Thyroglossal Duct Cyst Excision

see: Case Example of Thyroglossal duct cyst excision standard approach
see also: Case example thyroglossal duct cyst with tract through to oropharynx
see also: Thyroglossal Duct Cyst Radiology

1. **GENERAL CONSIDERATIONS**
   a. **Indications**
      i. Infection
      ii. Mass effect (dysphagia, dyspnea, pain)
      iii. Cosmetic
   b. **Contraindications**
      i. Acute infection (treat prior to excision)
      ii. No other functional thyroid tissue (postoperative hypothyroidism).
         This contraindication is considered only as a relative contraindication.
         Removal of the thyroglossal duct cyst may still be indicated with the
         acknowledgement that thyroid hormone replacement may be
         necessary.
      iii. Medical contraindication to elective surgery
   c. **Embryologic Considerations**
      i. An epithelial proliferation in the floor of the pharyngeal gut appears
         during the third week of fetal development between the tuberculum
         impar and the copula. The bilobed diverticulum of primordial thyroid
         penetrates the underlying mesoderm at the foramen cecum and
         descends into the anterior neck. The proximity of the pericardium
         facilitates attachment to either side of the ventral aortic stem so, as
         the pharynx grows forward, the lobed thyroid primordium descends
         with the evolving vasculature. The thyroid bud descends with the
         ventral aortic sac anterior and inferior to the developing second arch.
         The copula of the third arch, which eventually forms the majority of
         the hyoid body, is initially posterior and superior to the second arch.
         Thus, the thyroglossal tract passes ventral to the hyoid bone. The
         thyroid bud remains connected to its origin during its descent, with
         formation of a tubular tract.
      ii. The thyroglossal tract path starts at the foramen cecum, runs
         inferiorly ventral to the hyoid bone and then, at the caudal pole of the
         hyoid bone, turns initially upward before descending. The thyroid
         normally takes its position in the anterior neck by the seventh fetal
         week, with eventual ductile involution. Persistence of the embryonic
         duct, or portions thereof, may result in thyroglossal duct cysts, or
         ectopic thyroid, anywhere along the course of glandular descent.
   d. **Other Considerations**
      i. Thyroglossal duct cysts are the most common form of congenital
         midline neck mass.
      ii. The most commonly found location is just inferior to the hyoid bone.
      iii. The thyrohyoid membrane does not insert on the inferior rim of the
         hyoid bone. Rather it inserts on the pre-epiglottic tissues and the
         posterior superior rim of the hyoid. This is important to keep in mind
         when dissecting the post-hyoid space.
      iv. 30% are discovered by the age of 10; 20% from 10 to 20 yrs, 15% in
         30's; and 35% after.

2. **PREOPERATIVE PREPARATION**
   a. **Evaluation**
      i. Note cystic mass and movement with deglutition
         1. The mass is not mobile in the lateral plane, but moves in the
            vertical plane
      ii. Note limits of mass typically within 2 cm of midline
         1. Of note, 25% are found just lateral to midline, with the
majority of these on the left

iii. Examine base of tongue for lingual thyroid (90% ectopic thyroid found at base of tongue)
iv. Palpate neck for cervical thyroid
v. Consider thyroid scan or ultrasound if normal cervical thyroid tissue not present
1. May use Technetium 99m-labeled pertechnetate scan in children (safer than \( {\text{I}}^{131} \))
2. Alternatively, identify to the patient or family that a hypothyroid state may result from removal of the cyst and is readily corrected with Synthroid

b. Consent
i. "Removal of the cyst and tissues that lie along its tract including a portion of the hyoid bone"
ii. Potential complications
1. Bleeding, infection, reaction to anesthesia, scarring
2. Damage to adjacent structures: superior laryngeal nerve, hypoglossal nerve (rare)
3. Recurrence: 4% for first operations with Sistrunk, higher if portion of hyoid is not removed
4. Orocutaneous fistula
5. Hypothyroidism
6. Need for postoperative intubation or tracheotomy and NG (feeding) tube
7. Potential swallowing alteration

