Branchial clefts are part of the embryonic development in the neck and remnants can persist as a result from a failure of one of these to obliterate. In fish these develop into gills. Incomplete, failed or persistent embryonic development of the branchial clefts can result in several anomalies or defects in the neck. Two common congenital problems that can occur from this abnormal development are branchial cleft sinuses/tracts/fistulae and cysts.

**How does a branchial cleft anomaly present?** Most branchial cleft sinuses/tracts/fistulae are asymptomatic, but they may become infected and drain. The cysts, however, usually presents as a smooth, slowly enlarging lateral neck mass that may increase in size after an upper respiratory tract infection. Those may not present until late childhood or, at times, early adulthood.

**How are branchial cleft anomalies diagnosed?** Diagnostic testing may include CT scan, ultrasound, and fine needle aspiration.

**How are branchial cleft anomalies treated?** Conservative (i.e. no treatment) management is sometimes considered if these have been asymptomatic, have not been infected, were incidentally noted, or if the child is considered too young for elective surgery (typically <1-2 yrs. of age). However surgical excision is often recommended especially if these are symptomatic or have been infected or if there is any uncertainty about the diagnosis. Complete surgical excision is recommended, but may be difficult (due to the close proximity of the internal jugular vein and carotid vessels that lie deep to these anomalies). If incompletely excised, these can recur. Definitive branchial cleft surgery is avoided during an episode of acute infection or if an abscess is present. Surgical incision and drainage of abscesses is indicated if present, usually along with antibiotics.

**What does surgery involve?** Surgical excision is definitive treatment for branchial cleft anomalies. General anesthesia is used for surgery. A horizontal incision in the neck is often made in a neck crease. Infrequently, more than one horizontal incision, known as a stai step or stepladder incisions, are made to fully dissect out the occasionally tortuous path of the branchial cleft anomaly. Sometimes, the branchial cleft anomaly tract extends into the back of the throat also called the pharynx. In those cases, endoscopic visualization through the mouth may be needed for complete removal of the tract remnant. This may also include tonsillectomy if the tract extends into the tonsillar bed. Patients may go home the same day or stay overnight depending on the size and location of the lesion, as well as how involved surgery is. Typically a small drain is placed in the wound and kept in place for 1-2 days. After surgery, the patient will probably have some discomfort and pain medicine is usually prescribed. It may or may not be necessary to remove stitches. If those need to be removed, it is usually done a week after surgery. The patient may shower or have a sponge bath at home one to two days after surgery, after the drain is removed. Recovery takes about a week. A follow-up appointment about 1-2 weeks after the surgery is typically made to check how the area is healing.
Surgical Risks and Possible Complications:

Despite the fact that surgery in the neck involves dissection in proximity to many important structures such as vessels and nerves, the procedure is usually performed without difficulty or long-term complications. Most patients usually leave the hospital the day of or the day after surgery.

After any surgery, some pain is normal, but if it does not decrease or worsens, it may be abnormal and indicate infection or bleeding. Bleeding and infection are possible, as with any surgery. There is not a high incidence of either of these complications with this type of surgery. The drain that may be placed during surgery is designed to help prevent these.

The biggest risk is recurrence of the cyst/tract. Every effort is made to remove the branchial cleft remnant in its entirety. Sometimes it has tracts which are not detected during the surgery. The vast majority of patients have the cyst/tract successfully removed in one procedure and never have another problem. If it does recur it may require further surgery to try to completely remove it.

The nerve which moves the tongue (the hypoglossal nerve) as well as the nerve which provides sensation and taste to the tongue (the lingual nerve), the nerves which supply the voice box with sensation and movement (the superior laryngeal nerve and the recurrent laryngeal nerve), as well as the nerve branches which supply movement to the lower part of the face may travel near the surgical area. Additionally the nerve that provides strength to the neck muscles that allow us to shrug our shoulders (the spinal accessory nerve) can be exposed during the surgery. Injuries to these nerves are rare with this procedure, but because of their location an injury is possible.

The large vessels of the neck, namely the carotid artery and internal jugular vein, are usually intimately associated with the wall of the branchial cleft anomaly. Great care is taken to dissect those away from the cyst and preserve them, which, in rare cases, may mean leaving some of the branchial anomaly behind. Injury to those is possible but extremely rare.

There are rare case reports of malignancies having been identified in branchial cleft lesions, including branchiogenic carcinoma and papillary thyroid carcinoma. All specimen are evaluated by the pathologists.

The incision will be carefully planned and sewn to minimize scarring. It is possible for the incision to heal with an unsatisfactory appearance. Scar revision is possible if this is the case.

The operation is carried out under general anesthesia. As with any type of surgery, the risks of anesthesia such as drug reaction, breathing difficulties, and even death are possible. Please feel free to discuss any specific concerns about anesthesia with the anesthesiology team.
1. Activity: Light activity is advised for 1-2 weeks after surgery.
2. Diet: General diet as tolerated is recommended.
3. Medicines: Pain medications are typically prescribed. These are to be taken as directed. Antibiotics may also be prescribed.
4. Bathing: Generally, showering is fine 24 hours after the surgery after the drains are removed. No bathing or soaking in water is recommended until after the incision is healed.
5. Post-operative follow-up: Sutures may be dissolvable or may have to be removed a week after surgery. A post-operative follow-up is typically scheduled for about a week after surgery.

At Suburban Ear, Nose and Throat Associates, Ltd., we go to great lengths to try to help you understand your plan of care. If at any time during your care you have questions or concerns, please call us at 847-259-2530.

I/we have been given an opportunity to ask questions about my condition, alternative forms of treatment, risks of non-treatment, the procedures to be used and the risks and hazards involved. I/we have sufficient information to give this informed consent. I/we understand every effort will be made to provide a positive outcome, but there are no guarantees.

Patient name PRINTED: ____________________________________________________________

Patient or Parent/Guardian/POA SIGNATURE: __________________________________________

(If applies) Parent/Guardian/POA Printed name: _________________________________________

(If applies) Parent/Guardian/POA relationship to patient: _________________________________

Date: ________________________________

Witness: _______________________________ Date: ________________________________