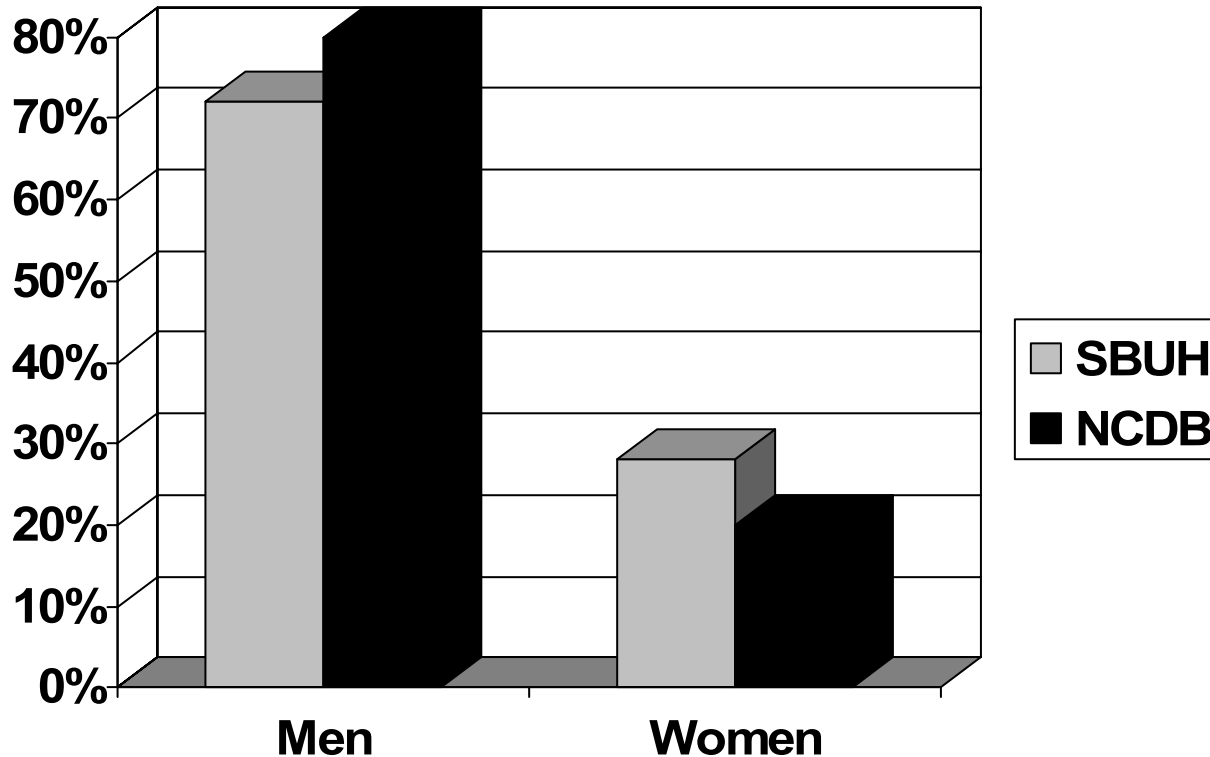


# Survey of Laryngeal Cancer

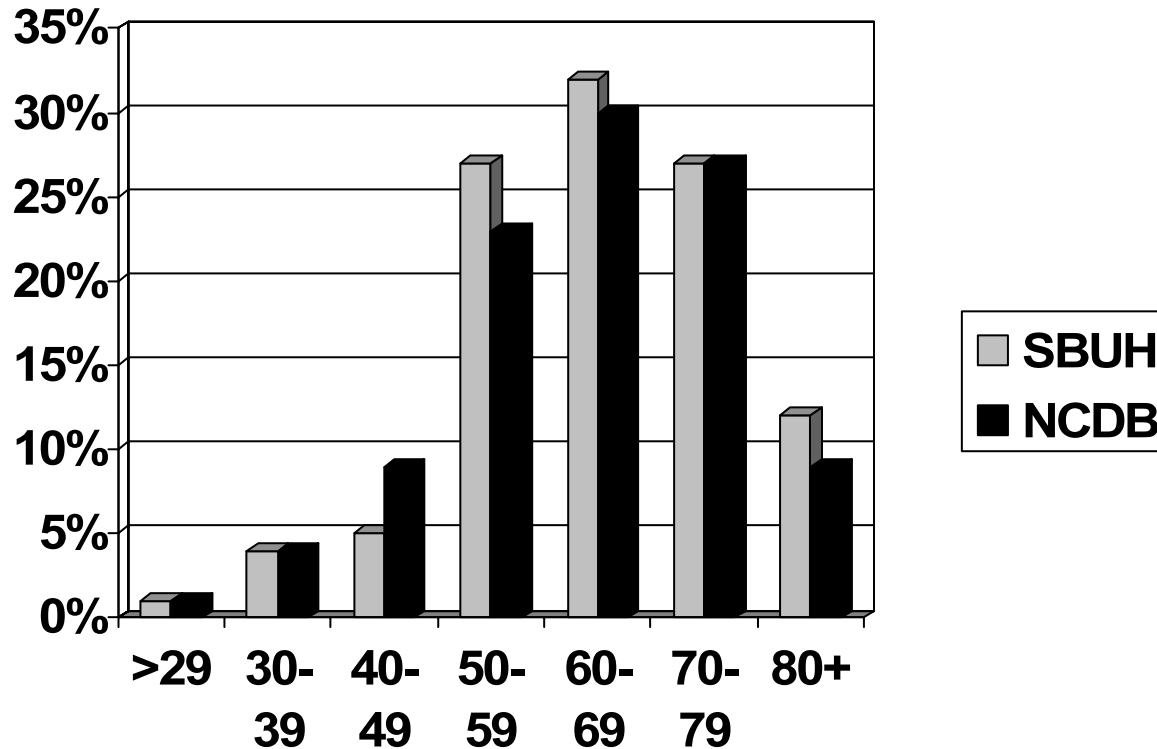
at SBUH comparing 108 cases seen here from 1998 – 2002 to the NCDB of 9,256 cases diagnosed nationwide in 2000

