**OPERATIVE PROCEDURE FOR COCHLEAR IMPLANTATION**

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After intubation (with endotracheal tube taped to side of mouth opposite of the cochlear implant side):

3 belts placed on patients with test rolling to both sides (to make sure the patient does not slide off)

Transtympanic steroid perfusion performed at the beginning of the case (to improve hearing preservation and reduce intracochlear fibrosis)

Facial nerve monitor electrodes to be placed (red at mouth, blue at eyes, and ground electrodes at forehead)

Prep with betadine from midline of head to clavicle

Make sure sterile, surgical towels are placed with the face and electrodes showing

Elevate the head of bed to reduce venous bleeding

Surgical hypotension is used (systolic blood pressure is kept at 100mmHg, if possible)

Inject the incision (C-shaped, 5mm behind postauricular crease)- do this before prepping and draping.

No hair shaving

No monopolar cautery is allowed if the patient has a contralateral cochlear implant

Place the device symmetrically if the patient has a contralateral device

Large Palva flap needs to be created (with the superior limb at the zygomatic root longer than the inferior limb). Be careful not to tear the external auditory canal skin.

A well-saucerized mastoidectomy is performed, with identification of the tegmen, sigmoid sinus, antrum, incus, and lateral semicircular canal. If the mastoid is hypopneumatized, the digastric is also identified.

Drill the cochlear implant well and suture tie-down holes (the cortical mastoidectomy and well are done with the surgeon’s eyes; only when the facial recess is started is the microscope brought in to view the facial recess)

Open the facial recess to provide adequate exposure to the round window and hypotympanic air cells (but without sacrifice of the chorda tympani nerve)

Expose the entire round window niche, visualize the stapes, and the undersurface of the tympanic segment of the facial nerve

The incus butress is preserved in hearing preservation cases.

Drill the well for the device. The well is about 2 fingerbreadths behind the external auditory canal. The silastic template is placed to make sure the periosteum has been elevated far enough posteriorly.

The CO2 laser is use to ablate vasculature on the promontory (and to reduce bleeding into the scala tympani)

A 1 or 1.5 mm diamond is use to take down the round window overhand

Either a cochleostomy or round window approach is used. The cochleostomy is inferior to the round window. The final penetration into the scala tympani is with the CO2 laser (to avoid bone dust from entering the cochlea).

Perilymph is not suctioned.

The device is placed into the well before the cochlea is entered.

The monopolar cautery is taken off the field before the device is placed into the well.

The electrode is advanced over 1 minute of time (soft surgical techniques)

The fascia is placed around the cochleostomy/round window site.\

The electrode is coiled into the mastoid.

Postage-stamp size pieces of gelfoam can help lateral wall electrodes stay in position.

The Palva flap is closed with horizontal mattress Vicryl sutures

Subcutaneous Vicryl sutures are used to close the skin incision.

Monocryl subcuticular sutures followed by Dermabond can be used to close the skin (as well as running

Intraoperative NRT is performed if a non-hearing preservation approach is used

An intraoperative x-ray is used if there is concern about device placement, abnormal NRT, or with a Cochlear 632 device (as per manufacturer recommendations)

Deep extubation is performed (to reduce bucking of the patient)

Red or blue Velcro mastoid wraps are placed

The patient is given subcutaneous heparin (to reduce risk of DVT formation postoperatively) as well as IM Toradol (to reduce postoperative pain)

The patient is either sent home or admitted for 23 hour observation

The patient is sent home with prednisone (60mg/day), Pepcid, and Keflex (500mg 4x/day) for one week. The patients can also take Tylenol #3 for

breakthrough pain. However, when at home, Advil or Aleve are recommended as the main pain relievers

The mastoid dressing can be removed the day after surgery (or the patient may keep it on if he/she desires)

The patient should have a postoperative visit one week after surgery (either in-person or via video visit)

The patient then has the device activated at 2 weeks after surgery

The patient follows up with Dr. Samy at 4 months after surgery with repeat audiogram (to consider contralateral device placement)

(Thanks to the University of Iowa Head and Neck Protocols for the basic structure of this surgical step sheet)