CLINICO-PATHOLOGICAL STUDY AND SURGICAL MANAGEMENT OF ESOPHAGEAL CARCINOMAS

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ABSTRACT: INTRODUCTION: Esophageal carcinoma is one of the most challenging problems confronting the surgeons. Majority of the patients present late. In developing countries like ours, chewing of tobacco leaves along with use of betel nuts and leaves also, in addition to smoking and alcoholism, have been implicated in the development of esophageal carcinoma. Surgery is still the initial treatment of choice for a curative intent. Since the advancement of investigations, we can now detect these cancers at an early stage thereby improving the long term relief following surgery.

MATERIALS AND METHODS: This study was conducted in patients who underwent surgery for malignant esophageal tumours in the Departments of Surgery and Surgical Gastroenterology, from September 2009 to March 2011. All the patients who were diagnosed and operated for carcinoma esophagus were included in the study. Data collected was analyzed and studied for understanding the pattern of the incidence, disease presentation, age/sex distribution, etiological factors, clinico-pathological characteristics, complications and outcome of surgery. **RESULTS:** A total of 30 patients were operated with M:F ratio 2:1. Carcinoma esophagus showed peak age incidence in the 5th-6th decade. More than 90% belonged to the poor socioeconomic class. Nearly 75-80% of patients were either smokers, alcoholics or were addicted to betel nut chewing. Dysphagia was the primary mode of presentation. Esophagogastroduodenoscopy was done in all patients. Lesions were predominantly seen in lower 1/3rd of the esophagus. Histopathologically, 22(73.3%) had squamous cell carcinoma while the remaining 8(26.7%) had adenocarcinoma. All 30 patients were operated and of these, 26(86.6%) patients underwent trans-hiatal esophagectomy and rest underwent thoraco-laparoscopic procedure. 1(3.3%) patient had splenic tear intra-operative for which splenectomy was performed. 4(13.3%) patients developed complications like minor cervical anastomosis leak in 2(6.6%) patients, pleural effusion 1(3.3%) and pneumonia 1(3.3%), which were managed conservatively. There were no stricture/stenosis of the anastomotic site and no deaths occurred in the postoperative period. **CONCLUSION:** Squamous cell carcinoma of the esophagus is seen more than adenocarcinoma. Tobacco use and alcohol consumption along with presence of preexisting esophageal conditions are strong risk factors for the development of the disease. Disease shows predominance to male and is more common in 5th-6th decade of life. Carcinoma of lower third of esophagus is more common. Surgical approaches do not alter the mortality or survival although duration of stay may be reduced.

KEYWORDS: Carcinoma esophagus, Adenocarcinoma, Squamous cell carcinoma.

INTRODUCTION: Tumours of the esophagus are among the most challenging problems confronting the surgeons.¹ Benign tumors are rare and comprise of 0.5-0.8% all esophageal tumors.² Esophageal cancer represents one of the most lethal malignancies affecting the mankind. It is the 9th most common carcinoma of all carcinomas.¹ Adenocarcinoma of the esophagus is increasing in incidence

at a rate exceeding that of any other neoplasm.³ Once the overt symptoms appears the average survival rate without treatment is 9 months.⁴

Most of the patients in our setup present in the late stages. Considering the rate of blockage of stents and cost of procedure more emphasis is laid on the surgical procedure which gives long term relief compared to other procedures. Surgical therapy remains the mainstay therapy for patients with resectable carcinoma both therapeutically as well as palliatively.⁵ Palliation is the primary goal for patient with locally advanced cancers and those with metastasis. Primary goal of palliation is restoration of swallowing, relief of pain and local control of the disease.⁶ To achieve this surgical resection gives best results in all forms of esophageal cancers.²

Trans-hiatal esophagectomy can be performed with minimal morbidity and is the desired operation of choice and it is better tolerated physiologically.^{1,3} It also confers the advantage of a radical approach and incorporates near total esophagectomy and cervical anastomosis.^{6,7} There are many studies reported in the literature which have studied trans-hiatal esophagectomy and its complications.

