## **Original Research Article**

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# Study of acquired oesophageal strictures

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#### **ABSTRACT**

**Background:** We profiled the patients of acquired oesophageal strictures coming to our hospital in terms of causes, clinical presentation, efficacy of investigations and treatment modalities.

**Methods:** In this two-year observational study, all patients presenting with complaint of difficulty in swallowing were enrolled and subjected to detailed history taking, examination, barium swallow study and other investigations. The patients were managed with surgical and/or non-surgical approaches, as indicated.

**Results:** Out of total 46 eligible patients, 34 presented with malignant strictures while 12 presented with benign ones. Dysphagia was the commonest symptom in patients with malignant (31, 91.17%) as well as benign strictures (12, 100%). Shouldering with hold up of barium (19, 55.88%) was the most common finding noted in malignant strictures, while those with benign stricture had smooth tapering (7, 58.33%) as the commonest finding. On flexible endoscopy, the level of growth corroborated with the barium swallow findings in all 34 patients with malignant strictures and the lower one third (16, 47.05%) was observed to be the most common site of affection. Majority (21, 58.8%) of patients were having squamous cell carcinoma, with adenocarcinoma dominating in lower one third lesions (13 out of 16, 81.25%). No cases of adenocarcinoma were noted in middle and upper one third lesions.

**Conclusions:** Majority of patients with malignant strictures were having squamous cell carcinoma, with adenocarcinoma dominating in lower one third lesions. Surgical resection led to relief from dysphagia in all the 6 cases of oesophagectomy with oesophagogastric anastomosis in malignant stricture cases with excellent long term survival and symptomatic relief

Keywords: Carcinoma oesophagus, Oesophageal stricture

## INTRODUCTION

Dysphagia is defined as a sensation of sticking or obstruction during passage of food through upper gastrointestinal tract. Being distensible organ, any oesophageal surgical pathology will take long time to manifest as dysphagia.

Thus, the underlying disease process may well have progressed considerably before symptoms appear. Also, oesophagus is one of those organs which can't be palpated by the surgeon. Hence suspected lesions of oesophagus, either congenital, inflammatory or neoplastic, have to be evaluated by either symptoms or investigations only. Various causes/factors lead to obstruction of oesophageal lumen in the form of strictures, leading to dysphagia.

Peptic Strictures, caustic injury, malignancy etc. are some of the prominent causes leading to mechanical dysphagia. It is of paramount importance to pick up the underlying cause and plan for necessary management, surgical or otherwise, at the earliest.

The aim of the present study is to profile the patients of acquired oesophageal strictures coming to our hospital in terms of causes, clinical presentation, efficacy of investigations and treatment modalities.

#### **METHODS**

The present type of study is observational study in its nature performed at Government Medical College and Super-Specialty Hospital, Nagpur over a study period of 2 years (November 2004 to November 2006). The study population included all the patients presenting with complaint of difficulty in swallowing.

#### Inclusion Criteria

- Age group- More than 12 years
- Ready to give written consent

#### **Exclusion Criteria**

- Patients with acute corrosive injuries
- Patients with GERD
- Patients of dysphagia on investigation found to have medicinal cause like diabetic autonomic neuropathy, pseudobulbar palsy etc.
- Patients with connective tissue disorder
- Patients with motor/functional disorder
- Patients with dysphagia who on investigation found to have intraluminal cause like foreign body
- Patients presented with fungal, bacterial, viral, protozoal infection of oesophagus

Firstly, patients complaining of difficulty in swallowing were assessed by detailed history and clinical examination. They were then subjected to barium swallow study and other investigations and, if they showed evidence of stricture, were admitted to surgical ward. Initial assessment included detailed history, examination for hydration, electrolytes, vital parameters and examination of respiratory system. Then a thorough clinical examination was conducted as per a pre-tested and validated proforma.

Further patients were subjected to routine investigations, radiological studies, abdominal ultrasound and endoscopy for diagnosis, delineation of extent of disease, suitability of operative intervention, endoscopic intervention or referral for radio-chemotherapy. Ct scan of thorax/abdomen, bronchoscopy and pulmonary function tests were done in selected group of patients, as indicated. A total of 46 patients of acquired oesophageal strictures who were admitted in surgical wards were enrolled as per mentioned criteria & considered for analysis, after eliciting required written informed consent.

All patients were followed up for 6 months after required treatment and were reassessed thoroughly at each visit. Chi-square test was applied, with p<0.05 being considered as statistically significant.

