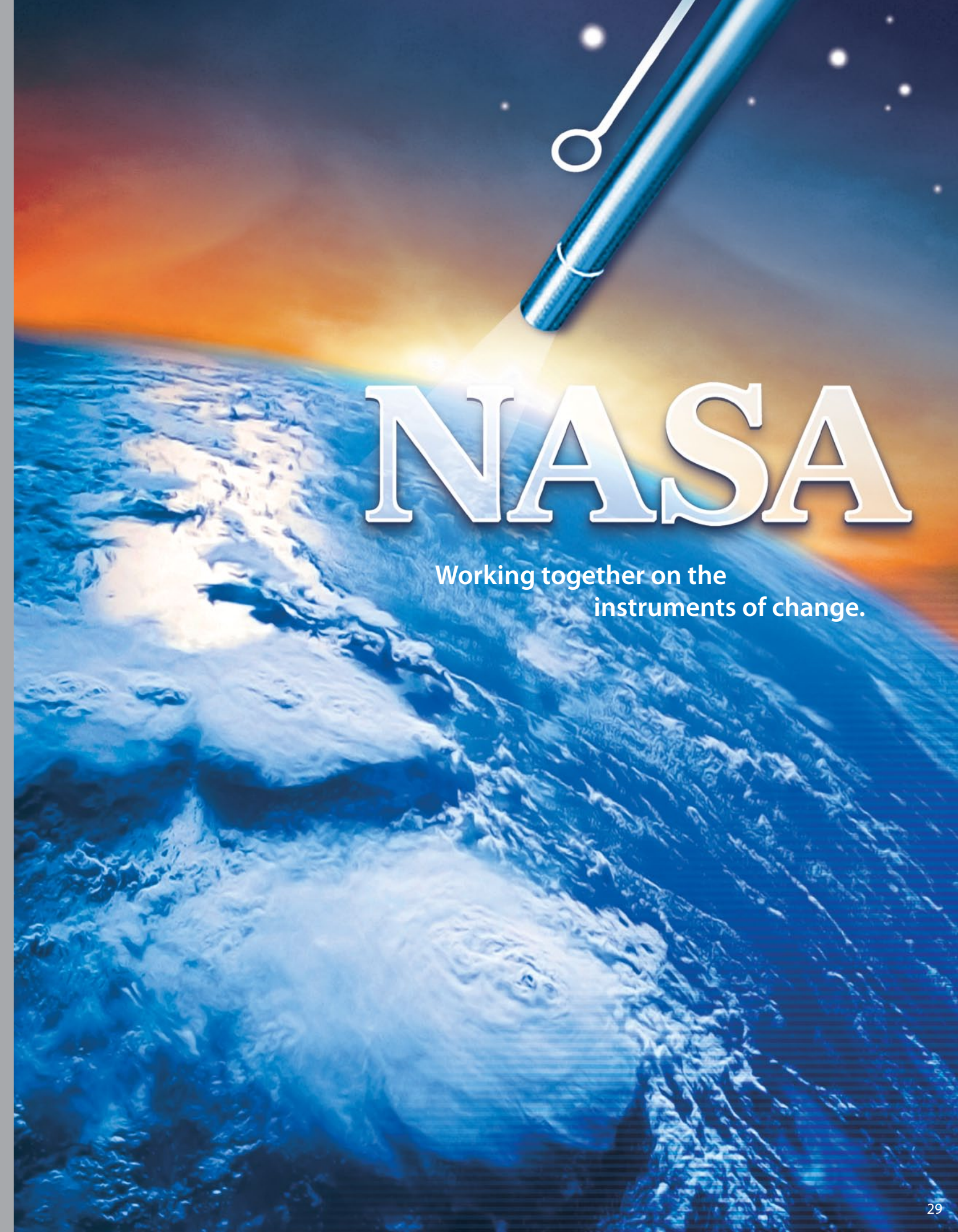
As good as a state-of-the-art, high-definition endoscope is, it can only give surgeons a clear panoramic view at a fixed angle — zero, 30 or 70 degrees — and it can only display its finding on a flat 2D monitor that lacks a sense of depth.

Now, with the **MARVEL**, the surgeon will be able to use an instrument with a tip that rotates 160 degrees, allowing a 3D view of the tumor from all angles or even maintaining a primary frontal view.

The **MARVEL** includes a tiny-electronic, high-definition camera, as well as a miniature radio transmitter, both mounted on the tip of the endoscope. Although the technology previously existed for cameras this size, this will be the first application that has adopted its use for 3D endoscopes.