Stony Brook University Hospital  
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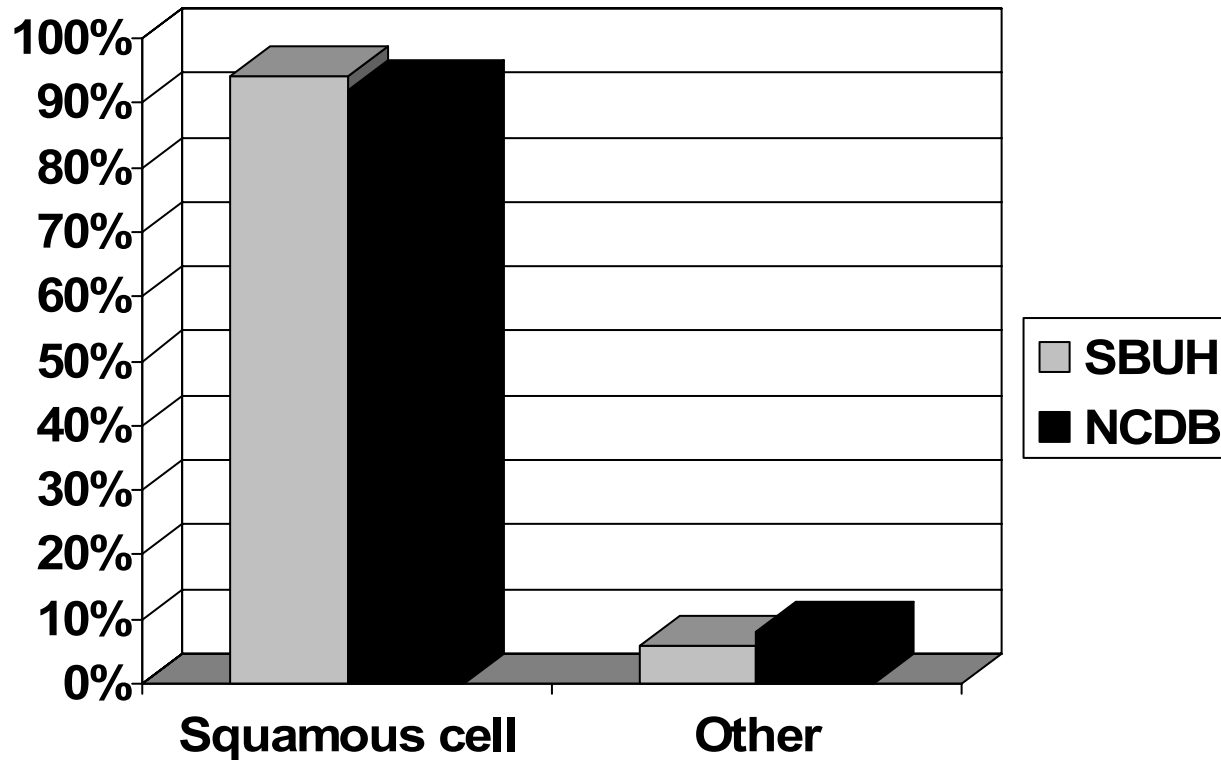
# Gender distribution for 108 cases of laryngeal cancer at SBUH from 1998 to 2002 compared to NCDB