METHODOLOGY: The study was conducted at the Departments of Surgical Gastroenterology and General Surgery, between September 2009 and April 2011. All the patients who were diagnosed to have carcinoma esophagus were included in the study. Patients with history of previous chemotherapy, radiotherapy or esophageal surgery, inoperable cases and malignancies of upper 1/3rd were however, excluded from the study. Thirty patients who underwent esophagectomy for malignant esophageal tumors (for lower middle 1/3 and lower 1/3). The cases of carcinoma esophagus which were confirmed by relevant investigations were subjected to surgery. Operative findings and postoperative findings were recorded. The aims of this study were:

1. To study spectrum of clinical presentation, etiology, evaluate lab investigations and the pattern of the disease.
2. To study the distribution of these tumors in relation to the age, sex and level of occurrence.
3. To evaluate the results of trans-hiatal esophagectomy in patients of carcinoma esophagus in terms of operative complications, postoperative complications, morbidity and mortality.
4. To compare the preoperative presentation in esophageal disease and other associated systemic illnesses with operative outcome and postoperative complications.

RESULTS: Our present study included all the patients with carcinoma esophagus who were operated from September 2009 to March 2011. The highest incidence was observed in 5th and 6th decade of life. The youngest patient in this series was a 40-year old male and the eldest was a 93-year old male. The mean age of patients with carcinoma esophagus was 59.9 years. Esophageal carcinoma was more common in males i.e. 66.7% and the M:F ratio was 2:1. Majority of the male patients (80%) were either farmers or labourers. All the female patients were homemakers. Majority of the patients were from low and middle socio-economic group. There were 16 (53.3%) smokers, out of which 4(25%) also had the habit of alcohol consumption. Two patients were alcoholics but non smokers and 6(20%) chewed betel nut and leaves. Dysphagia was the commonest presenting symptom with the majority of the patients(40%) presenting with a duration of 1-2 months followed by those with dysphagia of less than one month duration (36.7%) (Table 1).

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Symptom	Number of patients	%
Dysphagia	30	100
Weight loss	23	76.6
Odynophagia	4	13.3
Pain Abdomen	1	3.3

Table 1: Symptoms on Presentation

Apart from dysphagia, loss of weight and appetite was the most prominent symptom and was present in three-fourths of the patients with the disease. Chest pain mostly in the form of retrosternal dull ache was present in nearly 25% of patients. Odynophagia was seen in 4 patients and one patient had severe COPD on admission. Esophago-gastroduodenoscopy was done for all patients. Morphologically, 11(13.7%) patients had ulcerative growth and 19 (63.3%) had ulceroproliferative growth. Majority 83.3% had a lower-third lesion. In our study, 76.6% of patients were having blood group A or O. Histopathological examination revealed that 22(73.3%) patients had squamous cell carcinoma and 8(26.7%) had adenocarcinoma. Well differentiated carcinoma was seen in 6.6%, moderately differentiated in 86.6%, and 6.6% had poorly differentiated carcinoma. Clinical staging of the disease was done based on CT findings as per the UICC-TNM guidelines and was found that 19(63.3%) had Stage II disease, while the rest (36.6%) had stage III disease. Twenty six patients underwent trans-hiatal esophagectomy and rest underwent thoracoscopic procedure. In our study the estimated average blood loss was 400-500ml (Table 2).

Study	Estimated Blood Loss
Goan et al	458-605ml
Hagen et al	800-1000ml
Our study	400-550ml

Table 2: Estimated Blood Loss During THE

Four (13.3%) patients developed complications (Table 3) in the immediate post-operative period. All were managed conservatively. None of our patients developed chylothorax. There were no post operative deaths. The mean duration of stay in the hospital was 11.27 ± 1.14 days. On long term follow-up, no cases developed stricture or stenosis of the cervical anastomotic site.

Complication	Number	%
Stricture/stenosis of Anastomotic site	0	0
Cervical Leak	2	6.6
Chylothorax	0	0
Pleural Effusion	1	3.3
Pneumonia	1	3.3
Deaths	0	0
Total	4	13.3

Table 3: Post Operative Complications

DISCUSSION: Carcinoma of the esophagus ranks eighth in cancer incidence and is the sixth leading cause of cancer deaths worldwide and is also the third most common malignancy of the GI tract.¹ The long-term survival of patients with this disease after different treatment modalities remains dismal even in the best of hands with a 5-year survival rate of 15- 20%.

