TOTAL LARYNGECTOMY IN THE ERA OF ORGAN PRESERVATION. OUR EXPERIENCE IN A TERTIARY CENTER.

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Abstract:

In the era of organ preservation, majority of the Total Laryngectomies (TL) has been reserved only to advanced laryngeal cancer which is not suitable for conservative treatment or failure of the conservative treatment. With the objective of identifying the trend in TL, a retrospective chart review was done from January 2010 to May 2016 at the Department of Otorhinolaryngology and Head and Neck Surgery of National Academy of Medical Sciences. The data showed that 29 TL were performed. Majority of them (72%) were for advanced squamous cell carcinoma of the larynx. The study demonstrates that TL has a declining trend however incidence of laryngeal carcinoma has not.

Keywords: Laryngeal cancer, Laryngeal surgery, Total laryngectomy

INTRODUCTION

Laryngeal carcinoma is the third most common carcinoma in Nepalease males following carcinoma of the lung and stomach. It is the most common malignancy in the head and neck.[1] The first laryngectomy was carried out by Billroth in Vienna in 1873 for carcinoma of larynx.[2] This surgery is addressed, mainly, to advanced laryngeal malignancy and failure of conservative treatment however this is also performed for chemoradio-resistant laryngeal tumours, malignancy of adjacent anatomical structures, benign and extensive tumours with malignancy potential (recurrent laryngo-tracheal papillomatosis), laryngeal stenosis, intractable aspiration and chondroradionecrosis. Until approximately 1990, majority of laryngeal carcinomas were treated surgically. Total and partial laryngectomy were gold standard procedures to treat malignant tumors of the larynx. A paradigm shift in treatment occurred in the early 1990s with the advent of organ preservation treatments using radiotherapy and chemotherapy. The findings of the VA laryngeal cancer study group in 1991 demonstrated that nonsurgical therapy (induction chemotherapy followed by radiotherapy) had similar survival rates as primary surgery for advanced laryngeal tumors(Stage III and IV).[3] Another landmark study published in 2003 by the Radiation Therapy Oncology Group (RTOG) published by Forastiere et al stated that radiotherapy with concurrent administration of cisplatin was superior to induction chemotherapy followed by radiotherapy or radiotherapy alone for laryngeal preservation and loco-regional control in advanced laryngeal carcinoma.[4] The advantage of organ preservation and no postoperative stoma care is an appealing option to the patients. Despite the increased use of chemoradiation in the treatment of advanced laryngeal cancer, surgery is still frequently required.

MATERIALS AND METHOD

To identify the current trend in TL at a tertiary centre of Nepal, retrospective chart review of patients was done from January 2010 to May 2016. All the cases diagnosed with malignant laryngeal neoplasms were identified along with the total number of patients who went through TL. Any surgeries less than total laryngectomy was excluded. Demographic data, stage of the disease, site of the disease, indication of surgery and surgical outcome was recorded.

RESULTS

A total of 29 TL were identified. Majority of them, 55 %(n=16) were for squamous cell carcinoma of the larynx. Among them 6 were for stage III and 10 were stage IVa carcinoma. 17% (n=5) were salvage surgeries. The remaining 27% were for malignant salivary gland neoplasms, hypopharyngeal carcinoma and irreparable laryngeal trauma (Figure I).

A total of 23 cases were histologically diagnosed as laryngeal carcinoma in the year 2010 while this number has increased to 32 per year in May 2016 however the number of cases receiving TL as a primary treatment has decreased (Figure 2).

Over the period of 6 years, a total of 163 new patients were histologically diagnosed with

laryngeal squamous cell carcinoma. Among them, 76% (n=124) patients had early laryngeal cancer stage I and II, while 20% (n=34) had advanced resectable laryngeal cancer Stage III and IVa. Only 4 %(n=5) had unresectable tumors or distant metastasis stage IVb and IVc. Among the patients who had advanced resectable laryngeal cancer, only 47% of the patients went through TL.