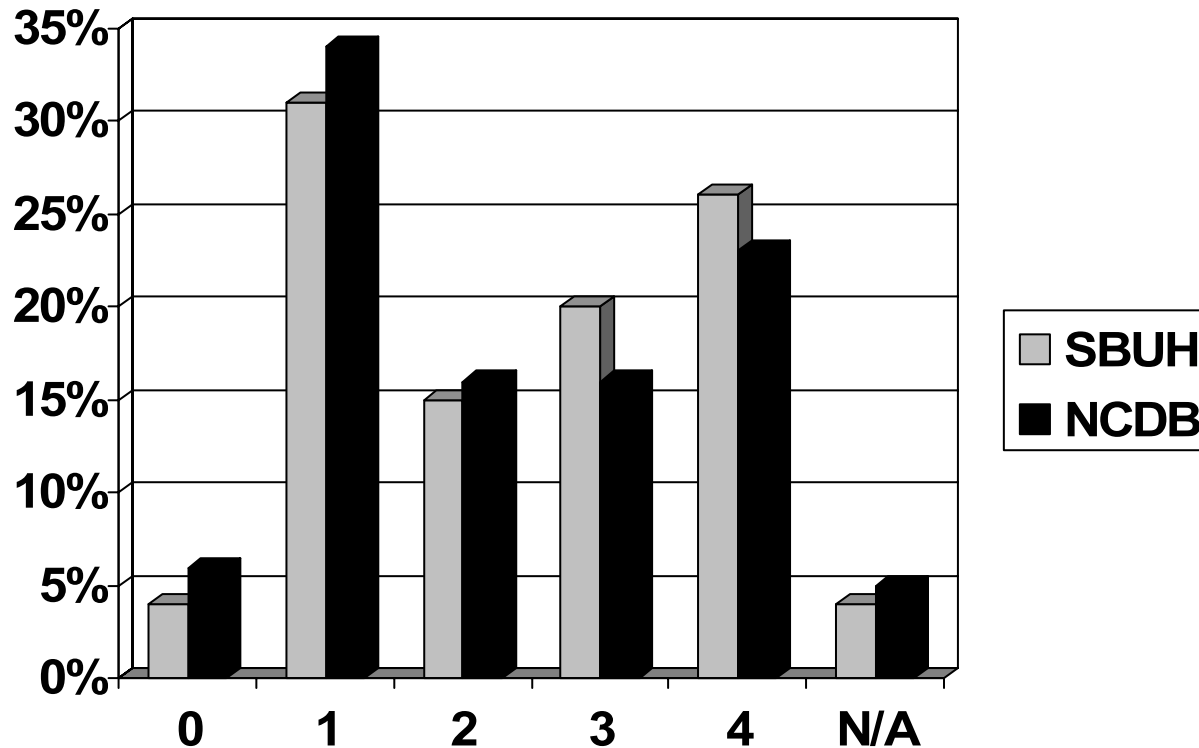
# Age at Diagnosis for 108 cases of laryngeal cancer at SBUH from 1998 to 2002 compared to NCDB



Histologic Type in Laryngeal Cancer for 108 cases at SBUH from 1998 to 2002 compared to 9,256 NCDB cases.



