



Middle Fossa Surgery, Spinal Fluid Leak Repair

Introduction: The ear parts sit in the base of the skull just underneath the middle part of the brain where the brain sits in a depression in the bone called the *middle fossa*. Several reasons exist for which surgical access to the middle fossa is necessary. Among those are tumors, spinal fluid (brain fluid) leakage into the ear, fractures of the skull especially with an associated facial paralysis, aneurysm exposure, and drainage of cysts that may occur deep within the skull base.

Purpose of middle fossa surgery: Exposing the middle depression of the skull base allows the surgeon to deal with underlying disorders. That access is gained by temporarily removing a piece of the skull just above the outer ear. The brain lining membrane generally stays intact as the brain is gently relaxed and a portion lifted up. When defects in the middle fossa of the skull base are exposed, they can be repaired, drained, or managed in a manner is appropriate for the disorder.

Alternatives to middle fossa surgery: In some patients, access to the area of concern may occur directly through the ear, but that may endanger hearing and balance function more than exposure of the middle fossa from above.

General Considerations: Through an incision in front of or behind the outer ear, the middle fossa operation also splits or moves the muscle above the ear that helps the jaw bone to chew. After outlining a skull bone window, the bone is removed and set aside to be replaced. After surgical management of the skull base problem, the bone window is generally replaced and sometimes held in place by titanium metal braces. For spinal fluid leaks, a portion of the inner aspect of this bone window may be shaped to cover and repair bone defects. As well, the muscle covering may be rotated inside to block and seal areas that leak spinal-brain fluid. The surgery is typically completed under general anesthesia on the day of hospital admission. Most patients go home the day after surgery, but some may need to stay in the hospital for several days. Ask the doctor about plans for your length of stay in the hospital. Most are able to return to work in about two weeks, some sooner, but lifting restrictions may last longer (see below).

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 usually just a day, but may last several days, sometimes longer. If major dizziness is a problem after surgery, plan to stay until you have gained balance function to be able to walk independently.
4. Following development of a major balance problem, return of balance function takes six weeks and sometimes longer. Balance may not completely return to normal. However, with most middle fossa surgery, only mild imbalance is expected.

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.
4. If balance function is impaired after surgery, the doctor will encourage continued efforts at retraining of balance function. Plan for a progressive increase of walking with 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 are uncommon on the first day or two. Occasionally, a 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 will not return to completely normal. **Tiredness** and headaches commonly follow major surgery. Dizziness after surgery usually improves more quickly 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 lift up to 25 pounds. You may resume normal lifting and other activity at three months after surgery 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 as listed above.

General Risks of middle fossa surgery: **Numbness of the outer ear** is common and improves in time. Mild **dizziness** is common after surgery and usually improves within a few weeks. More persistent dizziness/imbalance bothers some patients permanently. In some patients, middle fossa surgery may not cure the problem for which surgery was planned. **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 middle fossa 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. Since the muscle that helps the jaw-chewing motion must be moved and then replaced during the surgery, **chewing tenderness** is not uncommon for a while. Rarely, dysfunction of the **temporomandibular joint** may occur or be aggravated by 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 in spite of middle fossa surgery. 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. If a titanium plate is used in surgery, it may have an affect on **MRI scan** clarity of future brain imaging, but should not prevent MRI imaging in general. **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 Ear to be operated	R	L	Doctor: Loren J Bartels MD FACS	Date of Surgery	
Witness		Guardian printed name		Translator	
				Language	