



## **Acoustic Neuroma, Meningioma, or other Skull Base Tumor**

Involving the Internal Ear Canal and adjacent brain.

### **What is acoustic neuroma, meningioma, or other skull based tumor?**

Acoustic neuroma is a benign tumor that arises in the balance nerve between the inner ear and the brain. As the tumor grows, it compresses the hearing nerve and the facial nerve. Ringing in the ear and hearing loss are the earliest symptoms. As the tumors enlarge, brain compression may cause stumbling and coordination difficulty. With larger tumors, facial numbness, and pain may also develop. Meningioma is a benign tumor that arises from brain covering called dura or meninges. Meningioma may grow in any part of the skull including the skull base where the tumor may affect hearing, balance, swallowing, and other nerve functions. While acoustic neuroma accounts for over 80% of tumors in this area, and meningioma accounts for 10-12%, a variety of other rare tumors are included in this section because symptoms and risk issues are similar.

### **Purpose of Surgery:**

Removal of tumors from the skull base may be approached in several ways. The two most common approaches are retrosigmoid and translabyrinthine but middle fossa, and other highly specialized approaches may sometimes be employed. The retrosigmoid approach opens the skull behind the mastoid bone, gently holds the cerebellum out of the way, and may involve some drilling in the skull base. The translabyrinthine approach opens the skull through the mastoid bone and the balance organs of the inner ear. The middle fossa approach opens the skull above the outer ear in order to approach the inner ear and internal ear canal from above. The common goal of all of the surgical approaches is to remove the tumor while preserving as much normal or near normal nerve function as possible.

### **Alternatives to Tumor Removal:**

Some tumors in the skull base may not grow or may grow only very slowly. For these, observation rather than surgery may be a reasonable choice especially for older persons or persons with major risk factors for surgery. Radiotherapy, also called radiosurgery, may stop the tumor from continuing to grow. In some cases, when functional hearing preservation is highly unlikely, the surgeon may suggest the translabyrinthine approach in order to simplify the surgery and decrease the small risks of brain retraction. Hearing preservation maybe attempted by the retrosigmoid approach even for cases where the effort is highly unlikely to succeed, at the patient's request.

### **Risks of failure to manage acoustic neuroma or other tumor:**

In elderly individuals with small to medium sized tumors, watchful waiting may indeed be a reasonable option. When the tumor is larger, at any age, failure to remove the tumor may carry risks of brainstem compression, obstruction of spinal fluid flow, headache, blindness, increased risk of falling, and greater risk to nerves such as the nerve that makes the face to smile, the nerve that makes the face to feel, swallowing nerves, voice nerves, and nerves that make the eye to move (causing double vision). While these risks generally become apparent slowly, they may rarely appear suddenly. A small risk of spontaneous bleeding within the tumor exists and such can be fatal. Bleeding risk is higher in patients taking blood thinners, especially if the blood becomes exceptionally unable to clot. Headache and loss of vision are possible complications of neglected tumors. For small to medium sized tumors, failure to remove or manage the tumor may increase the risk of facial nerve paralysis or other complications when the tumor is finally managed. If hearing salvage was possible at first diagnosis, waiting may cause hearing salvage chances to be reduced or lost.

### **General Considerations:**

In a retrosigmoid craniotomy, the surgeon opens the skull behind the ear, in front of the base of the brain. The bone removed during the surgical opening of the skull is usually split and put back as part of repair of the surgical opening. In the translabyrinthine and middle fossa approaches, abdominal fat is used to fill the defect created by the surgical approach. The fat plug prevents spinal fluid from leaking out of the ear or through the nose. The retrosigmoid craniotomy disturbs a bit more muscle and has a bit more headache risk than the translabyrinthine approach. Feel free to ask the surgeon to demonstrate the surgery pathway on a plastic skull.

### **Before Surgery:**

Avoid use of Advil, Motrin, Aleve, Celebrex, Vioxx, or similar non-steroidal anti-inflammatory medication for a minimum of five days and preferably two weeks before surgery. Ask the doctor if any other medications will need to be changed ahead of surgery.

### **After surgery, restrictions include:**

Do not use aspirin, Advil, Motrin, Aleve, Celebrex, Vioxx, or similar non-steroidal anti-inflammatory medication for two weeks after surgery. These and other **arthritis medications may cause bleeding.**

**No nose blowing** for a minimum of two (2) weeks.

Open mouth to **sneeze** for two (2) weeks. Do not stop a sneeze by squeezing your nose.

You may wash the incision with soap and water and coat it with antibiotic ointment.

### **Resuming normal activities:**

**Dizziness** and some **headaches** are common for awhile after surgery. **Tiredness** and **depression** commonly follow major surgery. Resume **driving** and **return to work** when the dizziness and/or lightheadedness has improved sufficiently and if your job activity fits within lifting

restrictions, listed below. Dizziness after surgery usually improves more rapidly the more active you are. Avoid ladders, step stools, and unprotected heights until you can move quickly in any direction without dizziness or lightheadedness. The more quickly you work back into normal routines, the more quickly you will feel better and energy will return.