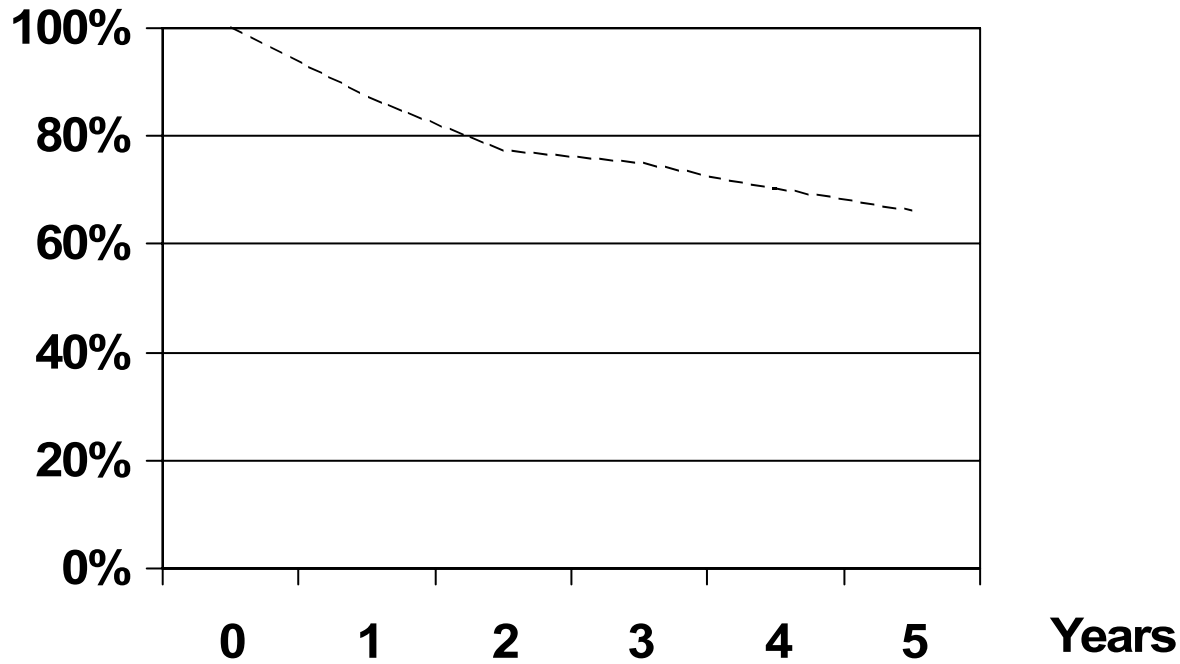
Stage at diagnosis in Laryngeal Cancer for 108 cases at SBUH from 1998 to 2002 compared to 9,256 NCDB cases.



Treatment modalities utilized in laryngeal cancer percent of 108 cases at SBUH from 1998 to 2002 compared to 9,256 NCDB cases.

Treatment	SBUH	NCDB
Surgery only	7%	18%
Radiation only	38%	33%
Surgery & Radiation	28%	23%
Radiation & Chemo	19%	12%
Chemotherapy only	2%	1%
Surgery, RT, Chemo	4%	2%
No treatment in 4 mo	2%	11%

# Laryngeal Cancer 5 Year Survival percent per 100,000 cases, NIH SEER Program.



## Head and Neck Cancer Summary: Changing Trends in Treatment of Head and Neck Cancer

The incidence of head and neck cancer has not changed significantly in the last decade. The incidence among men continues to exceed that among women (Figure 1). The majority of head and neck cancers are squamous cell carcinomas (Figure 2) arising from larynx, oral cavity and oropharynx (Table 1). Age prevalence is in the fifth, sixth and seventh decades of life (Figure 3). While the overall 5-year survival rates have not changed significantly, the way in which these cancers are treated has changed.

The trend today is to preserve function and esthetics for quality of life. This is possible because of improved surgical reconstructive techniques as well as the routine use of chemotherapy with radiation therapy for advanced cancers. Multidisciplinary evaluation by specialists in head and neck cancer surgery, radiation oncology, medical oncology, dentistry and speech rehabilitative support result in optimal management of the patient and best outcome. Accurate staging is an important part of treatment planning conferences. Stony Brook University Hospital provides a multidisciplinary approach, which includes experts who are involved in diagnosis, treatment and rehabilitation.

Treatment of head and neck cancers has traditionally been surgical excision and postoperative radiation therapy for advanced disease. However, surgery can result in difficulties in speaking, swallowing and chewing, not to mention potentially unsightly appearance. Advancements in the development and implementation of new surgical techniques and methods have significantly improved the outcome of treatment. In prior years, local tissue and/or pectoralis muscle was used to reconstruct a large defect. The disadvantages of such techniques are wound complications resulting from using a limited supply of donor tissue and the inability to replace missing tissue with tissue of similar composition, for example bone for a jaw defect. We have been able to overcome these limitations in the last decade with routine use of microvascular free flaps, a technique in which tissue of various compositions (skin, muscle, bone) is transferred with its blood supply to the defect and revascularized. These free flaps can be "custom fitted" into a defect to restore the original composition of the resected tissue as well as the patient's anatomy. For example, the fibula, a non-weight bearing leg bone, with its overlying skin is now routinely used as a microvascular free flap to reconstruct a large defect resulting from resection of one-half of the jaw and floor of mouth. The well-vascularized fibula bone reconstitutes the missing jaw, and the thin leg skin restores the floor of mouth sulcus to maintain tongue mobility. At a later date, dental implants can be placed into this vascularized bone to allow the patient to use a stable, functional denture. This technique of microvascular free flap reconstruction has significantly improved functional outcome following head and neck cancer surgery.