The image transmitted from the **MARVEL** can appear on the same monitor as the conventional endoscope, allowing a "picture in picture" effect and giving the surgeon superior visibility, depth perception and the ability to place surgical tools with the utmost precision.

The benefits are significant: Smaller cameras and thinner instruments allow for even smaller incisions and even less disruption to surrounding tissues and structures. In addition, by seeing the tumor in 3D and high definition, surgeons are more likely to be able to achieve a more complete resection.



## Skull Base Foundation

Because healing should know no limits.

Each year, more than two million people worldwide suffer from brain tumors and other skull base disorders, including more than 200,000 in the United States. These conditions go beyond any national or socio-economic boundaries and do not discriminate based on gender, age or ethnicity. They are devastating to the patients and their families.

The Skull Base Foundation (SBF) is a non-profit 501(c)3 organization dedicated to advancing research and saving the lives of children and adults with skull base tumors through innovative, minimally invasive surgical techniques that afford faster recovery time and increase the quality of life for patients and their families. Through ongoing research and innovative techniques, this visionary foundation is pioneering new ways to approach the brain, and, in the process, leaving behind the traditional, antiquated practices that have dominated neurosurgery for centuries. Started by Dr. Hrayr Shahinian in 2004, SBF is a cornerstone of SBI's efforts to demystify skull base surgery and to make its healing procedures available to as many people as possible.

## Founding Principles

- **Supporting Innovative Research**

Today, SBI applies its minimally invasive endoscopic techniques to more tumors and conditions than any other surgical center in the world, expanding the reach of endoscopic surgery and outcomes for patients worldwide.

- **Advancing Education**

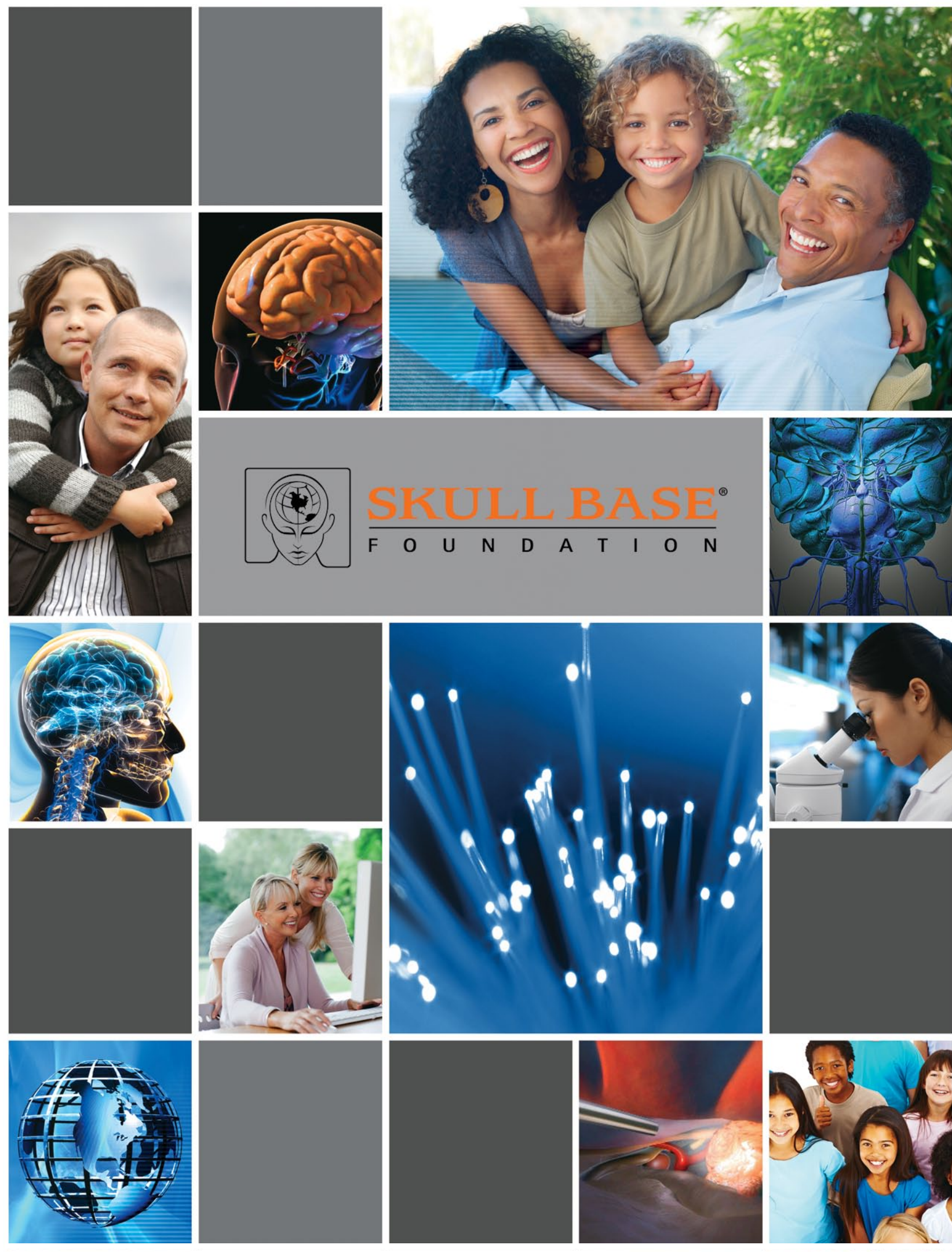
When he is not operating on patients, Dr. Shahinian travels the globe to promote the exchange of cutting-edge concepts and further the field of minimally invasive skull base surgery. SBI is a leader in carrying the message to patients, other doctors, hospitals and surgical centers.

