“Whenever, in less recent years, I happened upon any of our former supraglottic patients, with their permanent tracheostomy, drooping shoulders, and a shirt collar much too large for an exceedingly thin neck, surmounted by an apparently disproportionately big head, I felt unwillingly guilty for having inflicted upon them such a disabling and unnecessary mutilation.”

---Ettore Bocca

HISTORY
Supraglottic laryngectomy (SGL) is a surgical technique designed with the goal of complete elimination of cancer arising from the epiglottis, aryepiglottic folds, and false vocal cords while minimizing morbidity and maintaining the three primary functions of the larynx—airway protection, respiration, and phonation. Prior to its introduction by Alonzo in 1947, the primary treatment for supraglottic tumors was total laryngectomy and radical neck dissection leading to the disabilities referred to by Bocca above. Despite the functional benefits of a partial laryngectomy, general acceptance of this procedure was not immediately forthcoming. Not only did the medical community at the time question the oncologic safety of the procedure, but also Alonzo’s original description of the procedure necessitated a second stage operation to close a temporary pharyngostoma. Modifications made by Ogura in 1958 converted supraglottic laryngectomy to a one-stage procedure. Som, in 1959, reported the technique of reconstructing the surgical defect with primary reapproximation of the outer thyroid perichondrium to the tongue base—the procedure we continue to use today.

EMBRYOLOGY/ANATOMY
The larynx is comprised of three anatomic subunits—the supraglottis, glottis and subglottis. Structures that comprise the supraglottis include the lingual and laryngeal surfaces of the epiglottis, the aryepiglottic folds, the arytenoid cartilages, the false vocal folds, and the ventricle. During embryologic development these structures are derived from the buccopharyngeal anlage of branchial arches three and four. In contrast, the glottic and subglottic structures develop from the tracheobronchial anlage of the fifth and sixth branchial arches. This embryonic fusion plane, represented by a horizontal line
drawn through the ventricle, is an essential anatomic concept to understanding the validity of the supraglottic laryngectomy.

Pressman’s study in 1956 lent further support to the oncologic safety of the procedure by demonstrating that dyes injected submucosally in the supraglottis did not spread inferior to the ventricle. Fibroelastic membranes within the laryngeal framework serve as functional barriers and provide the anatomic explanation for these findings. These membranes which include the thyrohyoid membrane, the hyoepiglottic ligament, the thyroepiglottic ligament, the conus elasticus and the quadrangular membrane also serve to divide the larynx into two three-dimensional compartments—the preepiglottic space and the paraglottic space. The preepiglottic space is defined superiorly by the hyoepiglottic ligament, anteriorly by the thyrohyoid membrane, inferiorly by the thyroepiglottic ligament and posteriorly by the epiglottis. The paraglottic space is bounded superiorly by the quadrangular membrane and medial piriform sinus wall, inferiorly by the conus elasticus and laterally by the thyroid cartilage. Involvement of these spaces by a supraglottic cancer—most commonly through the infrahyoid epiglottis and ventricle—has a direct effect on potential surgical management of these lesions.

The lymphatic drainage of the supraglottis was also defined by Pressman. The “lateralized” structures of the aryepiglottic folds and false cords were found to demonstrate ipsilateral lymphatic drainage while the midline epiglottis drainage pattern was bilateral. Additionally, the supraglottis has a superficial lymphatic system, which tends to flow bilaterally with less regard for site while deeper lymphatics maintain laterality based upon the site of the lesion. The lymphatic vessels travel alongside the superior thyroid artery and vein, through the thyrohyoid membrane, and empty into the jugulodigastric (level II) and midjugular (level III) lymph nodes.

