

Early Complications of Total Laryngectomy: A Retrospective Study

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Objective:

To observe the various complications following total laryngectomy.

Materials and methods:

This is a retrospective study carried out in 54 patients at Ganesh Man Singh Memorial Academy of ENT and Head and Neck Studies, TU Teaching Hospital, between April 2004 and January 2009. All patients who underwent total laryngectomy for histopathologically proven carcinoma larynx and pyriform fossa sinus of various types were included. Complications during early postoperative period (within 2 weeks) were noted. Statistical analysis was done by simple manual analysis using frequency and percentage.

Results:

There were 54 patients included in the study, 48 males (88.88%) and 6 (11.12%) females. The age of patients ranged from 38 years to 78 years with an average of 58 years. Twenty patients developed complications postoperatively. Most common complications were pharyngocutaneous fistula (6 patients), wound infection (4 patients) and superficial flap necrosis followed by wound haematoma (2 patients) and chylous fistula (2 patients).

Conclusion:

Pharyngocutaneous fistula and wound infections are the most common complications after total laryngectomy. Assessment of risk factors and early recognition of complications are necessary to reduce the complications after total laryngectomy.

Keywords:

Laryngeal cancer, total laryngectomy, early complications.

INTRODUCTION:

Laryngeal cancer is an important malignancy in head and neck region. There are many therapeutic options available for the treatment of laryngeal cancer. These include total laryngectomy, chemo-radiation therapy or combined therapy.¹

Total laryngectomy is a radical procedure, which involves removal of whole of the larynx. This procedure is useful in the treatment of advanced laryngeal cancer² and as a salvage procedure when previous partial laryngeal surgery or radiotherapy has failed.¹ Complications following total laryngectomy can cause serious implications on the final outcome of the treatment, like pharyngocutaneous fistula, wound infection, flap necrosis, haematoma, chyle fistula, and carotid blow out which can prolong hospitalization and increase morbidity. The risk factors involved in the development of these complications should also be recognized and avoidance of these risk factors will reduce the occurrence of complications. This study was done to observe the various complications following total laryngectomy.

MATERIALS AND METHODS:

This retrospective study was conducted at Ganesh Man Singh Memorial Academy of ENT and Head and Neck Studies, TU Teaching Hospital, between April 2004 and January 2009. All patients who underwent total laryngectomy for histopathologically proven carcinoma larynx and pyriform fossa sinus of various types were included. Complications during early postoperative period (within 2 weeks) were noted. Statistical analysis was done by simple manual analysis using frequency and percentage.

RESULTS:

There were 54 patients included in the study, with 48 males and 6 females. The age of the patients ranged from 38 years to 78 years with an average age of 58 years. Out of these 54 patients, 20 patients developed complications. Most common complication was pharyngocutaneous fistula (6 patients, 30%) which was developed from seventh to twelfth post-operative day following surgery. It was managed conservatively in 5 patients and surgical repair was done in 1 patient. Wound infection was second common complication (4 patients, 20%). Other common complications were superficial flap necrosis (3 patients, 15%), chylous fistula (2 patient, 10%) and wound

Table 1. Types of complications after total laryngectomy

Complications	Number of patients	Percentage (%)
Pharyngocutaneous fistula	6	30
Wound infection	4	20
Superficial flap necrosis	3	15
Wound haematoma	2	10
Chylous fistula	2	10
Flap edema	2	10
Dysphagia	1	5
Total	20	100

haematoma (2 patients, 10%). (Table: 1).

DISCUSSION:

Carcinoma of larynx accounts for 40% of all head and neck malignancies.³ Its incidence varies worldwide. In our study, the mean age of patients was around 58 years with male preponderance. The main forms of treatment for head and neck cancer include surgery and radiotherapy. Initially, these are used aiming for cure. However, in some circumstances, they serve as a palliative treatment, depending on the type of tumor, extension, clinical condition and patient preferences. The correct diagnosis and staging are essential in the decision making process.⁴ Other factors, which should be considered, are age and general condition of patient, hospital facilities available and experience of surgical team.

Total laryngectomy consists of the complete resection of the cartilagenous larynx, the hyoid bone and the infra-hyoid muscles connected to the larynx. This surgical procedure is associated with bilateral anterior selective cervical dissections, (levels II, III and IV).⁵ Among postoperative complications after total laryngectomy, hemorrhages, bruises, respiratory obstructions, infection of the surgical wound and pharyngocutaneous fistula are noteworthy.⁵ The reported incidence of wound complications are 38-53%, and those after pretreatment with radio-therapy alone and in combination with chemotherapy were 37-74% and 46-100%, respectively.⁶ Although the subjects and methods varied among reports, these findings

indicated that the incidence of complications was higher when concomitant radiotherapy and chemotherapy was performed. In our study, the incidence of wound complications was 37%. Risk factors of head and neck surgery for wound complications (including fistula) are preoperative radiotherapy, preoperative chemo radiation, preoperative chemotherapy, age, stage, internal medical complications, preoperative weight loss, positive stump, and a history of habitual alcohol drinking.⁷

Development of pharyngocutaneous fistula (PCF) is the most common and troublesome postoperative complication following laryngectomy. Billroth was the first person to report PCF as a complication.⁸ PCF after laryngectomy occurs when there is a failure in the pharyngeal repair resulting in a salivary leak.⁹ This is a demoralizing complication not only for the surgeons involved, but also for the patient and his family. Its occurrence leads to increased morbidity, delay in adjuvant treatment, prolonged hospitalization, and increased treatment costs.^{9,10} A rate between 13% and 25% has been often reported and only few reports had a rate of less than 10%.^{10,11} In our study, six patients (30%) developed this condition.

Preoperative radiotherapy is reported as a significant risk factor in the development of pharyngocutaneous fistula,¹² but some feel that this is not statistically significant.¹³ In our study, one patient which received preoperative radiotherapy developed postoperative pharyngocutaneous fistula. Positive surgical margins, extended hypopharyngeal mucosal excision and low haemoglobin level have also been reported as risk factors for the development of pharyngocutaneous fistula.¹³ In our study low postoperative haemoglobin level (less than 10 gm/dl) was present in all patients who developed pharyngocutaneous fistula. Spontaneous closure of fistula with conservative measures has been reported in 70% of cases,¹⁴ which is lower than in our study. This recent study revealed that 83.3% fistula closed spontaneously without any surgical intervention.

Postoperative wound infections are major source of infectious morbidity in total laryngectomy patients. The overall incidence of postoperative wound infection after major head and neck surgery is 23% and this becomes higher in those patients who have received preoperative radiotherapy.¹⁵ Administration of prophylactic antibiotics reduces the risk of postoperative infection. In total laryngectomy patients, we gave 1 gm ceftriaxone with 500 mg of metronidazole for surgical prophylaxis. Despite these measures, four patients (20%) developed postoperative wound infection. All the patients who developed postoperative wound infection were given postoperative cephalosporins and metronidazole. Other complications that occurred in our patients include dysphagia, chylous fistula, wound haematoma, superficial flap necrosis and flap edema which is similar to other series.^{4,15}

CONCLUSION:

Pharyngocutaneous fistula, wound infection and superficial flap necrosis are most common complications following total laryngectomy in early post operative period followed by wound haematoma and

flap oedema. Assessment of risk factors and early recognition of complications are necessary to reduce the complications after total laryngectomy. This is a preliminary study in a tertiary care centre of Nepal.

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