- **Reducing Economic Burden**

In an ideal world, no one would be turned away for his or her inability to pay for lifesaving surgery. SBF is committed to providing surgical solutions that transcend socio-economic barriers worldwide and help defray expense for underserved individuals who require skull base surgery.

**We can't do it alone. We need the support of individuals, groups and corporations.** By donating to SBF, you can help advance needed research and save the lives of children and adults with life-threatening brain tumors. Partner with SBF and transform brain surgery one minimally invasive procedure at a time.

For more information, or a detailed explanation of opportunities, please contact SBF at (866) 266-9627 or go to [www.SkullBaseFoundation.org](http://www.SkullBaseFoundation.org).





## Passionate About Your Care Personalized with your treatment.

Since no two patients are ever alike, our approach to your care is as individual as your condition. We know that many patients come to SBI full of questions and often uncertain about the future. Our primary job during those early days is to explain your alternatives and be a true resource for your recovery. Our team is not only knowledgeable, experienced and highly skilled, but compassionate and willing to help, whether it is an answer to your question or a shoulder to lean on. At SBI, you will discover the highest standards of professionalism living hand-in-hand with the deepest levels of concern for your overall well-being.

## How Do I Get Started?

Simply by reviewing this information, you are well on your way to determining if Dr. Shahinian and SBI can help. We also encourage patients to send in their clinical information (MRI films, test results, blood work, etc.) for an evaluation. Contact one of our nurses toll-free at (866) 266-9627 for assistance or go to [SkullBaseInstitute.com](http://SkullBaseInstitute.com) for more information.

## Who Is A Candidate For Surgery?

SBI uses its fully endoscopic techniques to treat a wider array of tumors and conditions than any medical center in the world. Here is just a partial list.