SUPRAGLOTTIC CANCER

Of the nearly 13,000 new cases of laryngeal cancer diagnosed annually in the United States, 30-40% of these tumors are thought to arise in the supraglottis. The vast majority (95%) of these tumors are squamous cell carcinoma. However, tumors of salivary gland origin (acinic cell, mucoepidermoid, adenocystic) mesenchymal tumors (chondrosarcoma, fibrosarcoma, liposarcoma) and benign conditions (papilloma, necrotizing sialometaplasia, granular cell myoblastoma) can also involve the supraglottis. Like other head and neck cancers, there is a higher incidence in men and significant tobacco and alcohol use are major risk factors for the development of supraglottic squamous cell cancer. The most common site of origin is the infrahyoid epiglottis followed by the false cord, suprahvroid epiglottis, aryepiglottic fold and ventricle. Local tumor spread occurs via mucosal extension, submucosal extension, and deep invasion. Invasion through foramen that house mucus glands within the cartilage of the epiglottis allows spread to the preepiglottic space. The paraglottic space becomes involved most often by spread of disease involving the mucosa of the ventricle. Compared to glottic squamous cell cancer, supraglottic cancer has been associated with early metastasis to cervical lymph nodes. Over 50% of patients will have neck disease at presentation and over 25% of patients will have occult metastasis. Distant metastasis most commonly involves the lung and occurs infrequently (5%).
The staging system for supraglottic cancer as set forth in the 1997 American Joint Committee on Cancer is as follows:

**Tumor**
- **T1**: tumor limited to one supraglottic subsite with normal true vocal cord mobility
- **T2**: tumor involves more than one supraglottic subsite or region outside the supraglottis (vallecula, base of tongue, medial wall of pyriform sinus) or invades the glottis but with normal cord mobility
- **T3**: tumor limited to the larynx with cord fixation or involves the postcricoid mucosa or preepiglottic space
- **T4**: tumor extends beyond the larynx with involvement of lateral pyriform, soft tissues of the neck, oropharynx, esophagus or destruction of the thyroid cartilage.

**Nodes**
- **N1**: single ipsilateral node < 3cm
- **N2a**: single ipsilateral node > 3cm, < 6cm
- **N2b**: multiple ipsilateral nodes, all < 6cm
- **N2c**: contralateral nodes, all < 6cm
- **N3**: any nodes > 6cm

**Metastasis**
- **M0**: no distant metastasis
- **M1**: any distant metastasis

**Staging**
- **I** = T1, N0, M0
- **II** = T2, N0, M0
- **III** = T1-3, N1, M0
- **IV** = any T4, T1-3 + N>1, any M>0

This staging system serves to group diseases with similar prognosis for use in patient counseling and treatment planning as well as providing a standardized language by which medical professionals can communicate. The majority of supraglottic tumors present with advanced disease—stages III and IV.

**DIAGNOSIS/EVALUATION**

Many patients with supraglottic tumors will remain asymptomatic until the tumor has reached an impressive size. Alternatively, the presenting complaint will be an enlarging asymptomatic neck mass. Signs and symptoms to address during history taking include things such as hoarseness or change in quality of voice, dysphagia, odynophagia, chronic cough and sore throat, globus, hemoptysis, otalgia, and stridor. Past medical and surgical history will provide insight about the patient’s general health. Social history not only helps to identify the potential risk factors of tobacco and alcohol use but also can provide information regarding the patient’s functional status by asking about occupation and recreational activities. Physical examination, although focused in the head and neck region, should cover all organ systems. Careful evaluation of the entire upper aerodigestive tract is mandatory to exclude the presence of any synchronous pre-
malignant or malignant lesions. Palpation along the floor of mouth and posterior tongue provides important information regarding extent of disease. Visualization of the larynx may be performed with the laryngeal mirror or the flexible fiberoptic endoscope. The endoscopic exam provides the advantage of allowing examination of the larynx in its naturally suspended position. The adequacy of the airway, location and extent of the mass, and mobility of the vocal cords should be determined on exam. Palpation of the neck to determine the presence of lymphadenopathy should always be undertaken although some studies have reported the accuracy of this exam to vary between 50-90%.

