

Original Article

Postoperative complications and Its management after total laryngectomy

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Abstract

Objectives: To find out the pattern of complications, frequency, risk factors and the management after total laryngectomy.

Methods: It was a cross sectional study done in the Department of Otolaryngology & Head-Neck Surgery, Shaheed Suhrawardy Medical College Hospital, Dhaka from July 2007 to Dec 2009. 15 patients undergoing total laryngectomy for histologically proven Carcinoma larynx were included in this study. Patients were reviewed after surgery and any complication that occurred was recorded. The presentation, diagnosis and management of these complications were discussed after total laryngectomy.

Results: There were 15 male patients, 3 non radiated cases and 12 post irradiated cases. Age of patients ranged from 35-75 years. Complications included wound infection (04), pharyngocutaneous fistula (03), flap necrosis (01), pharyngeal stenosis (01), stomal stenosis (01) and stomal recurrence (01).

Conclusions: Wound infection and pharyngocutaneous fistula are most common complications after total laryngectomy. Preoperative radiotherapy is an important risk factor for development of pharyngocutaneous fistula in total laryngectomy patients.

Key Words: Total laryngectomy, Ca larynx, complications;

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Introduction

Cancer of the larynx is neither common nor rare¹. A higher incidence of laryngeal carcinoma has been reported from Asian population. In Bangladesh, it is the most common malignancy in men². Laryngeal cancer is an important malignancy in head and neck region. It represents 1% of all malignancies.¹ Over 95% of laryngeal carcinoma is treatable³.

There are many therapeutic options available for the treatment of laryngeal cancer. These include LASER surgery, partial laryngectomy, total laryngectomy and radiation therapy¹.

Total laryngectomy is a radical procedure which involves removal of whole of the larynx. This procedure is useful in the treatment of advanced laryngeal cancer⁴ and as a salvage procedure when previous partial laryngeal surgery or radiotherapy has failed.

Complications following total laryngectomy can cause serious implications on the final outcome of the treatment. Severe infection with flap necrosis resulting in carotid blow out can be life threatening. Pharyngo-cutaneous fistula can prolong hospitalization and increase morbidity.⁵ Fistula formation has an important effect on patient morbidity and mortality postoperatively. Similarly late complications like pharyngeal stenosis can result in swallowing difficulty,⁶ while stomal recurrence may render the tumour incurable thus adversely affecting the prognosis.⁷ It is therefore important to diagnose these complications early so that timely intervention can be done.

To find out various complications after total laryngectomy with respect to their presentation, diagnosis and management, this study was conducted on fifteen patients who had undergone total laryngectomy.

Methods

It was a cross sectional study conducted in Department of Otolaryngology & Head-Neck Surgery, Shaheed Suhrawardy Medical College Hospital, Dhaka from July 2007 to Dec 2009.

Inclusion criteria: All patients who underwent total laryngectomy for histologically proven Squamous cell Ca larynx with N0 neck.

Exclusion criteria: All patients who underwent total laryngectomy along with additional surgical procedure like radical or functional neck dissection. Patients undergoing partial laryngectomy were also excluded from this study.

Every patient was assessed pre-operatively by thorough clinical examination and direct Laryngoscopy under general anesthesia to see the primary site and extension and biopsy was taken for histological confirmation of diagnosis. Nodal status was confirmed by CT scan of neck. The nature of the operation and its consequences were explained in details to the patient and to his family members. All patients were observed for any post operative complications during their stay in the hospital and after discharge from hospital a regular follow up visit record was maintained. The patients were examined at regular intervals monthly for three months. Later on patients were called for follow up after every six months for one year. During each follow up visit a thorough clinical examination was done in all patients and appropriate investigations were carried out where indicated. A complete record of complications, their diagnosis and treatment was maintained during this period.

Results

In these series 15 male patients were studied. Out of them 12 (80%) patients received pre-operative full dose curative radiotherapy.

The age of the patient ranged from 35 to 75 years. The mean age was 50 years. Most of the cases are supraglottic carcinoma 12(80%), Glottic carcinoma in 3(20%) and no subglottic carcinoma. In this study out of 12 supraglottic cases, 6 patients presented in stage II and 6 in stage III. Among the glottic cases 1 patient presented in stage II and 2 in stage III. Histologically all 15(100%) were squamous cell carcinoma. Tracheostomy was done pre operatively in 6(40%) patients and in the remaining 9(60%) during the time of operation.