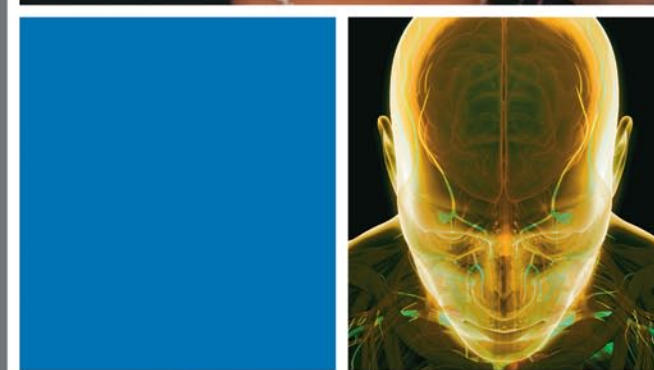
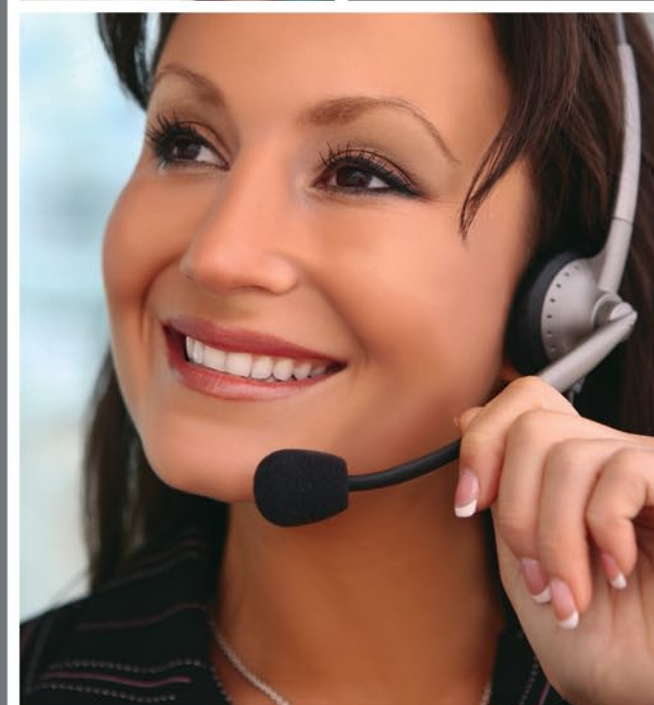
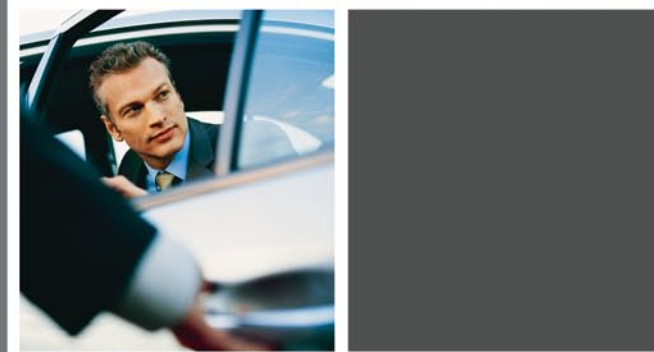
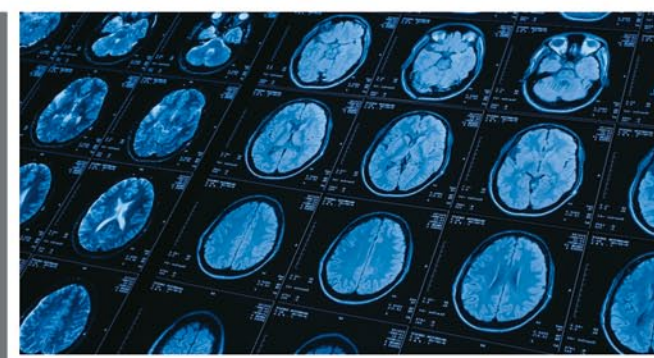
- Adults with tumors such as pituitary tumors, meningiomas, pineal tumors, craniopharyngiomas, acoustic neuromas, chordomas and head and neck tumors.
- Adults with cranial nerve and vessel disorders such as trigeminal neuralgia, hemifacial spasm, aneurysms and arteriovenous malformations.
- Infants or children with the above-mentioned tumors and conditions, plus congenital deformities such as craniosynostosis.

## What Is The Process?

Once we identify you as a candidate for surgery, we set up a phone consultation, start planning your procedure with you and helping with the details of your visit. If you wish, we work closely with your existing doctor or referring physician to ensure your care is both personalized and continuous. We are one of the only centers employing a dedicated patient concierge, whose sole job is to see to your comfort and convenience during your visit. In fact, we're the only medical facility in the world to provide a complimentary limousine on the day of the procedure — one less thing for you to worry about during a hectic and emotional time.

## Can I Talk To Someone Who's Been In My Shoes?

SBI's patient-to-patient network is a unique and highly beneficial part of SBI's approach to patient care. Prospective patients or their family members have the valuable opportunity to communicate directly with a former SBI patient, who can provide a first-hand view of the entire journey, including the process, the surgery, the recovery and his or her prognosis today. Please contact our patient coordinator at (866) 266-9627 to find out more about this insightful opportunity.



## What Happens Afterwards?

Once surgery is complete, most patients recover quickly, experience little pain and are ready to return home after a few days. You will receive several follow-up calls from SBI as we monitor your recovery. We are available 24 hours a day to answer any questions you may have.

SBI maintains close contact with your referring physician before and after your procedure. He or she is contacted immediately after surgery and kept up-to-date of your perioperative condition by letter, telephone, fax or e-mail. Once your treatment is completed, you will be referred back to your physician for follow-up, removal of sutures or staples and post-operative hormonal profiles.

## What's The Next Step?

Please call our medical professionals to discuss disorders and treatments. You will find a friendly and knowledgeable person to help you become better informed.