Preoperative studies that should be obtained in the patient with a supraglottic mass include a complete blood count, serum chemistry panel, liver function tests, and a chest x-ray. A CT scan of the neck is felt to be the best imaging study to evaluate a supraglottic lesion. These images are most useful in defining the deep extent of tumor and allow identification of preepiglottic or paraglottic space involvement or thyroid cartilage invasion. CT scan may also reveal enlarged lymph nodes that were not detected on physical exam. It is best to perform CT scan prior to any biopsy so as not to obscure the margins of the mass with resultant edema or hemorrhage.

Prior to any definitive treatment these patients should undergo panendoscopy and biopsy under general anesthesia. Repeat palpation of the oral cavity and neck may provide additional information once the patient is relaxed. Direct laryngoscopy is performed to verify extent of the tumor and delineate involved structures in order to allow planning of appropriate definitive therapy. Biopsies must be large enough to provide adequate tissue for pathologic study. Biopsies can be taken not only of grossly abnormal tissue to provide a histologic diagnosis but also along marginal areas to provide additional information about the extent of the lesion. Esophagoscopy and bronchoscopy are performed to exclude the presence of synchronous malignancies. Once all of this information is collected, presentation of the patient at a multidisciplinary tumor board allows for discussion among professionals from a variety of specialties to determine the best treatment options for that patient.

**SELECTION CRITERIA**

One of the most important factors influencing the success of supraglottic laryngectomy is appropriate patient selection. Patient factors and tumor factors play an equally important role in this selection process.

Every patient undergoing supraglottic will experience at least mild temporary aspiration postoperatively. Therefore, prior to undertaking this treatment route, the patient’s cardiopulmonary reserve must be considered. Some clinicians use pulmonary function testing to determine this factor. Many feel that using the arbitrary value of FEV1 > 50% of expected is an imprecise measurement of function and instead rely more upon patient history of daily activities. Stair climbing is a simple clinical maneuver that can provide the necessary information. What one is attempting to delineate is that the patient will be able to participate in their postoperative care with early ambulation and strong cough for pulmonary toilet.

Tumor factors are equally important in the selection process and established contraindications are based upon the anatomic considerations that were discussed earlier. Tumor involvement of the thyroid cartilage or the anterior commissure, which increases
the likelihood of thyroid cartilage invasion, is a contraindication for supraglottic laryngectomy. Once the inner thyroid perichondrium has been invaded, tumor spread is unpredictable and safe cartilage cuts cannot be made. Vocal cord fixation is suspicious for paraglottic space involvement with tumor. Since this space extends inferiorly beyond the base of the ventricle it would not be completely removed with a SGL. The standard procedure can be extended to include one arytenoid but bilateral excision will result in failed rehabilitation. Similarly, resection of tumor involving the pyriform apex or postcricoid mucosa will lead to increased postoperative aspiration and dysphagia. Base of tongue involvement extending superiorly beyond the circumvallate papillae will make primary closure difficult and results in increased dysphagia and aspiration.

Despite conscientious and thorough preoperative evaluation with examination and imaging, some of these tumor factors will not be obvious until the time of surgery. Therefore, it is essential to include in the preoperative discussion with the patient the potential necessity of conversion to a total laryngectomy intraoperatively.