India has one of the highest incidence of this disease in the world, ranging between 10-50cases/100,000. Various studies have shown that this disease shows predominance to male, with male to female ratio ranging from 1.5-7:1. Our series had a M:F ratio of 2:1. The maximum occurrence of this malignancy in our study was found in the 5th and 6th decade of life which was similar to the nationwide incidence as reported by Nayar et al.⁸ Several studies have described risk factors associated with esophageal cancer. Alcohol intake, especially in combination with smoking, causes chronic irritation and inflammation of the inner lining of the esophagus and predisposes to the development of squamous cell carcinoma.⁹ Other risk factors for squamous cell cancers include food preservatives such as nitrosamines, achalasia, caustic injury, and genetic predisposition.¹⁰ Due to a high incidence of tobacco use, these patients will often present with concurrent or subsequent cancers of the upper aero digestive tract such as lung cancer or head and neck cancer. In some regions, the high incidence of carcinoma of esophagus has been found to be related to the diet and environmental factors.⁵ The list includes intake of hot beverages and foods, preserved food containing nitrates, dietary deficiency of essential nutrients and minerals as well as infrequent consumption of fruits and vegetables.^{11,12} Barrett's esophagus has been identified as a strong risk factor for the development of esophageal adenocarcinoma.⁴ Sgourous et al quoted that for carcinoma esophagus the screening should focus on patients with long history of GERD, male sex and age more than 50 years.¹³

The common presenting symptoms include dysphagia and weight loss. Dysphagia occurs in 90% of patients and is usually progressive and is later followed by loss of weight. Upto 50% of patients complain of pain with swallowing. Advanced cancers may present with haemetemesis or malaena, hoarseness of voice and persistent cough.^{6,7} In our study all the patients had dysphagia at presentation, with 5(16.6%) having Grade II dysphagia, 12(40.0%) having Grade III dysphagia, 9(30.0%) having Grade IV dysphagia, and 4(13.3%) having Grade V dysphagia. Loss of weight and appetite was present in three-fourths of the patients.

Esophagogastroduodenoscopy (EGD) allows precise evaluation of the extent of esophageal and gastric involvement and can precisely measure the distance of the tumor from the incisors to appropriately categorize the tumor's location. EGD was done for all patients in our study. Morphologically, 11(13.7%) patients out of 30 had ulcerative growth and 19(63.3%) patients had ulceroproliferative growth. Majority of our patients (83.3%) had a lower-third lesion. In almost all major series worldwide, the most common site for malignancy in the esophagus is the middle third followed by the lower third.

On evaluation of endoscopic biopsies, 73.3% had squamous cell carcinoma and rest had adenocarcinoma, out of these 2(6.6%) had a well differentiated carcinoma, 26(86.6%) had a moderately differentiated carcinoma and 2 (6.6%) patients had a poorly differentiated carcinoma. It has been observed in other studies that squamous cell carcinoma is the most frequent histology worldwide, but in US, UK and Germany, the incidence of adenocarcinoma has increased drastically. The frequency, severity and duration of reflux symptoms co-relate with increased risk of adenocarcinoma.¹⁴

CT scan has a high sensitivity and specificity in detecting distant organ metastasis, involvement of aortic wall and peritoneal carcinomatosis. Hence it is helpful if all the patients are subjected to CT scan preoperatively. Clinical staging of the disease was done based on CT findings as per the UICC-TNM guidelines and 63.3% had Stage II disease, while the rest had stage III disease. On correlating the CT findings with that at surgery for the length of the lesion, the results, CT scan can accurately predict the length of the lesion when compared with assessment at surgery. However, the same cannot be said for the N or overall stage of the tumour.

In our the estimated average blood loss was 400-500ml and is similar to the series by Goan et al where blood loss was estimated between 458-605ml.¹⁵ Hagen et al reported more blood loss during surgery.¹⁶ One patient had splenic injury intraoperatively for which splenectomy was performed. Four(13.3%) patients developed post operative complications - minor cervical anastomosis leak(2), pleural effusion (1) and pneumonia(1), which were managed conservatively and patients subsequently improved. None of our patients developed chylothorax. There were no post operative deaths. Dkunan et al quoted mortality rate under 10% for esophageal resection in his series. Rahim MA quoted hospital mortality rates for carcinoma esophagus ranges from 11% - 20%.¹⁷ In our series, 4 deaths were recorded during follow up and 4 patients were lost for follow-up and their present status is not known, so our study survival rate is 22 cases (73.3%) at 1 year. In our study there were no postoperative strictures or stenosis of the anastomotic site. All the patients had excellent relief from dysphagia.

CONCLUSION: In conclusion it has been found that carcinoma esophagus is the most common gastrointestinal cancer in our study. Early diagnosis offers the only chance of cure in these patients. However, majority of esophageal carcinoma were detected late. Smoking and alcohol along with use of betel nuts are major risk factors for the development of the disease. Carcinomas of the lower third of the esophagus were seen more compared to other series. In our study, surgical resection remains the gold standard of treatment for management of esophageal tumors in operable cases. It offers excellent relief from dysphagia. Our study shows a good survival rate in patients who underwent surgical resection which partly may be due to the stage at their presentation.

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