There has also been a trend towards treating more advanced (Stage III and Stage IV) head and neck cancers with a combination of chemotherapy and radiation therapy (chemo+XRT), the so called "organ preservation" regimens. Chemotherapy can be given prior to radiation (induction), or given along with radiation (concurrent). Surgical treatment of primary tumor stage T3 and T4 laryngeal cancers usually requires total laryngectomy, the complete removal of the larynx, resulting in significant alterations in lifestyle. Patients have to re-learn how to produce a voice, which is never normal. Certainly, surgical treatment of T4 cancers requires total laryngectomy. In carefully selected patients, T3 laryngeal cancers can be treated with conservation laryngectomy, where a portion of the vocal cord can be preserved to allow patients to maintain their voices. However, with this type of surgery the patient may require a chronic tracheostomy tube. The alternative treatment modality for advanced squamous cell cancers of the larynx is to use non-surgical treatment, referred to as "organ preservation" approach.

National and international trials have evaluated the outcome of treating advanced laryngeal cancers using different treatment modalities. Patients and the treatment modality they received were grouped as follows:

- Group A. Chemo+XRT followed by surgery for persistent/recurrent disease
- Group B. Surgery with postoperative radiation
- Group C. Radiation followed by surgical salvage for persistent/recurrent disease.



The conclusions derived from analysis of all the results from these numerous trials are:

- 1.) Chemotherapy given concurrently is more effective than given as an induction agent; however, toxicity and side effects from concurrent treatment are much greater than when given sequentially. In some concurrent chemo+XRT trials, this resulted in patient drop out rates as high as 50%, with patients changing to Group B or Group C.
- 2.) Of the patients who were able to withstand the toxicity of concurrent chemo+XRT and complete the treatment, the percentage of larynges preserved in Group A were higher than the percentage preserved in Group C.
- 3.) Most of the studies did not demonstrate a significant difference in the overall survival rate between the three treatment groups.
- 4.) While two of the trials suggested a trend towards a lower incidence of distance metastasis in patients treated with chemo+XRT, other trials failed to demonstrate any difference.

Based on these results, there has been a trend nationally to treat Stage III and Stage IV laryngeal squamous cell cancers with concurrent chemo+XRT. Early stage (I and II) cancers can either be treated with voice preservation partial laryngectomy, endoscopic laser surgery or radiation therapy. These early stage lesions are not treated with chemo+XRT. Figure 4 shows the treatment modalities utilized for laryngeal cancer at SBUH, which is compared to national data from the National Cancer Data Base (NCDB). Our chemo+XRT group is slightly higher than that of NCDB. This may be a reflection of the higher percentage of advanced stage III and IV cancers that are seen at SBUH (Figure 5). There is also now a trend to treat advanced oropharyngeal cancers, particularly base of tongue, with concurrent chemo+XRT, since extensive resection of the base of tongue can result in persistent swallowing problems with the risk of aspiration. Oral cavity cancers, such as those arising from anterior tongue, floor of mouth or mandible are best treated with surgery first, since the morbidity from surgery is relatively low, and the functional outcome can be excellent with the use of microvascular free flaps.

While the organ preservation approach does preserve the anatomical structures, there is a great risk of potential short and long-term side effects, such as xerostoma, swallowing difficulties, dental caries and jaw bone necrosis, and other side effects of chemotherapy. As we trend toward using more chemotherapy and radiation therapy protocols for head and neck cancers, these patients need to be managed jointly by multiple disciplines. They will receive pre and post dental care to maximize the outcome of treatment they receive and minimize complications such as jaw necrosis, speech and swallowing difficulties. Speech pathologists work vigorously with patients to evaluate and rehabilitate their swallowing dysfunctions. These patients are followed closely for response to therapy and possible recurrence by the treating team, who provide a team approach to decision making in both treatment and follow-up. Cancer surveillance follow-up examinations include state-of-the-art imaging modalities such as the new PET-CT scanner. These advanced imaging modalities can detect recurrence in the soft tissues before it becomes evident to the examining eye. Outcomes are monitored and compared to benchmark data. National Cancer Institutes, Surveillance End Results and Epidemiology (SEER) overall 5-year survival rate per 100,000 [patients] is 66% in cancer of the larynx (Figure 6). Detecting cancers and recurrences early will improve patient survival. Sophisticated Interventional Radiology techniques at Stony Brook University Hospital, including CT and ultrasound imaging, along with the utilization of minimally invasive image guided biopsies, allow for early detection, optimal staging and accurate cancer surveillance. The importance of participation in screening and health education is emphasized and encouraged for early detection and disease prevention.

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