**TECHNIQUE**

A standard tracheostomy is performed prior to the definitive procedure with strict attention paid to keep this incision separated from the neck wound. A superiorly based apron skin incision is designed and flaps are elevated to above the hyoid superiorly. The inferior and posterior extent of elevation is dictated by the type of neck dissection to be performed. Most often, this will minimally involve selective dissection of levels II-IV and this will be performed prior to the SGL. The suprahyoid muscles are released from the hyoid and the infrahyoid muscles divided 1 cm below the hyoid and reflected inferiorly. The greater cornu is skeletonized bilaterally with careful identification and preservation of the hypoglossal nerves. The outer thyroid perichondrium is incised along its superior aspect and elevated inferiorly but left attached to the inferior cartilage. Next the thyroid cartilage cuts must be planned. In the past these cuts have been placed at such locations as one centimeter below the thyroid notch, the midway point between the thyroid notch and inferior cartilage border, and the junction of the upper one third and lower two thirds of the cartilage. A human cadaver study by Meiteles et al. in 1992 confirmed the safest location of cartilage cuts to be the junction of the superior one third and inferior two thirds in both men and women. Precise placement of the cuts is essential to avoid trauma to the anterior commissure and true cords. The cuts extend through the cartilage but the inner perichondrium should be left intact at this time. The cuts are extended posteriorly to include the superior cornu of the thyroid cartilage. In smaller unilateral lesions this can be modified to preserve the superior cornu on the contralateral side. This may improve postoperative rehabilitation by preserving the superior laryngeal nerve. Entry into the pharynx is dictated by tumor location but may occur through the vallecula or the contralateral pyriform sinus. Mucosal cuts begin anterior to the arytenoid on the lesser-involved side. Using heavy scissors a cut is made perpendicularly across the aryepiglottic fold inferiorly to the level of the ventricle. The scissors are then turned horizontal to the larynx with one blade in the ventricle and one through the cartilage cut. This proceeds anteriorly to the midline thereby opening the larynx somewhat like a book and allowing resection of the more involved side with maximal visualization. During the mucosal cuts it is important to attempt to leave the mucosa over the arytenoids intact. If
this was not possible, all exposed cartilage should be covered using mucosa from the adjacent pyriform sinus. The wound is then closed by reapproximating the thyroid perichondrium to the tongue base. If the perichondrium is insufficient, drill holes are made through the thyroid cartilage for suture placement. It is important that the bites through the tongue base include the deep musculoaponeurotic layer to increase strength of the closure. The stitches are delayed until the shoulder roll is removed and the head flexed and then tied in sequence. This effectively reduces tension on the closure, which is then reinforced by approximating the suprahypoid and infrahyoid musculature. Suction drains are inserted and the skin closed in layers.

Modifications of the procedure advocated by some authors include suspending the remaining thyroid cartilage to the mandible and inferiorly releasing the larynx by dividing the infrahyoid strap muscles. These additions have not demonstrated significantly improved postoperative rehabilitation. The simultaneous performance of a cricopharyngeal myotomy is controversial. Some clinicians believe that it improves postoperative swallow while others state that it increases the risk of postoperative aspiration by increasing the propensity for laryngopharyngeal reflux.

The standard SGL can be extended to include one arytenoid, part of the pyriform, or the tongue base. If an arytenoid is resected the free edge of the true cord is reapproximated to the body of the cricoid posteriorly in the midline. Tumor involvement of the vallecula necessitates extended tongue base resection. In this case the pharynx is entered through the pyriform and resection occurs from inferior to superior. The circumvallate papilla is the superior most extent of safe resection. Small lesions that involve the superior aspect of the anterior or medial pyriform may be resected in continuity with a SGL. These extended procedures are all associated with increased aspiration and dysphagia. Patients selected for these operations must have excellent cardiopulmonary reserve and be extremely motivated.

POSTOPERATIVE CARE/REHABILITATION

Functional outcome after conservation laryngeal surgery is dependent upon specialized postoperative care. Primary issues encountered in post-SGL patients are tracheostomy decannulation and return to oral intake. The cuff on the tracheostomy tube is initially left inflated to help minimize early aspiration associated with expected postoperative edema. As soon as the patient demonstrates a strong cough and ability to protect the airway, the cuff is deflated. If this is tolerated then the trach is downsized. Once trach plugging can be tolerated for 24 hours then the patient can be safely decannulated. It is desirable to decannulate the patient prior to beginning oral feeding so as to prevent aspiration secondary to laryngeal tethering at the trach site. A study conducted in Spain in 1996 revealed an inability to decannulate to be a significant post op complication. Nearly 24% of patients with supraglottic lesions and 50% of patients with base of tongue lesions required permanent tracheostomy. Factors associated with this complication were advanced stage (T3, T4) and advanced patient age (>65 y/o). Similar rates between 20-30% have been demonstrated in other studies. In contrast, a study of the MD Anderson experience reported an early decannulation rate of 80% and 100% eventual decannulation. This study did however employ strict selection criteria that excluded
many patients with advanced disease. Prolonged time to decannulation was associated with extended procedures.

