Introduction

Over the past 20 years there has been a fundamental change in the way that advanced laryngeal malignancies are treated. The first pioneering paper was the frequently cited Veterans Affairs Study which demonstrated that advanced laryngeal carcinoma could be treated with induction chemotherapy plus radiotherapy compared to total laryngectomy with radiotherapy. This paper demonstrated that induction chemotherapy had no effect on survival but did have a significant impact on the quality of life of patients. In 2003 the RTSG-11 study published in the Journal of the National Cancer Institute demonstrated that concurrent chemotherapy with radiotherapy compared to induction chemotherapy with radiotherapy alone had a significant impact on survival and the quality of life of patients. The RTSG-11 study also demonstrated that concurrent chemotherapy was superior to induction chemotherapy with radiation and to radiation alone.

A study in 2006 demonstrated over 20 years the survival rates of laryngeal squamous cell carcinoma had been declining. This information has called into question the indication for laryngectomy for laryngeal carcinoma. Laryngectomy for preservation therapy involves laryngeal preservation but also controlling local and regional disease. In the USA, it has been reported as a treatment option for advanced laryngeal carcinoma. Despite a lack of functional larynx, these patients suffer a significant impact on their quality of life. Patients who undergo chemoradiation under the care of head and neck oncology patients often suffer from chemo-radiation toxicity of the larynx and undergo multiple biopsies to investigate for neoplasm and often undergo extended courses of antibiotics. The gold standard in treating these advanced lesions has been total laryngectomy with bilateral neck dissections followed by radiation therapy. Recent studies have demonstrated that the survival for patients with laryngeal cancer has decreased over the past 20 years. Additionally it has been noted that patients undergoing total laryngectomy for advanced lesions had better survival compared to organ preservation therapy.

In addition to survival the concept of quality of life has played an increasingly large role in the care of head and neck oncology patients. While cure and patients survival are the primary outcome it is becoming increasingly apparent that attention must be paid to the quality of the patient population. Patients who undergo chemoradiation under the care of head and neck oncology patients may have some functional larynX. For these patients functional larynx has a significant impact on their quality of life. In addition to being a key part of the function of communication, speech and swallowing, the larynx has a significant impact on self esteem and quality of life. It is because of this fact that the number of patients who undergo total laryngectomy following chemoradiation continues to increase.

Methods

Objective: To analyze the Loyola experience in treating advanced laryngeal malignancies, focusing on patients who successfully underwent chemoradiation eradicating their malignancy but were left with a non-functional larynx because it had become non-functional following therapy.

Inclusion criteria: Patients undergoing total laryngectomy following successful chemoradiation for squamous cell carcinoma of the larynx. These patients presented with advanced lesions of the larynx and underwent multiple biopsies to investigate for neoplasm and often underwent extended courses of antibiotics.

Results

A total of 143 total laryngectomies were performed at LUMC between 2004-2012. Thirty-three patients underwent total laryngectomy following successful chemoradiation for squamous cell carcinoma of the larynx. The absence of squamous cell carcinoma was histologically proven in all surgical specimens. All seven patients had been treated at the Loyola University Health Care System.

Discussion

Laryngeal carcinoma accounts for approximately 12,000 new cases annually. In the vast majority of cases the pathology is squamous cell carcinoma. Thirty-eight percent of all new cases are diagnosed at an advanced stage. Over the past 20 years there has been a significant shift in the treatment of patients with advanced laryngeal carcinoma. Laryngectomy with preservation therapy has played a significantly larger role in the treatment of these advanced laryngeal tumors. This in turn has lead to an increased role of salvage total laryngectomy in cases of persistent or recurrent disease. These salvage cases come with increased risk of complications due to tissue damage following chemoradiation.

Total laryngectomy has been the standard by which all alternative treatments have been compared to for over 120 years. The VA Study in 1991 and the RTSG-11 study in 2003 drastically changed the treatment of advanced laryngeal malignancies. The concept and practice of preserving patients with advanced lesions while keeping their larynx intact was revolutionary and ushered in the era of non-surgical organ preservation therapy for advanced lesions.

Table 1. Patients Undergoing Total Laryngectomy Following Successful Chemoradiation

<table>
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<th>Patient Number</th>
<th>Age at Surgery</th>
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Conclusions

A total of seven patients were identified that underwent total laryngectomy following successful chemoradiation for squamous cell carcinoma of the larynx. These patients presented with advanced lesions of the larynx and underwent multiple biopsies to investigate for neoplasm and often underwent extended courses of antibiotics. We sought to investigate the number of patients who underwent total laryngectomy due to a non-functional larynx as a complication of successful chemoradiation at Loyola University Medical Center since 2004. This year was chosen as it marked the start of patients being routinely treated with organ preservation therapies for advanced laryngeal malignancies. Our review demonstrated that approximately 5% of all total laryngectomies performed at Loyola during the past 20 years were performed as a complication of successful chemoradiation.

References