#### **RESULTS**

In the present study, a total of 46 patients were included for final analysis. Here we mainly wish to focus upon the malignant versus benign categories of strictures. Thirty four patients presented with malignant strictures, while 12 presented with benign ones. The average age of carcinoma oesophagus at presentation was 53.55 years, while it was much lower in benign category (41 years). Sex-wise distribution showed male preponderance with a male to female ratio of 25:9 in those with malignant strictures. Benign category had only slight insignificant male preponderance (7:5).

Analysis of symptomatology of patients with malignant strictures showed 31 out of total 34 (91.17%) patients had dysphagia. Other common symptoms were weight loss (13, 30.95%), regurgitation (6, 17.64%) and anorexia & hoarseness of voice (each 5, 14.7%). (Table 1).

Table 1: Symptomatology in patients with malignant oesophageal strictures (n=34).

Symptom	No. of patients	%
Dysphagia	31	91.17
Weight loss	13	30.95
Regurgitation	6	17.64
Anorexia	5	14.7
Hoarseness of voice	5	14.7
Local pain	3	8.82

Dysphagia (12, 100%) was observed to be the commonest symptom in patients with benign strictures also, followed by regurgitation (7, 58.77%) and local pain (5, 41.66%). (Table 2).

Table 2: Symptomatology in patients with benign oesophageal strictures (n=12).

Symptom	No. of patients	%
Dysphagia	12	100
Regurgitation	7	58.33
Local pain	5	41.66
Cough	3	25
Weight loss	3	25

Weight loss was observed to be one of the uniform symptoms and was found to be directly proportional to the duration of dysphagia in months. It was more (average weight at presentation- 39.6 kg) in corrosive stricture than in peptic ulcer patients (average weight at presentation- 43.8 kg).

Almost all the patients had one or the other form of addiction. Alcohol (18) intake was the most commonly observed form of addiction, followed by smoking (13) and tobacco chewing (9). In patients with corrosive

strictures, acid ingestion was more common than alkali ingestion (4:1). The accidental ingestion of corrosive substance is more common in males and almost all the patients reported with the history were alcoholic. History of previous endoscopic dilation was present in two patients.

Routine investigations of the participants revealed most of the patients to be anemic and hypoproteinemic. Barium swallow was undertaken in all the patients and findings noted. Shouldering with hold up of barium (19, 55.88%) was the most common finding noted in

malignant strictures, followed by filling defect (13, 38.23%), with most of the lesions in the lower one third of oesophagus (16, 47.05%). Those with benign stricture had smooth tapering (7, 58.33%) as the most common finding on barium swallow, followed by mucosal irregularity (5, 41.66%), with lower third again being the most common area of affection (5. 41.67%). (Table 3).

Of the 5 patients with corrosive strictures, 2 were detected to have concurrent gastric injuries on barium meal examination, while no gastric abnormality was detected in patients with peptic or drug induced ulcer.

Table 3: Barium swallow findings of the patients with malignant and benign strictures.

<b>Total number of cases (n)</b>	Most common barium swallow findings					
Malignant Strictures						
34	Shouldering with hold	up of barium	Filling	Defect	Mucos	al irregularity
	19 (55.88%)		13 (38.23%)		2 (5.88%)	
Benign Strictures						
12	Smooth tapering	Mucosal irreg	ularity	Pseudodive	erticuli	Reflux of dye
	7 (58.33%)	5 (41.66%)		3 (25%)		3 925%)

Table 4: Histopathological differentiation as per level of growth in malignant strictures

Site	No. of patients	Histopathological types	%
Upper one third	4	Squamous cell carcinoma	100
Middle one third	14	Squamous cell carcinoma	100
Lower one third	16	Sq. cell carcinoma- 3	18.75
		Adenocarcinoma- 13	81.25

On flexible endoscopy, the level of growth, as measured from the incisor teeth, corroborated with the barium swallow findings in all 34 patients with malignant strictures. On endoscopy, the lower one third (16, 47.05%) was observed to be the most common site of affection, followed by middle one third (14, 41.17%) and upper one third (4, 11.76%). The growth was mostly proliferative in nature (19, 55.88%). Majority (21, 58.8%) of patients were having squamous cell carcinoma, with adenocarcinoma dominating in lower one third lesions (13 out of 16, 81.25%). No cases of adenocarcinoma was noted in middle & upper one third lesions. In patients with peptic strictures, Barrett's oesophagus with varying degrees of dysplasia was noted. All of them were negative for malignant cells.