Voice rehabilitation after SGL generally is successful. A study from the University of Florida reported return of voice in all of their 40 patients who underwent SGL. Further evaluation of voice quality was not reported. Other reports looking at voice quality report 93% speech intelligibility following SGL.

Probably the most difficult aspect of recovery from SGL is resumption of safe oral intake. Patients are initially maintained on tube feedings while they begin to learn to swallow their own saliva. Speech therapy consultation is warranted at this juncture to begin patient teaching of the supraglottic swallow. This is not an easy maneuver to master and requires significant time from the therapist and significant motivation from the patient. The supraglottic swallow consists of six steps. The patient first takes in a deep breath and then performs a valsalva maneuver, which aids in glottic closure. Food is placed in the mouth and the patient swallows then coughs to clear the laryngeal inlet. This is followed by a second swallow and cough prior to the next inspiration. It is best to start with soft or pureed foods rather than clear liquids. Once the patient is able to take thin liquids, carbonated beverages seem to be better tolerated. As many as 10% of patients undergoing standard SGL will have significant postoperative swallowing problems requiring permanent feeding tubes. Extended procedures are associated with both a prolonged time to swallow recovery and a decrease in patients that achieve normal to swallow to only about 57%. Factors that appear to be associated with poor postoperative swallow and aspiration based on videofluoroscopic evaluation are low laryngeal position and delayed oropharyngeal transit. This stresses the importance of superior and anterior repositioning of the larynx after tumor excision.

Perhaps the most devastating complication after SGL in the necessity to perform a total laryngectomy secondary to chronic aspiration. The conversion rate in the literature varies from 2.5 to 12.5% of cases. Factors associated with increased likelihood of total laryngectomy were again advanced stage of disease requiring extended procedures and patient age over 65 years.

ENDOSCOPIC LASER SURGERY FOR SUPRAGLOTTIC CANCER

The concept of endoscopic management for supraglottic lesions began in 1939 when Jackson described the use of a tubed laryngoscope and punch biopsy forceps to resect tumors of the suprahoid epiglottis. Technologic advances such as the development of the operating microscope in the 1950’s, the introduction of suspension microlaryngoscopy in the 1960’s, and the use of the carbon dioxide laser for endolaryngeal surgery in the 1970’s led to the further expansion of this concept.

Potential advantages of endoscopic vs. open surgery include no need for tracheostomy, shorter operating time, decreased incidence of pharyngocutaneous fistula, no neck incisions, and earlier rehabilitation of swallow. Disadvantages include the need for specialized equipment, prolonged healing time as the defect is allowed to heal secondarily, and the potential need for a second procedure if a staged neck dissection is to be performed.

The use of endoscopic laser resection with an intent to cure is dependent upon size, location and extent of the tumor. T1 and T2 lesions located on the suprahoid
epiglottis, aryepiglottic fold and vestibular fold with minimal preepiglottic and no paraglottic involvement may be approached with endoscopic resection. Tumors that arise on the infrathyroid epiglottis and false cord are less amenable to endoscopic resection secondary to their tangential relationship to the distal lumen of the laryngoscope. The previously mentioned subsites, on the other hand, are perpendicularly oriented to the laryngoscope which facilitates tumor cuts by the laser.

