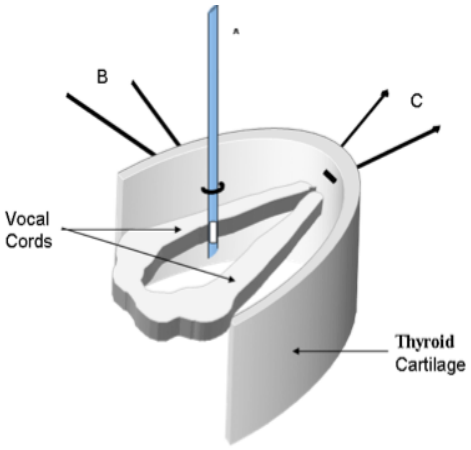
The Yale Larynx Laboratory
A Clinical Review

Management of Radio-recurrent Cancer of the Vocal Cord

Clarence T. Sasaki MD, Jordan Sukys MD



Laboratory Note

The purpose of this newsletter is to update our readers with the evidence-based management of certain Head & Neck disease presentations. In this issue, we shall focus on management of radio-recurrent vocal cord cancer.

The Yale Larynx Laboratory was founded by John A. Kirchner in 1967. Since 1975 this laboratory has been in continuous operation under the direction of Clarence T. Sasaki, the Charles W. Ohse Professor of Surgery. It has been funded by the National Institutes of Health and by endowments of grateful patients.

Case Presentation

An 89-year-old former smoker presented with new hoarseness 16 years after primary radiation of a T2N0 squamous cell carcinoma (SCC) of the right true vocal cord involving the anterior commissure. Biopsy of a new lesion demonstrated moderately differentiated SCC. A CT scan depicted fullness of the right true cord, with effacement of the fatty plane between the paraglottic space and thyroid cartilage, but no invasion of the thyroid cartilage.

Clinical findings

The patient's voice was noted to be slightly breathy. There was no palpable cervical lymphadenopathy. Fiberoptic laryngoscopy demonstrated intact cord mobility bilaterally and an irregular free edge of the right vocal cord. The remainder of the examination was unremarkable. Staging direct laryngoscopy showed involvement of the anterior commissure and 2-3mm extension to the contralateral left cord anteriorly. Subglottic extension was less than 10mm anteriorly. Clinical stage was recorded as T2N0, for what was very likely a "second primary" in the setting of radio-recurrence.

Course

Salvage treatment options including re-irradiation, open and endoscopic partial laryngectomy, as well as total laryngectomy, were discussed; he and his family elected to proceed with an open partial laryngectomy. The patient underwent a vertical frontolataral partial laryngectomy. Surgical margins were negative and pathologic staging corroborated the clinical staging of T2N0. The post-operative course was smooth. On post-operative day 15, he was successfully decannulated and discharged home.

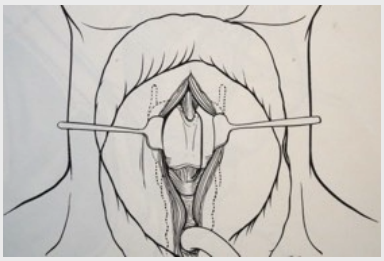


Figure 1: Subperichondrial exposure of right thyroid ala[8]

Figure 2: Exposure of laryngeal lumen through laryngofissure[8]

Figure 3: Transmucosal incisions with adequate margin around tumor[9]

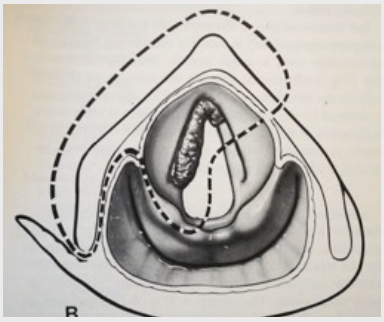


Figure 4: Outlined area of oncologic resection[9]

Discussion

Approximately 13,000 new cases of laryngeal cancer are diagnosed each year in the United States, with glottic subsite and SCC representing the large majority of these cases[1,2]. The goals in managing glottic SCC are to achieve local control of disease, while maintaining airway patency, swallowing function and voice quality. Following these aims, organ-preserving therapy with primary radiation or endoscopic surgery (with or without laser) have become the accepted standards of care for early stage (T1N0, T2N0) glottic cancer[2-4].