**Skull Base Institute**  
8635 West 3rd Street  
Suite 1170 W  
Los Angeles, CA 90048

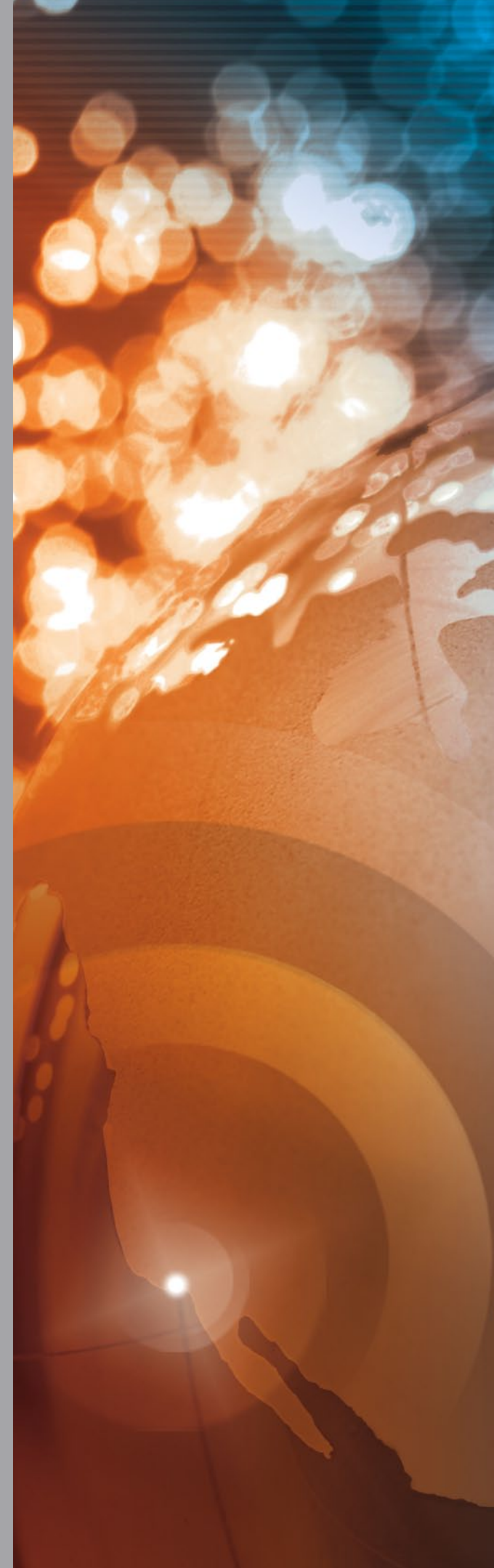
**Toll-Free Hotline (866) 266-9627**  
**Local Telephone (310) 691-8888**  
**Facsimile (310) 691-8877**  
**staff@skullbaseinstitute.com**

### Experience Makes The Difference

There may be no more complicated and delicate part of the human anatomy than the skull base. Experience and knowledge are key. During his 20-year career, Dr. Shahinian has successfully performed more than 4,500 endoscopic procedures to remove skull base and brain tumors and correct neurovascular conditions. Moreover, he's been a champion of minimally invasive endoscopic techniques since 1994. When he's not operating, Dr. Shahinian travels the world teaching, presenting, lecturing and training other doctors and surgeons in these lifesaving procedures. He literally wrote the book on skull base surgery.

## Top 10 Reasons To Choose Skull Base Institute For Your Surgery

- 01.** SBI has one of the highest success rates and one of the lowest surgical complication rates in the world.
- 02.** Dr. Shahinian was among the innovators of minimally invasive endoscopic techniques and has been performing them since 1994.
- 03.** SBI is the only center performing all procedures using minimally invasive techniques and applying that knowledge to more conditions than any other.
- 04.** There are no trainees or less experienced surgeons; Dr. Shahinian performs all surgeries personally.
- 05.** SBI is the only institute working with NASA to apply space-age technology to the innovation of surgical instruments.
- 06.** The only center of its kind, SBI is devoted entirely to the science and art of skull base surgery.
- 07.** Unique and extensive "hybrid" training makes Dr. Shahinian exclusively a skull base surgeon, not a neurosurgeon.
- 08.** Dr. Shahinian is the senior author of [Endoscopic Skull Base Surgery: A Comprehensive Guide with Illustrative Cases](#) by Humana Press.
- 09.** SBI has performed more than 4,500 endoscopic skull base and brain procedures.
- 10.** In addition to SBI's established expertise, patients will find world-class services and attention, before, during and after surgery.



SKULLBASEINSTITUTE.COM  
TOLL FREE HOTLINE: (866) 266-9627  
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PITUITARY CENTER FACIAL PAIN, SPASM & PARALYSIS CENTER MINIMALLY INVASIVE SKULL BASE & BRAIN TUMOR PROGRAM  
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**SKULL BASE**<sup>®</sup>  
I N S T I T U T E