The most important factor in endoscopic laser surgery is adequate exposure. The tubed laryngoscopes used for glottic surgery expose only a small surgical field. Steiner’s bivalved laryngopharyngoscope and Zeitels’ adjustable supraglottiscope more than triple the operative field and allow optimal exposure. The superior blade is placed in the vallecula and the lower blade pushes the endotracheal tube against the posterior pharyngeal wall. The laryngoscope is repositioned as needed to maintain optimal exposure throughout the case.

The carbon dioxide laser is the laser of choice for endolaryngeal surgery. Advantages of the CO2 laser include its superficial effect which helps to minimize damage to surrounding normal tissue. Coupling of the laser to a microspot micromanipulator allows for precise tissue cutting. The laser is hemostatic for vessels 0.5-1.0mm in diameter. And, the no touch tissue destruction allows the surgeon to observe the lasers effect on the tissue layer by layer.

Small supraglottic tumors on the suprahypoid epiglottis or aryepiglottic fold may be resected en bloc with the endoscopic laser. The majority of supraglottic cancers, however, must be excised piecemeal. The epiglottis is split sagitally in the midline with resection of the suprahypoid division first followed by the infrathyroid component. The preepiglottic fat is then encountered and removed until the thyroid cartilage is identified. Resection is then continued inferiorly to include the aryepiglottic folds and false cords as needed. Frozen sections are taken from the specimens and re-resection performed for positive margins. The defect is allowed to granulate and heal by secondary intention. Potential complications of endoscopic excision include intraoperative or postoperative hemorrhage and laryngeal chondritis in exposed cartilage.

A recent study out of Germany by Ambrosch et al reported a 5-year local control rate of 100% for T1 and 89% for T2 supraglottic cancers. Similar control rates are cited in other reports on endoscopic resection experience. This control rate is similar to that for open horizontal SGL and slightly better than that for primary XRT therapy for similar lesions.

Functional recovery in terms of post operative swallow is more rapid following endoscopic excision. Ambrosch reports a mean of 6 days of post operative nasogastric intubation which is similar to Eckel’s experience in which the majority of patients required an NGT for only 10 days post op. This is a significantly shorter time period for tube feeding than that reported for open SGL. Endoscopic tumor resection maintains the normal suspension of the larynx by preservation of the hyoid and strap muscles. This, in addition to sensory preservation through the superior laryngeal nerves, facilitates early recovery of swallow. Eckel reports that with endoscopic surgery 40 of 46 patients did not require tracheostomy at all any time during their treatment. Four of the remaining 6 were decannulated within 9 weeks of surgery. Both authors report normal voice after surgery.
SURGERY VS. RADIATION THERAPY

Treatment options for patients with supraglottic cancer include primary surgery, primary radiation therapy (XRT), or adjunctive pre- or post-operative radiotherapy. The decision for surgery, radiation, or both must be made on an individualized basis. Advantages of surgery over XRT include less long term tissue damage, improved follow up examination, reservation of radiation therapy for recurrent cancer, and definitive pathologic evaluation of the extent of disease. Disadvantages of surgery include the postoperative rehabilitative issues mentioned previously as well as the potential necessity of intraoperative conversion to total laryngectomy. Advantages of radiation therapy include avoidance of operative morbidity/mortality and reservation of surgery for salvage of treatment failures. Disadvantages include long term tissue damage with associated difficulty in follow up exam, the potential for chondroradionecrosis, XRT cannot be used again for recurrent or secondary head and neck cancer, and post-XRT surgical salvage is more difficult and likely to necessitate total laryngectomy rather than a conservation procedure.

Most clinicians agree that both primary XRT and surgery offer good control of early disease. Conservation surgery is associated with a lower recurrence rate (5%) compared to primary XRT (23%) as reported by Spriano et al. But, they also noted a trend toward improved local control with new hyperfractionation protocols. They also recognized that although surgery may offer slightly improved control, many patients may not qualify for SGL and therefore primary XRT offers a reasonable organ preserving option.

