Chapter P

Microflap Excision of a Vocal Fold Cyst

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I. Fundamental and related chapters: Chapters C, D, H

II. Diagnostic Characteristics and Differential Diagnosis of Vocal Fold Cyst

Vocal fold cysts present as subtle, submucosal masses, typically yellow in color and are present at the anterior or mid vocal fold. They can be quite difficult to detect in some cases and videostroboscopy is usually needed to make the diagnosis (see Chap C). Stroboscopy shows severely diminished or absent mucosal wave where the lesion is present. A yellowish submucosal discoloration can be seen in the area of vibratory stiffness.

Differential diagnosis of a suspected vf cyst is limited to subepithelial fibrovascular lesions which can be distinguished from cysts by their more diffuse nature (involvement of the entire subepithelial membranous fold) which results in lack of mucosal wave over the entire fold. An exploratory cordotomy will distinguish the subepithelial fibrovascular lesion from a cyst. Large vf polyps may rarely be confused with vf cysts, however, polyps are usually distinguished by preservation of vibratory function/mucosal wave, and expansion/thinning of the epithelial cover.

III. Indications and Contraindication:

Indications for surgery:

Symptomatic dysphonia and lack of resolution with medical treatment

IV. Surgical Equipment

Surgical Microscope with 400mm objective lens Standard Microlaryngeal Tray (see Chap 9):

- Suspension Laryngoscope (Dedo, Ossoff-Pilling, Zeitels)
- Suspension System (Lewy + Table-mounted mayo stand *or* Boston Univ)
- Tooth protector
- Sickle knife (fresh)
- Upcutting and straight microlaryngeal scissors
- Flap elevator
- Microlaryngeal suction 3,5,7
- Non-traumatic flap grasper/alligator

V. Surgical Procedure

1. Intubation with 5 or 5.5 microlaryngeal endotracheal tube

This is essential for adequate exposure of the entire membranous vocal folds

2. Expose Larynx with suspension laryngoscope

- Use the largest suspension laryngoscope that will adequately expose the *entire* vocal fold
- Hints: (Chap H)
  1. Tooth guard to protect maxillary dentition
  2. Use lever of Lewy to achieve anterior vf exposure
  3. Anterior counterdistension with neck taping method

3. Incision (Fig A)

Use a fresh sickle knife

Make incision just lateral to, or directly over the lesion, in a posterior-to-anterior direction

- Keep the incision superficial by maintaining a slight pull on the knife superiorly (toward yourself), which "tents" up the mucosa, protecting the deeper layers
- The incision should be slightly longer than the actual lesion to afford adequate space in which to work

4. Separate the epithelial cover from the cyst (Fig B)

- Use the 30 degree flap elevator to develop a plane in the superficial lamina propria (SLP, or Reinke's space), between the overlying epithelium and the cyst.
- The instrument can usually be visualized through the thin, semi-translucent flap (0.2mm thick) during this step. The tip of the elevator should be pointing medially.
- The dissection is continued to the inferior-most portion of the lesion.
- Use caution with the flap elevator inferiorly, as the tip of the instrument may perforate the delicate epithelial flap; gentle pressure laterally with the "back" of the flap elevator helps avoid perforation
- *Note: it is important to perform this side of the dissection first, when natural "countertraction" is provided by adherence of the cyst wall to the vocal ligament. If the epithelial cover is separated as the last step, perforation of the thin, delicate flap is more likely*

5. Separate the cyst from the vocal ligament (Fig C)

- Dissect between the cyst and the vocal ligament with a 30 degree flap elevator
- The fibers of the vocal ligament run parallel to the long axis of the vocal fold and are white in color, with little vascularity. Great care should be taken to avoid violation of the vocal ligament. Some scant gelatinous-appearing material (SLP) can often be seen, and should be preserved..
- Avoidance of cyst wall rupture is tantamount to a successful surgery, as cyst dimensions may be difficult to define after rupture occurs.
- If there is penetration of the cyst an attempt to prevent complete evacuation of the cyst should be done by grabbing the cyst at the penetration with a small microalligator and then dissection can be continued. If the cyst is ruptured completely, then careful and meticulous dissection of all the suspended cyst wall contents should be removed