However, recurrence rates for these modalities in T1 and T2 glottic cancers range from 12-38%, and introduce the consideration of salvage treatment methods in those primarily treated with radiation[4]. Total laryngectomy has historically been the gold standard of management in this setting, although organ-preservation procedures including open partial laryngectomies and transoral endoscopic procedures with or without laser are being increasingly considered in low stage recurrence[1]. Because access to the anterior commissure can be a limiting factor in endoscopic procedures, open salvage partial laryngectomies may be preferred for low stage recurrence with anterior commissure involvement (Tables 1 and 2). In our patient's case, open partial laryngectomy was favored because effacement of fatty plane between intrinsic larynx and thyroid cartilage presented a pathologic uncertainty.

Table 1. Indications for vertical partial laryngectomy

- T1 or T2 primary tumors in those who decline/cannot receive radiation
- T1 or T2 primary tumors not amenable to endoscopic resection because of unacceptable line-of-sight exposure
- T2 primary tumors with impaired vocal cord mobility
- T1 or T2 primary verrucous carcinoma of the glottis (radiation resistant)
- T1 or T2 radio-recurrent tumors
- Select T3 primary tumors with impaired vocal cord mobility due to tumor bulk

Table 2. Contraindications for vertical partial laryngectomy

- Subglottic extension > 1.0cm anteriorly or > 0.5cm posteriorly
- Most T3 glottic tumors
- Involvement of unilateral entire vocal cord and > 1/3 contralateral cord

Five-year survival and disease-specific survival have been noted to be 88% and 93% respectively in early stage recurrent glottic SCC treated with salvage partial laryngectomy[6]. Overall complication rates are similar to those in salvage total laryngectomy, reported to be about 20%, with wound and fistula complications being most common. Rates of decannulation are reported to be 84%[6,7].

Technique for performing vertical frontolateral hemilaryngectomy

1. After tracheotomy, a subperichondrial exposure of the right thyroid ala is accomplished and a vertical thyrotomy is made with a vibrating saw away from the affected cord about 5mm left of midline (Figure 1)

2. The laryngeal lumen is entered through the cricothyroid membrane exposing the entire glottic larynx through laryngofissure (Figure 2)

3. A transmucosal horizontal incision is made through the laryngeal ventricle including (or not) the body of arytenoid, carrying that incision vertically through the posterior glottis and anteriorly along the top of the cricoid (Figure 3)

4. After removing the affected vocal cord with its thyroid ala (Figures 4-6), the remaining (uninvolved) false cord is sutured to the top of the cricoid to create a pseudocord promoting serviceable phonation (Figure 7)

5. After inserting a feeding tube, the vertical thyrotomy is closed allowing the pseudocord to “collapse” into the glottic lumen against the remaining intact left vocal cord (Figure 8)

6. The patient is decannulated in two weeks when an oral diet can be resumed

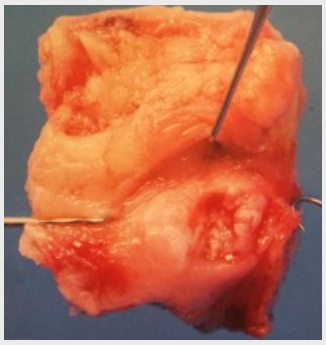


Figure 5: Specimen including vocal cord and thyroid ala[10]

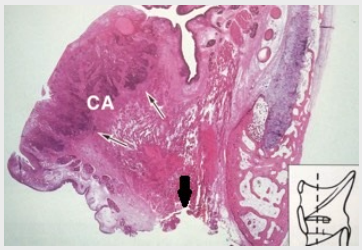


Figure 6: Coronal section of specimen. Arrow demonstrates clear inferior margin[10]

Figure 7: Advancement rotation of involved false vocal cord[9]

Figure 8: Ipsilateral false cord (arrow) sutured to top of cricoid creating new pseudo cord

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The Yale Larynx Laboratory

Clarence T. Sasaki, M.D., The Charles W. Ohse Professor of Surgery

Dimitra Vageli, PhD, Associate Research Scientist

Jose Costa, M.D., senior advisor, Professor Emeritus, Department of Pathology

Bruno Cardoso, M.D.

Michael Hajek M.D.

David Kasle, M.D.

Michael Lerner, M.D.

Athanasios Simetis

Jordan Sukys, M.D.

Jacob Tower, M.D.

Office Location:

Yale Otolaryngology

PO Box 208041

New Haven, CT 06520

For new and follow- up patient appointments:

Phone: 203-785-5430

Fax: 203-785-3970

Academic Line:
203-785-2025