The control rates for primary XRT used for stage III and IV disease are significantly lower than with surgery—T3 = 40% vs. 85%, T4 = 30% vs. 80%. Unfortunately, advanced disease may also make the patient unsuitable for conservation surgery. In these cases, in order to achieve improved disease control, more extensive surgery may be required and the patient will have to sacrifice function.

Alternatively, those patients with advanced disease but good function may benefit from combined surgery and XRT although this regimen is not without morbidity. Primary tumor factors that warrant postoperative XRT include close or positive margins (neck disease factors will be discussed later). Steiniger et al reviewed 29 patients undergoing supraglottic laryngectomy. Seventeen patients had postoperative XRT while 12 had surgery only. Evaluation of overall survival demonstrated no difference between the two groups but increased morbidity was noted in the XRT group (delayed decannulation or oral feeding, aspiration, airway obstruction). A confounding factor in this study is that a significantly higher percentage of patients with advanced stage disease were in the combined therapy group (76% vs. 25%). In contrast, the MD Anderson study and the multicenter study reported by Rademaker did not note XRT to cause additional morbidity in terms of decannulation or postoperative swallow.

One additional therapeutic option which is continuing to evolve is the use of concomitant chemotherapy and radiation therapy. Patients with T3 and T4 supraglottic squamous cell cancer may elect to undergo this organ sparing protocol which involves daily XRT to a dose of 5,000cGy and two cycles of cisplatin and 5-fluorouracil. The patient is then examined to assess tumor response. Those patients who have had only partial response are offered salvage surgery while those with complete response receive...
MANAGEMENT OF THE NECK

The most important factor influencing long-term survival in supraglottic cancer patients appears to be involvement of the cervical lymph nodes. Either occult or clinically obvious neck disease is associated with a 50% decrease in survival. Opinions as to how to best address the N0 neck is highly variable. The first question is what modality to use to address the neck, surgery or XRT. Most agree that single modality therapy is desirable if at all possible. Simultaneous XRT delivered to a clinically N0 neck along with the primary site offers good control rates. If, however, the patient is to have surgery for the primary then the N0 neck is best treated surgically. This poses the second question, which is which side of the neck to dissect. Hicks et al studied patterns of neck disease in patients with supraglottic tumors and found that 30% of patients with clinically N0 necks had occult disease. The incidence of bilateral disease was found to be 44%. Lutz et al looked at patterns of recurrence with supraglottic patients. Their study included both N0 and N+ subjects but found that recurrence in the unoperated neck was the most common site of local-regional failure irregardless of the primary tumor site being midline or lateral. Studies such as these have led many to believe that bilateral neck dissection should be performed for the clinically N0 neck. The final question would then be, what levels of the neck to include in the dissection. The dye studies performed by Pressman indicated the lymph nodes in level II and III to be most likely involved with metastasis from the supraglottis. From this information it would seem reasonable to perform selective dissections of levels II-IV. However, Hicks et al found that of the N0 necks with occult metastasis, 82% had level I disease. This data necessitates a level I-IV selective neck dissection. Treatment of the N+ neck is less controversial and involves either selective I-IV dissection for limited neck disease or radical/modified radical neck dissection for more extensive nodal involvement. Postoperative XRT to the neck is used if pathology demonstrates multiple positive nodes or extracapsular spread.

CONCLUSION

"I conclude by saying that many things have changed in the surgical management of supraglottic cancer, but changes concern the techniques and not the principles of cancer surgery, that is, the necessity of being radical in both the primary and the neck. Supraglottic laryngectomy combined with functional elective or curative neck dissection is fully in line with those principles and it represents a priceless contribution to saving more lives while sparing mutilation...I am persuaded that the solution to the problem of supraglottic cancer in its entirety is still in the surgeon's hands, provided that we remember that we are waging a war against cancer in the larynx and in the lymph nodes of the neck, and not against the larynx and the neck."

---Ettore Bocca
BIBLIOGRAPHY


