



Endolymphatic Sac Surgery

Introduction: The most common reason for the labyrinth of the inner ear balance system to cause attacks of vertigo is Meniere's disease. Meniere's disease typically causes fluctuating hearing loss, ear noise called *tinnitus*, and spells of spinning called *vertigo*. While Meniere's disease usually affects only one inner ear in a major way, the second ear can become involved at any point in time. Prior to the vertigo attack, the inner ear swells causing fluctuation of hearing in the affected ear. During each spell or attack of Meniere's disease, some portion of the inner ear ruptures which is what causes the attacks of vertigo. The rupture is caused by excessive fluid which, in part, results from abnormal function of a small sac or bag on the back side of the inner ear called the endolymphatic sac. Research suggests that the Herpes family of viruses may play a role in the development of Meniere's disease in some patients. Not known yet is whether a specific treatment for Herpes can stop Meniere's disease attacks. Other viruses appear capable of causing Meniere's disease and some believe that head trauma and chronic middle ear infection or other inflammatory disorders can cause it as well.

Purpose of endolymphatic sac surgery: Once the ear causing the Meniere's syndrome type vertigo is identified, operating on the bag on the back side of the inner ear appears to reduce the probability that the inner ear will continue to rupture in a manner that causes vertigo. Early vertigo episode relief probability is about 70% while longer term relief is a bit less.

Alternatives to endolymphatic sac surgery: Low salt diet, surgical and medical alternatives exist and should be considered before resorting to a surgery for Meniere's disease. Cortisone-like medication (steroids) injected into the middle ear seep slowly into the inner ear. Steroids can possibly stop the Meniere's disease although probability of benefit is less than a fifty percent chance. The risks related to steroid application to the middle/inner ear are minimal. Injection of gentamicin in a similar manner has a good chance of stopping the vertigo spells and some chance of worsening the hearing and ringing in the treated ear. Gentamicin application may not work in ears that have been previously operated or severely infected. Endolymphatic sac surgery drains or removes a sack-like structure on the backside of the inner ear and may stop the vertigo in about 70% of operated patients. Worse hearing and ringing are uncommon with endolymphatic sac surgery. Selective vestibular nerve section cuts the balance nerve away from the hearing nerve between the inner ear and the brainstem. It is highly likely to stop the vertigo while preserving the hearing in over 70% of operated patients. A labyrinthectomy has a high chance of relieving the vertigo, but destroys the hearing in the process. Doing nothing at all has some chance of allowing the Meniere's type vertigo to go away. Chronic use of medication to lessen the affects of the Meniere's disease spells may be considered adequate therapy by some. Dietary salt restriction, cholesterol control, and blood sugar management may help some Meniere's disease patients.

General Considerations: Through an incision behind the outer ear, the endolymphatic sac operation enters the mastoid bone and the balance organ (labyrinth) of the inner ear. The bag is entered and its lining is destroyed. That destroys the ability of the lining to participate in excess fluid production for the inner ear. The surgery is typically completed as an outpatient under general anesthesia. Most patients go home within 4 hours after surgery. Most are able to return to work in about two weeks, some sooner.

Things to know before Surgery: Avoid **Bextra, Aspirin, Advil, Motrin, Aleve, Vioxx, Celebrex** and similar non-steroidal agents for at least five days prior to surgery, preferably two weeks. You may use Tylenol. Ask the doctor if any other medications will need to be changed ahead of surgery.

1. On the day prior to surgery, the patient meets with the surgeon to complete appropriate paper work. A trip to the hospital allows for blood work and a meeting with the anesthesia staff. Arrive for surgery about two hours ahead of the scheduled surgery time.
2. Surgery is completed under general anesthesia and takes about 2½ hours.
3. The hospital stay is typically outpatient, but may sometimes be longer if quite off balance. In that circumstance, you will stay until you have sufficient balance function to be able to walk independently.
4. Return of balance function takes six weeks and sometimes longer. Balance may not return to completely normal.

After surgery, restrictions include: Do not use **Bextra, 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**. You will be given prescriptions for pain medicine, and antibiotic ointment. Please use them as the prescriptions dictate.

1. 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. Nose blowing may inflate the ear with air and create an air pocket and delay healing.
2. Use **petroleum jelly (Vaseline) coated cotton** to plug the ear to prevent water from getting into the ear until told otherwise.
3. You may **wash the incision** with soap and water. Coat the incision with **antibiotic ointment** twice a day for two weeks. Expect to see the surgeon at two weeks after surgery. The doctor will encourage continued efforts at retraining of balance function. Plan for a progressive plan of walking, head swinging side to side and up and down. Tossing a ball hand to hand

and other activities will encourage a broad range of balance function recovery. Recovery rates parallel activity. Poor activity levels delay recovery.

Resuming normal activities: Most patients are **mildly dizzy** and have some **headache** after surgery. Nausea and vomiting may occur on the first day or two. An unusual patient has difficulty walking without assistance for a few days to weeks. Expect the nursing staff to strongly encourage walking even if you are dizzy. The earlier walking resumes, the safer and the quicker a sense of balance will return. Balance may not return to completely normal. **Tiredness** and headaches commonly follow major surgery. Dizziness after surgery usually improves more quickly as you become active. **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.

1 **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 resume normal lifting and other activity unless the doctor has indicated a reason to continue to avoid lifting.

2. Resume **driving** when dizziness and/or lightheadedness have improved sufficiently to maintain focus with quick head movements. **Return to work** if your job activity fits within lifting restrictions, listed herein.

General Risks of endolymphatic sac surgery: **Numbness of the outer ear** is common and improves in time.

Dizziness is common after surgery and usually improves within a few weeks. More persistent dizziness/imbalance bothers some patients permanently. In about 30% of patients, endolymphatic sac surgery may not stop the spells of vertigo. **Bleeding** or bruising on the side of the face may cause eye swelling and rarely requires a return to surgery for control. **ringing** in the ear is sometimes a noticeable nuisance after surgery, but may also be improved by surgery. **Loss of all residual hearing** in the operated ear is quite unlikely, but possible. A **hearing aid** is not always an option on the operated side. A **hearing aid** that routes the sound to the opposite ear may be possible after endolymphatic sac surgery. **Taste** for sweet, sour, salt, and bitter on the surgery 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. A **hole in the ear drum** is a possible rare side effect of surgery and may require additional surgery.

Infection may develop after surgery with a general risk of less than 1% of our experience. *If you think you have an infection, with wound swelling, wound drainage, or fever, call the doctor right away.* **Rarely, 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 to stop the spinal fluid leakage. **Weakness** or **paralysis** of the nerve that makes the face to smile is a rare side effect of ear surgery. A delayed onset facial paralysis can develop after leaving the hospital especially in persons with a fever blister history. The face recovers to normal or nearly normal in almost all cases, but, in rare cases, facial movement may be permanently impaired. **Blood** transfusions are generally not 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. Prostate gland trouble may require bladder catheterization after surgery of any kind.

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: Loren J Bartels MD FACS	Date of Surgery	
Witness		Guardian printed name		Translator print/sign	Language