Complications of Laryngectomy

Adnan, Mahmood Alam, Akif Rafi, Ali Inam Khan, Saffaf Habib, Gul Naeem

ABSTRACT

Background: Wound complications after head and neck surgery are associated with increased patient morbidity, inevitably increased health care costs hospitalization, and resource utilization. Multiple risk factors have been implicated in the development of complications including site and extent of surgery, previous radiotherapy (RT), radical neck dissection and flap reconstruction.
Objectives. To analyze patients with squamous cell carcinoma (SCC) of the larynx who were treated between 2010 and 2017 at a single institution and to report the incidence of postoperative complications for total laryngectomy (TL).
Materials and Methods: This was a retrospective study carried out on patients of total laryngectomy from 1st January 2010 to December 2017 in ENT Aunit Hayatabad Medical complex Peshawar. Total no of17patients were included in this study.
Results: In our study 17 patients of squamous cell carcinoma larynx stage III&IV were included . All were male no female case presented. Age range was from 34 to 72 years. Postoperative complications were recorded for the period of 1 month. 6 patients developed complications. Most common complication was pharyngocutaneous fistula 3 (17%) cases, 2 (11.7%)cases with post operative hematoma and 1 (5.8%)case of wound dehiscence. No mortality occurred in our series. All cases who were operated out side and admitted later in our unit were not included in this study. We recorded complications for period of 1 month.
Conclusion: Primary total laryngectomy offers the best survival rate with low complications for advanced laryngeal squamous cell carcinoma. Salvage Total Laryngectomy causes more frequent local complications, especially after chemo radiotherapy
Key words: *Squamous cell ca, Laryngectomy, Complications*

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INTRODUCTION

The burden of cancer is increasing in economically developing countries as a result of population aging and growth as well as, increasingly, an adoption of cancer-associated lifestyle choices including smoking, physical inactivity, and "westernized" diets. [1] Cancer is the leading cause of death in developed countries and the second leading cause of death in developing countries. [2]

Squamous cell cancer of larynx significantly affects the quality of life and causes serious disease burden to public health in the long run.& There are important psychological and socioeconomic implications involved when the main organ of speech production is affected, as it impacts an individual's ability to communicate. [3]

Cancer of the larynx is fourteenth most common cancer in the world and it is the second most common cancer in head and neck following oral cavity cancer, as well as the second most frequently cancer occurred in respiratory tract except lung cancer. [4]

Laryngeal cancer occurs more commonly in men than in women (5.8 cases per 100,000 vs 1.2 per 100,000, respectively). [5] Approximately half of global laryngeal cancer cases (77,505/156,877) and deaths (44,639/83,376) occurred in Asia. [6]

Complications after total laryngectomy can be divided into local (fistula, infection, chyle leak, carotid rupture, and flap necrosis) airway and swallowing difficulties, and general (pulmonary, metabolic, myocardial infarction, urinary infection). Such complications significantly affect morbidity, hospitalization and costs of treatment. [7]

Larynx preservation using chemo radiotherapy became increasingly popular during the latest 20 years. [8] This concept offers potential preservation of voice and swallowing with survival similar to primary laryngectomy. Salvage laryngectomy was reserved after failure of such treatment, when persistent disease or when biopsy proved recurrent tumor is present. However, salvage surgery is accompanied with significantly larger number of complications. [9]

1. Department of ENT and Head & Neck Surgery
Post Graduate Medical Institute/HMC, Peshawar

Correspondence: Dr Adnan
Assistant Professor ENT and Head and Neck Surgery
KGMC/HMC Peshawar
Email: adnanhmc@gmail.com
Cell: 03339192034

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MATERIALS AND METHODS:

This was a retrospective study carried out in ENT A unit Hayatabad Medical complex Peshawar on patients of total laryngectomy from 1st January 2010 to 31stDecember 2017. Medical record of all patients were retrieved from their hospital charts. Total no of 17 patients were included in this study who were primarily operated in our unit. All patients with primary surgery or post chemo radiotherapy residual disease admitted in our unit and later total laryngectomy performed were included in this study. Patients who were brought to our unit later after surgery been done out side were not included in this study.

RESULTS

In our study 17 patients of squamous cell carcinoma larynx stage lll & IV were included . All patients were male. Age ranges from 34 to 72 years. 2 (11%)cases were below 40 years, 5(29%) patients were in ages between 40 and 50 years, 7 (41%) patient ages were in between 50 to 60 years and 3 (17%) patients were above 60 years.(Table1)

Postoperative complications were recorded for the period of 1 month. 6 patients developed complications. Most common complication was pharyngocutaneous fistula 3 (17%) cases, which was developed later after 7 days. 2 (11.7%) cases with post operative hematoma were shifted to operating room and re-explored. 1(5.8%) case of wound dehiscence developed on 8th day, which was treated conservatively(Table2). In our series of postoperative complications, 5(29%) cases received preoperative radiation. (Table 3) No mortality occurred in our series.

DISCUSSION:

For squamous cell carcinoma of larynx there are many treatment options. These include micro laryngeal surgery to total laryngectomy, radiation, chemoradiation and combined modalities.