**Avoid lifting**, bending, and stooping for two weeks. Then avoid lifting more than 10 pounds until six weeks after surgery. Six weeks after surgery, you may lift up to 30 pounds. At three months after surgery, you may resume normal lifting and other activity unless the doctor has indicated a reason to continue to restrictions.

**General Risks of acoustic neuroma, meningioma, or other skull based tumor removal:**

**Numbness** in the scalp above and around the ear is common and may improve in a couple of years. **Dizziness** is common after surgery and usually improves within a few weeks. More **persistent dizziness** bothers some patients permanently.  **ringing** in the ear is sometimes a noticeable nuisance after surgery, but may also be improved by surgery. Further **hearing impairment** in the operated ear is common even when the surgeon attempts to save it because portions of the hearing nerve or inner ear blood supply may travel with the tumor. In the **translabrynthine approach, the residual hearing is sacrificed** as part of the surgery. A **hearing aid** may not be an option on the operated side, but sometimes, a hearing aid that routes the hearing to the residual hearing ear may be possible. A bone anchored hearing aid may be possible if you lose hearing in the operated ear-ask the doctor for details. **Nasal and eye dryness** are common on the tumor side.

**Liquid tears** may be necessary, generally only for a few months, but sometimes permanently. **Taste** for sweet, sour, salt, and bitter on the side to front of the tongue may be altered by surgery and may not recover back to normal, but symptoms usually settle down within six months. Ability to smell is not affected by ear surgery. **Infection** called meningitis may develop after surgery with a general risk of less than 1% of our acoustic neuroma experience. *If you think you have an infection, with wound swelling, wound drainage, or fever, call the doctor right away.* **Spinal fluid** may leak through the wound or through the mastoid bone into the nose. If you develop clear fluid leakage through the incision or nose, let the doctor know right away. If spinal fluid leakage persists, the surgeon may elect to place a **spinal fluid drain** into the lower back for a few days. If the drain does not solve the problem, more surgery may be necessary stop the spinal fluid leakage. Spinal fluid leakage may predispose to infection and other serious problems. **Facial weakness or paralysis** on the tumor side that affects the ability to smile can be a side effect of tumor surgery. A **delayed onset facial paralysis** can develop after leaving the hospital.

The face recovers to normal or nearly normal in most cases, but, in some, facial movement may be permanently impaired. In rare cases, the facial nerve may need to be repaired or replaced either at the time of the tumor surgery or on a delayed basis in a separate operation. In the event of facial nerve weakness or paralysis, liquid tears, eye lubrication, and other special **eye precautions** will be necessary and more surgery to protect the eye may become necessary. Other **rare problems** after tumor surgery include numbness to touch or warmth in the face, double vision, trouble swallowing, weakness of the voice, shoulder, and walking/coordination problems, which may require additional medical care. Stroke, excessive bleeding and blood collection inside the head, and death are possible but highly unlikely. Permanent clumsiness of the hand and the foot on the tumor side is possible, generally a risk only for larger tumors. **Blood transfusions** are rarely needed, but would pose transfusion related risks (see the hospital blood transfusion informed consent form for more details). **Anesthesia** has its own risks that the anesthesia doctor will discuss with you. **General medical conditions** that affect the heart, circulation, breathing, and urination can all be aggravated by surgery of any kind. Men whose bladders and **prostate** glands are sensitive to certain medications may need bladder catheterization after surgery of any kind. Failure to be active after surgery can result in **blood clots** from the legs or pelvis traveling to the lungs and may occur in persons otherwise predisposed to such risks. These blood clots form in deep veins and are called *deep venous thrombosis* and may go to the lungs as **pulmonary emboli**. Let the doctor know if you have had blood clots travel to lungs ever in your past. **Pulmonary emboli can be fatal** and generally are signaled by shortness of breath, with or without sore legs calves.

**Patient/Guardian Statement:** The patient or patient’s guardian and/or legal representative state by signing below that doctor has discussed the surgery, alternatives, and major risks, that the above information has been communicated to the patient, guardian, and/or legal representative and that an opportunity to ask questions has been given. The consent form should not be signed until the patient, guardian, and/or legal representative have obtained a layman’s understanding of the surgery and have obtained satisfactory answers to all questions. By signing the consent form, the patient, guardian, and/or legal representative indicate a layman’s understanding of the surgery, potential alternatives to surgery, and reasons for surgery and indicate a desire to proceed. If the surgery has been explained in another language, the person who has translated must indicate by cosigning the document that all information from the doctor and from this consent form have been communicated to the patient, guardian, and/or legal representative and that all questions have been answered satisfactorily.

Patient printed name				Patient/guardian signature		Date Signed	
Circle Surgery ear	R	L	Doctor: <b>Loren J Bartels MD FACS</b>		Date of Surgery		
Witness				Guardian printed name		Translator	
						Language	