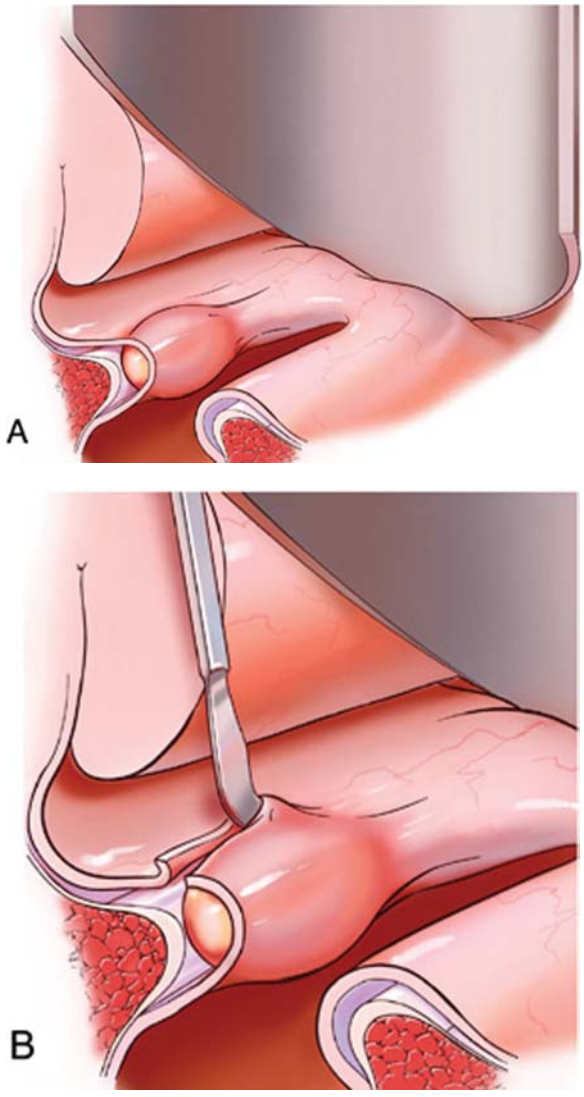

Fig. A,B

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6. Removal of lesion (Figs D-E)

- Some sharp dissection with scissors may be necessary, if fibrous connections between the cyst and ligament cannot be bluntly dissected with the flap elevator. These fibrous connections are most commonly present anterior and posterior to the vocal fold cyst and will need to be carefully lysed before the cyst can be removed.
- Once all attachments of the cyst wall are freed, the lesion is remove and the flaps are replaced and allowed to coapt.
- No need for epithelial resection is necessary, normally