Total laryngectomy is a radical procedure which involves removal of whole of the larynx. This procedure is useful in treatment of advanced laryngeal cancer and salvage procedure when previous partial laryngeal surgery or radiotherapy has failed. Study by Schwartz et al. Comprising 2000 patients from multiple institutions from 1989 to 1999 reported an increased incidence of wound complications in patients with a history of previous Radiotherapy.[10]

Complications after laryngectomy such as pharyngocutaneous fistula, wound infection, chyle leak, swallowing and airway problems have a significant impact on morbidity causing prolonged hospitalization and inevitably increased health care costs. Multiple factors contributing to increased risk of wound complications have been implicated, including prior radiotherapy, chemo-radiotherapy, malnutrition, duration of surgery, anemia, tobacco use, medical comorbidity, preoperative tracheostomy, radical neck dissection, and flap reconstruction.[11]

In our series of cases all 17 patients were male contrary to literature. Iseh k. in his study recorded male-to-female ratio of 3.5:1.[12]Tavane et al suggested that factors closely related to male sex are smoking and drinking behavior, responsible for the considerably high ratio of male to female rates of the laryngeal tumors.[13]

We have recorded ages 34 to 72 years, while 2 cases were under 40 years of age. Ganly et al reported age group was mainly 5th& 6th decade. The age range was 20-70 years with a mean age of 47years for males and 33.8 years for females.[8]

In our study the most common complication after laryngectomy recorded was phryngocutaneous fistula. 3 (17.6%) patients developed fistula out of 17. Postoperative pharyngocutaneous fistula is a major complication of total laryngectomy that prolongs the short hospitalization of 2 to 3 weeks to many weeks or even months. It is a common complication that increases the morbidity and mortality of the procedure. The management of this problem increases hospitalization time and delays initiation of postoperative radiotherapy, where indicated. General factors taken into account were concurrent diseases such as diabetes, liver diseases, or chronic anemia; local factors included radiotherapy before and after surgery, preoperative tracheostomy, type of cervical lymph node removal, and method of pharyngeal closure. Incidence of pharyngocutaneous fistula has been reported in the literature between 3% to 65%. [11,14]In our series all three cases received preoperative radiation. Preoperative radiotherapy is reported as a significant risk factor in the development of pharyngocutaneous fistula, though some studies deny any statistical significance of preoperative

chemoradiation. Multiple risk factors have been investigated, including tumor stage, tumor site, concurrent neck dissection, preoperative or postoperative hemoglobin level, comorbid illness, prior tracheotomy, use of prophylactic antibiotics, type of suture material used, type of drain used, type of closure, duration of surgery, and preoperative radiotherapy.[14]

In our series all patients who received chemo-radiation, low Hb (less then 11gm/dl) levels were observed post operatively in patients with pharyngocutaneous fistula. None of our patients had positive surgical margins.

In our series 2 (11%) cases developed hematoma at wound site. Both patients were shifted back to operating room and re explored. Arecent study by Schwartz et al.comprising2000 patients from multiple institutions from 1989 to 1999 reported an increased incidence of wound complications in patients with a history of previous RT.[10]

1 (5%) patient had wound dehiscence in second week. Multiple factors contributing to increased risk of Wound complications have been implicated, including prior radiotherapy, chemo-radiotherapy, malnutrition, duration of surgery, anemia, tobacco use, medical comorbidity, and others. However, studies about complication rates are often limited by small sample sizes, as well as by variability in the type of surgery performed, the tumor site and stage, and the method of reconstruction. In addition, the definition of complication varies among studies.[14]When chemotherapy is combined with RT, wound complications increased in some studies.[15]

Chemotherapy alone has been reported to increase wound complications in patients with advanced-stagehead and neck carcinoma. Schuller et al. reported a wound complication rate of 46% after 3 cycles of chemotherapy whereas Cory et al. reported a wound complication rate of 56% after induction methotrexate[16,17].

Because this was a retrospective study, we were unable to assess the impact of nutritional status in our analysis. This is best measured by the prognostic nutritional index, which is a combination of biochemical factors (serum albumin, transferrin), immune competence (total lymphocyte count, hypersensitivity skin tests), and anthropometric measurements (body mass index, arm muscle circumference, and skin fold thickness). In head and neck carcinoma, nutritional status deteriorates during CTRT or hyperfractionated RT and this has been shown to have a negative effect on morbidity, mortality, and also survival[18].

CONCLUSION:

Primary total laryngectomy still offers the best survival rate with low complications in advanced laryngeal squamous cell cancers. Salvage total laryngectomy is associated with an increased incidence of overall, local, and fistula complications when the surgery is performed after CTRT treatment failure. Problems related to local wound healing, especially the development of pharyngocutaneous fistula, constituted the most common postoperative complication in these patients.

Table 1. Age of patients

Age Range	No	%
Below 40 years	2	11
4th Decade	5	29
5th Decade	7	41
6th Decade	3	17

Table 2. Complications

Complication	No	%
Pharyngocutaneous Fistula	3	17
Hematoma	2	11.7
Wound Dehiscence	1	8

Table 3. Preoperative Radiation

Preoperative Treatment	Pharyngo Cutaneous Fistula	Hematoma	Wound Dehiscence	Total	Percentage
Radiated Patients	3 (17%)	1 (5.8%)	1 (5.8%)	5	29.4%
Non Radiated Patients	None	1 (5.8%)	None	1	5.8%

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