3. **NURSING CONSIDERATIONS**

a. Room Setup
i. See [Basic Soft Tissue Room Setup](#)

b. Instrumentation and Equipment
i. Standard
   1. Major Instrument Tray 1, Otolaryngology
   2. Major Instrument Tray 2, Otolaryngology
   3. Bipolar Forceps Trays
ii. Special
   1. Varidyne vacuum suction controller
   2. Nerve stimulator control unit and instrument
   3. Bowman lacrimal probes
   4. Cummings retractor, large and medium
   5. Bone cutters and rongeurs, small set

c. Medications (specific to nursing)
   i. Antibiotic ointment

d. Prep and Drape
   i. Standard prep, 10% providone iodine
   ii. Drape
      1. Head drape
      2. Square off incision site with towels, from lips to clavicles; lateral extension to trapezius
      3. Split sheet

e. Drains and Dressings
   i. Varidyne vacuum suction or Penrose drain
   ii. Antibiotic ointment to suture line
   iii. Adaptic, small 3 x 3 in
   iv. Fluffs
   v. Kling, 4 in

4. **ANESTHESIA CONSIDERATIONS**

a. General Anesthesia with Endotracheal Intubation

b. Positioning
   i. Modified Rose position with neck extended
   ii. Using Benzoin solution over chin, affix a 10"x10" drape over the chin
   iii. Drape to allow easy oral access with minimal drape manipulation

c. Preoperative Systemic Medications
   i. Antibiotics (see [Antibiotic Prophylaxis in Head and Neck Surgery](#) protocol)
   ii. Consider Decadron to reduce postoperative swelling
5. **OPERATIVE PROCEDURE**

   a. Mark incision and infiltrate with 1% lidocaine with 1:100,000 epinephrine.
      i. Use a horizontal curvilinear incision in skin crease, over mass prominence if no sinus tract/fistula.
      ii. If sinus tract/fistula present, encompass within an elliptical incision.
   b. Carry incision through platysma.
   c. Separate strap muscles in midline and retract muscles laterally.
   d. Incise fascia overlying cyst.
   e. Retract cyst and free from investing tissues of larynx.
   f. Incise superior muscular attachments to hyoid without undercutting hyoid or incising periosteum.
   g. Resect the midportion (10 to 15 mm) of hyoid in continuity with mass using heavy (Mayo) scissors.
   h. Direct dissection superiorly at 45° angle with respect to long axis of body, with removal of 5 to 10 mm core of base of tongue tissue toward the foramen cecum.
   i. It is usually not necessary to enter the oropharynx nor remove mucosa.
   
   **editorial note (HH):**
      i. My practice has been to place a hemoclip to mark the superior extent of the dissection near the foramen cecum
      ii. I then take a frozen section from the upper end of the resected specimen to search for a patent tract that may occasionally communicate through to the oropharynx
      iii. If a tract is identified at the superior extent, it is followed as far toward the oropharynx as necessary - and may require entry into the oropharynx
      iv. If there is entry into the oropharynx, consideration for a feeding tube and even tracheotomy may be entertained
      v. Click to see example of infectious complication of incomplete thyroglossal cyst removal with tract communicating into the oropharynx requiring revision surgery
         see: [Case example thyroglossal duct cyst with tract through to oropharynx](#)
   j. Irrigate wound and obtain meticulous hemostasis.
   k. Place drains, either Penrose or suction drain, depending on size of cyst.
   l. Close wound in layers.

6. **POSTOPERATIVE CARE**

   a. Drains removed when output decreases (typically one to two days)
   b. Delay oral diet with clear liquids 48 hours postoperatively if pharynx entered
   c. Closely follow airway postoperatively
   d. Topical wound care
   e. Follow-up five to seven days for suture removal
   f. Check pathology of specimen to ensure benign
g. Follow-up for hypothyroidism (order TFTs if symptomatic)

a.

SUGGESTED READINGS