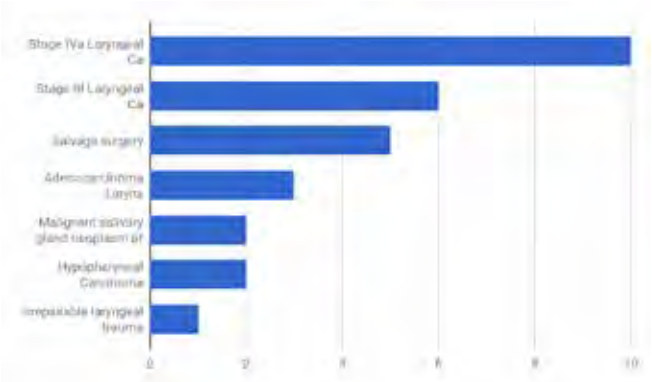

Figure I : Indications of Total Laryngectomy

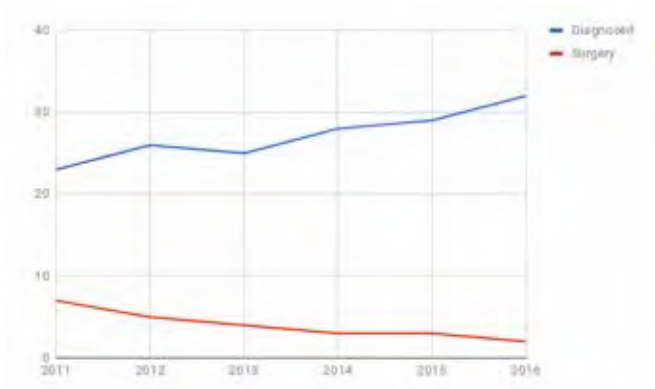

Figure II : Number of new cases of laryngeal carcinoma and total laryngectomy.

DISCUSSION

The procedure of total laryngectomy has decreased considerably over the years as other modalities of treatments have become more appealing, however majority of the total laryngectomies are still being performed for advanced squamous cell carcinoma. In contrast to the findings of VA laryngeal group and RTOG, Chen A.Y, in his publication in 2007 stated that primary TL was associated with increased survival compared with CRT or RT alone in advanced laryngeal carcinoma.[5] Dziegielewski et al demonstrated a superior survival rates for T3 and T4a laryngeal cancers with TL with RT/CT versus RT or CRT alone.[6] Despite the superior survival rates in total laryngectomy, voice handicap, oropharyngeal dysphagia and difficulty in socializing can compromise the quality of life. In Advanced laryngeal carcinoma, radiation therapy alone can be considered for patients who are medically unfit to undergo surgery however survival rate is low. CRT has better survival than RT alone.[5]

Early laryngeal carcinomas can be treated with single modality treatment. Horizontal or vertical partial laryngectomy and various minor procedures on the glottis can be performed. Both surgery and irradiation are equally effective at treating early laryngeal carcinoma however speech and voice are significantly better in patients treated by irradiation than in those treated by surgery.[7]

Our study demonstrated that more cases of laryngeal Ca are being diagnosed every year however, Coupland et al have shown that age-standardised rates for laryngeal cancer has declined in both sexes.[8] Wünsch Filho V has demonstrated that incidence rates for laryngeal cancer among males have been decreasing since the late 1980s while, among females, the rates have shown a stable trend.[9] This phenomenon is probably the result of changes in gender behavior related to tobacco smoking.

Evidence suggests that radiation efficacy is improved and treatment time shortened with accelerated and hyperfractionated treatment schemes. Okubo et al demonstrated excellent local control rate for laryngeal carcinomas, attributable to the effect of accelerated hyperfractionation.[10] No late toxicities of grade 2 or more was noted among the 39 patients treated and was safe and effective for patients with moderately advanced laryngeal carcinomas. Sakata et al showed that accelerated hyperfractionation had significantly improved the local control rates for T1 glottic cancer however had more severe mucosal reactions but no severe late reactions.[11]

In patients with laryngeal cancer, radiotherapy with concurrent administration of cisplatin is superior to induction chemotherapy followed by radiotherapy or radiotherapy alone for laryngeal preservation and locoregional control.[4] However concurrent chemoradiotherapy protocols are associated with significant acute and late toxicities which has led to recent interest in targeted therapies such as monoclonal antibodies (eg, cetuximab). Cetuximab is presently used in many organ preservation protocols for laryngeal cancer following a landmark multicenter trial.[12]

CONCLUSION

Therapy for laryngeal cancer is based on the tumor type and staging, patient's general condition, and the surgeon's and institution's preferences and experience. Treatment must be individualized to consider each patient. Due to the development in radiotherapy and chemotherapy the number of TL being performed has dropped considerably. The advantage of organ preservation, lower long term adverse effects and no postoperative stoma care provides a more appealing option to the patients.

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