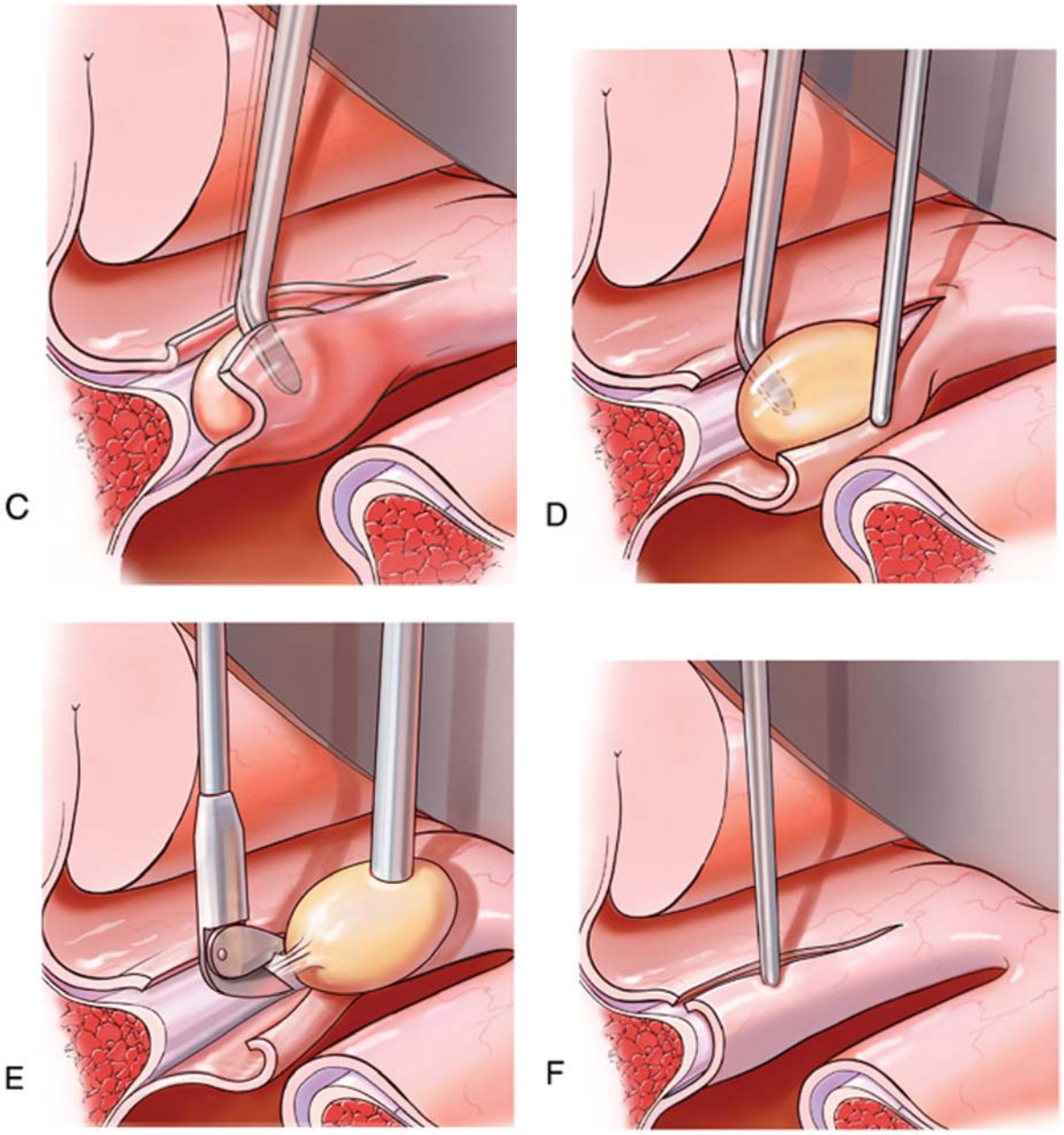

Fig. C–F

VI. Post Operative Care/Complications (See Chap K–L)

- Complete Voice Rest for one week
- Proton pump inhibitors (PPIs), Pain medications (tongue pain from suspension)
- Follow-up in one week, begin graduated voice use under supervision of SLP (if possible)
- Complications:
- Chipped teeth (typically maxillary) (note- use of customized acrylic mouth guards virtually eliminate this problem)
- Anesthesia/Hypoesthesia of Tongue +/- loss of taste

Due to pressure neuropathy of lingual nerve from suspension laryngoscope

- Resolves in 2-3 weeks typically, may persist for 3 months or more
- Minimize by keeping suspension time to less than 2 hours
- Prolonged post-operative dysphonia

Seen in cases where extensive scarring/adhesions are seen, especially if cyst rupture has occurred prior to surgery. Occasionally, a Type III cyst vocalis deformity(sulcus vocalis with associated cyst) is seen (see Chap C), where the cyst extends *into* the vocal ligament, requiring dissection into the ligament and in some cases resection of vocal ligament fibers to remove the entire cyst wall. In these cases, prolonged hoarseness and slow recovery in voice quality can be expected. We recommend intensive voice therapy, oral corticosteroid taper, and reassurance. The use of steroids is especially indicated if erythema is present at the operative site.

- Cyst recurrence

This is unusual except in the case of anterior commisure mucous retention cysts or Type III Sulcus Vocalis-. Recurrence is generally seen within 6-12 weeks following surgery. Revision phonomicrosurgical removal can be carried out after the 3rd post-operative month, with meticulous detail paid to the removal of all cystic wall remnants; this may require limited vocal ligament fiber resection in some cases (see above).

VII. Summary/Key Points:

1. Diagnosis of vocal fold cyst may be difficult preoperatively, however videostroboscopy greatly improves the chances of detection. Often exploratory cordotomy is required to differentiate between the diagnosis of a fibrous mass versus vocal fold cyst.
2. Delicate handling of the cyst is necessary to avoid rupture, which will complicate the removal
3. Surgical dissection between the epithelial covering and cyst wall (medial dissection) should precede dissection between the lesion and vocal ligament (lateral dissection)
4. The surgeon should be familiar with the pathophysiology of a Type III sulcus vocalis/cyst combination, and be prepared to deal with this entity appropriately (see Chap V)
5. Post-operative recovery may be slower for vocal fold cysts than with other benign laryngeal lesions.

VIII. Select Bibliography