Table- I
Site of growth (n- 15)

Site of carcinoma larynx	Number of patients	%
Supraglottic	12	80%
Glottic	3	20%
Subglottic	0	00%

Table- II
Preoperative TNM staging of carcinoma larynx patient undergone total laryngectomy (n- 15)

Site	TNM stage			
	StageI T ₁ N ₀ M ₀	StageII T ₂ N ₀ M ₀	StageIII T ₃ N ₀ M ₀ T ₃ N ₁ M ₀	StageIV T ₄ N ₀ M ₀ , AnyTN ₂₋₃ M ₀ Any TAnyNM ₁
Supra glottis	0	6	6	0
Glottis	0	1	2	0
Sub-glottis	0	0	0	0

Table- III
Relation of Complications with Preoperative Radiotherapy (n-15)

Complication	No. of patients	Relation with Preoperative Radiotherapy
Pharyngocuta neous fistula	3	2
Wound infection	4	3
Flap necrosis	1	1
Stomal stenosis	1	1

Table- IV
Immediate complications after total laryngectomy (n- 15)

Complication	Number of patients	Percentage %
Pharyngocuta neous fistula	3	20%
Wound infection	4	26.6%
Haematoma	1	6.6%
Flap necrosis	1	6.6%

Table-V
Delayed complications after total laryngectomy (n- 15)

Complication	Number of patients	Percentage %
Stomal recurrence	1	6.6%
Stomal stenosis	1	6.6%
Pharyngeal stenosis	1	6.6%

Patients were followed up monthly for 3 months and then after 6 months for one year. 3(20%) patients developed pharyngo-cutaneous fistula within 7th to 15th post operative day and these three patients were managed conservatively which involved adequate drainage, frequent dressings and fresh blood transfusion. With these conservative management fistula healed completely within 3 to 4 weeks. 4(26.6%) patients developed wound infection. Wound swab was sent for culture and sensitivity and antibiotics changed accordingly. Wound healed within 2-3 weeks with conservative treatment and adequate aseptic dressing. 1(6.6%) patient developed post operative haematoma which was drained immediately. This patient developed wound infection later on and was managed conservatively.

1(6.6%) patient developed flap necrosis which was partial and was managed conservatively with frequent dressing. 1(6.6%) Patient developed stomal stenosis, which was managed surgically. Tracheostomy of this patient was done pre operatively. 1(6.6%) patient developed stomal recurrence 4 months after surgery, which was confirmed by biopsy. The case was inoperable and he was sent for radiotherapy. The patient lost from further follow up. Voice Rehabilitation with oesophageal voice was tried in all patients. Primary or secondary tracheoesophageal fistula with Blom Singer valve was not used in any patient.

Discussion

Carcinoma of larynx is an important malignancy in head and neck region. It accounts for 40% of all head and neck malignancies⁸. In Bangladesh the cancer of larynx and hypo pharynx comprised around 21% of all cancer in males². In this study age distribution of laryngeal carcinoma was in between 35-75 years. This finding is almost consistent with the study of Aslam MJ et al⁸.

In this series, among 15 male patients. 12(80%) had supraglottic growth and 3(20%) had glottic growth

The incidence of supraglottic growth is higher in this country.

In the present study, pharyngocutaneous fistula developed in 20% patients. This rate is consistent with work of Parikh SR et al⁹, who in large series of 125 patients of laryngectomy reported 22% incidence of fistula⁹. The highest incidence of pharyngocutaneous fistula was reported as 66% by Bresson K et al¹⁰. The lowest incidence of pharyngocutaneous fistula was 2%¹¹.

Out of three patients developed pharyngocutaneous fistula in the post operative period two had pre operative radiotherapy and two had pre operative tracheostomy. This is consistent with the observation of a previous study that patient requiring preoperative tracheostomy had a higher fistula rate¹². In Memorial Sloan-Kettering Cancer Center in New York, Weingrad DN and Spiro RH analyzed that multiple factors are responsible to fistula formation. The only significant association was the extent of surgery. In their series, out of 48 patients who had undergone laryngectomy, pharyngocutaneous fistula developed in only 2 (4%)¹³.

Three patients developed pharyngocutaneous fistula in this series were managed

conservatively which is similar with the statement of SS Qureshi et al¹⁴. But the pattern of fistula management by Weingrad DN and Spiro RH was different which included simple closure and flap repair¹³.

Here, wound infection was developed in 26.6% of total laryngectomy. This rate is in accordance with the finding of Aslam MJ et al⁸. The factors probably responsible are absence of well trained and well oriented nursing staff, inability to maintain absolute sterilization in the post operative period especially during repeated suction and also because of the contamination from the visitors. Among 4 cases of wound infection, one developed partial flap necrosis.

In the follow up period 1 (6%) patient developed pharyngeal stenosis. However, incidence is 12% in the series of Aslam MJ et al⁸.

Here, one patient (6.6%) developed tracheostomal stenosis. Subsequently he developed stomal recurrence. A lower rate of 5% was evident in the series of Mantravadi R et al¹⁵.

In our study, no patient developed nodal metastasis. Aslam MJ et al⁸ opines that postoperative radiotherapy to the neck reduces the risk of nodal metastasis after total laryngectomy.

Conclusion

To comment on post operative complications of total laryngectomy, it demands further elaborate and extensive study to come to a decisive opinion. The present study reflects that complication rate is higher in radiation failure cases. Complication is almost equal to most comparable published series. The most frequent, troublesome immediate complication is pharyngocutaneous fistula all of which have been treated conservatively with satisfactory result. Preoperative radiotherapy is an important risk factor for development of

pharyngocutaneous fistula in total laryngectomy patient.

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