Ultrasonography was undertaken in all the participants. It revealed gastroesophageal junction thickening with mass lesion in 6 patients, liver secondaries in 3 patients; amongst other insignificant, unrelated or incidental findings. It showed regional lymph node involvement in 13 patients, evidence of attachment or invasion of major intrathoracic structures like the pericardium, aorta or bronchi in 9 patients. No evidence of distant (liver/lung) metastasis was noted. As for kind of treatment in patients

with malignant strictures, definitive surgery was possible in 7 patients, while rest (27) received either radiotherapy (4), chemotherapy (7), or combined chemo-radiotherapy (13). Three patients didn't receive any definitive therapy. The patients undergoing surgery were discharged, on an average, on 13th day, with the post procedure period being largely uneventful, except in one patients who developed myocardial infarction on 4th day and died. Out of 34 patients of malignant strictures, 9 were lost during long term follow-up (4 died, 5 did not report). Twenty-five patients are alive and taking oral/jejunostomy feeds satisfactorily.

### **DISCUSSION**

A total of 46 patients of oesophageal strictures were studied between November 2004 and November 2006. Thirty-four patients had malignant strictures while 12 had benign strictures. The average age of patients with malignant strictures was 53.55 years (Squamous cell carcinoma (SCC)- 53.3 years, Adenocarcinoma- 54.16 years), while benign strictures presented on an average around 51 years of age. The male to female ratio in adenocarcinoma (2.1:1) is greater than that in SCC (1.8:1). In a retrospective study by N.M. Gupta et al1, the

age group affected was younger in SCC (48+14) than in adenocarcinoma (54+12). We reported the male to female ration in carcinoma patients at 2.1:1. In the similar study by Gupta et al, male to female ratio is comparable in SCC (1.4:1) while in adenocarcinoma male significantly outnumber females by 8.8:1 ratio.1 The patient with benign strictures have been reported to be of variable age and with variable sex ratio depending upon the etiology, as reported in various previous similar studies.<sup>2-4</sup>

Thirty one out of 34 total patients of carcinoma oesophagus presented with dysphagia. Out of these 31 patients, only 12 were considered for operative intervention and only 7 were subsequently found operable. In a study by Pie-Yen-Wang, 54.14% tumours were found operable and 44.28% were resectable in the epidermoid group, whereas 64.10% were operable in adenocarcinoma group.<sup>5</sup> The most common predisposing factors in present study were alcohol consumption (52.94%) and smoking (44.11%), which is in-line with the available evidence.

All 46 patients in our series underwent barium swallow examination and approximate level of lesion noted. In all the cases (100%), subsequent endoscopic findings and level of growth were in corroboration of barium swallow findings, along with histological confirmation by biopsy. This denotes the very high diagnostic accuracy of barium study and is comparable with reports by Sharif Jan et al and Fiona et al, who reported the corroboration at 99.31% and 96% respectively.<sup>6,7</sup>

As for benign strictures, present study findings are in agreement with the observations by Ott DJ (88%) et al and Creteur V (87%) et al.<sup>8,9</sup> Further, we observed smooth tapering to be the commonest (58.33%) finding in benign strictures, which is in-line with the finding of Pia Luedtke.<sup>10</sup> We observed the incidence of carcinoma oesophagus to be highest in lower one third (47.05%). Byrne JP et al also indicated that the site of distribution of oesophageal cancer has shifted from middle third to lower one third. He observed as high as 171 out of 281 cases (60.85%) of oesophageal cancer to be belonging to lower one third.<sup>11</sup>

The lowest incidence in upper one third along with above finding may be explained by substantial increase in the predisposing factors for carcinoma lower one third (alcohol consumption, smoking etc.). Surgical resection led to relief from dysphagia in all the 6 cases of oesophagectomy with oesophagogastric anastomosis in malignant stricture.

One patient had delayed anastomotic stricture, for which endoscopic dilatation was done and patient was instructed for regular self-dilation with foley's catheter, with acceptable relief of dysphagia. All the six patients were in regular follow-up, alive and well. These results show improvement over those of Von FM et al, who reported deaths in 13 out of 25 patients in 1st post-operative year.<sup>12</sup> In another study by Maher M et al, 4 deaths were reported in 19 patients who underwent transhiatal oesopahegectomy. Satisfactory long-term relief from dysphagia was achieved in all the surviving patients in both the studies, similar to our observations.<sup>13</sup>

#### **CONCLUSION**

The carcinoma oesophagus occurs at a younger age than the benign ones with significant male preponderance. Dysphagia was the commonest presenting feature in both malignant as well as benign strictures. Majority of patients with malignant strictures were having squamous cell carcinoma, with adenocarcinoma found dominating in lower one third lesions. Surgical resection led to relief from dysphagia in all the 6 cases of oesophagectomy with oesophagogastric anastomosis in malignant stricture cases with excellent long-term survival and symptomatic relief.

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Institutional Ethics Committee

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