

**A PATHOLOGICAL STUDY OF GASTRIC OUTLET OBSTRUCTION**<sup>1</sup>\*Dr. C. Rajmohan, MS and <sup>2</sup>Dr. Selladurai<sup>1</sup>Assistant Professor, Department of General Surgery, Tirunelveli Medical College, Tirunelveli.<sup>2</sup>Assistant Professor, Department of Surgical endocrinology, Stanley Medical College Chennai.**\*Corresponding Author: Dr. C. Rajmohan**

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**ABSTRACT**

**Introduction:** Gastric outlet obstruction is due to obstruction in first part of duodenum at the site of chronic scarring from ulceration or antrum where a benign gastric ulcer (type II and type III) or carcinoma is a problem. Stenotic complications of peptic ulcer disease are hour glass deformity and tea pot deformity (gastric ulcer). Stenotic complications arise from repeated cycles of ulceration and healing resulting in dense fibrosis with narrowing and deformity. Common causes of gastric outlet obstruction are Chronic duodenal ulceration / fibrosis, Antral gastric carcinoma, Carcinoma of the head of pancreas. **Aim of The Study:** To evaluate the age and sex incidence of gastric outlet obstruction. Also Pathological study on causes of gastric outlet obstruction and to correlate the results of upper gastrointestinal endoscopy, biopsy and peroperative findings in gastric outlet obstruction. **Materials and Methods:** This was a pathological study on gastric outlet obstruction comprising of 34 cases of gastric outlet obstruction. The patients have been selected from Tirunelveli Medical College Hospital in the Surgery department from December 2010 to December 2011. The cases were selected with following inclusion and exclusion criteria. An elaborate study of all the patients with regard to history, clinical features, routine investigations, endoscopy and biopsy report, pre operative management, per-operative findings, post operative management and complications during post operative period is managed. Patient general condition, nutrition status, hydration and co-morbid conditions were managed before surgery. **Results:** Gastric outlet obstruction is common in age less than 50 years is 14 (40%). In 10 patients it is due to malignancy and in 4 patients it is due to benign lesion. In age between 50 to 55 years 8 patients (24%) develop gastric outlet obstruction. In 7 patients the cause is malignant lesion and in one patient the cause is cicatrized duodenal ulcer in 1st part of duodenum. In age between 56 to 60 years 4 patients had gastric outlet obstruction and in all 4 patients cause was malignant lesion. In age between 61 to 65 years 5 patients had gastric outlet obstruction. In 3 patients the cause is malignant lesion and in 2 patients it was due to benign lesion. In age above 65 years 3 patients develop gastric outlet obstruction and the cause is malignant lesion. In this study young age to develop gastric outlet obstruction is 30 years due to cicatrized duodenal ulcer and oldest age is 75 years due to gastric carcinoma. The age incidence is 30 to 75 years with mean of 52.5 years. The young age to develop gastric carcinoma is 35 years. **Conclusion:** The present study is a pathological study on gastric outlet obstruction. The observations from the data and results obtained in the present study were Male patients are more commonly affected by gastric outlet obstruction. Carcinoma in pyloric antral region was the most common cause of gastric outlet obstruction. Vomiting and dehydration are the common symptoms and signs of gastric outlet obstruction. Upper gastro intestinal endoscopy and biopsy are the Gold standard investigation for gastric outlet obstruction. It has been used for both diagnostic purpose and taking biopsy from the lesion. All patients above 40 years with symptoms of dyspepsia should undergo upper gastro intestinal endoscopy and biopsy examination.

**INTRODUCTION**

Gastric outlet obstruction is a group of clinico-pathophysiological consequence of mechanical impediment of gastric emptying. Clinical entities that can result in gastric outlet obstruction are categorized into two well- defined groups of causes - benign and malignant. In the past when peptic ulcer disease was more prevalent, benign causes were the most common, however, the scenario has changed dramatically with the advent of potent medical treatments like H2 receptor antagonists, proton pump inhibitors and other drugs,

reducing the incidence of peptic ulcer and its complications substantially. At the same time, the incidence of antral carcinoma of stomach producing gastric outlet obstruction has comparatively increased, which may due to increased early diagnosis of the condition with the help of flexible fiber optic endoscope. The procedure of choice is truncal vagotomy and posterior gastrojejunostomy. An alternative procedure is highly-selective vagotomy with posterior gastrojejunostomy where propulsive activity of antrum is preserved. Other option is truncal vagotomy with.<sup>[1,2,3]</sup>

pyloroplasty. The patients who have identifiable cause that could be treated with balloon dilations have long term results with median of 5 dilatations. Dilatations with lifetime acid suppression have good long term<sup>[3]</sup> results. This study has been taken up to review the changes in the presentation of gastric outlet obstruction in view of changing trends in the management because of new drugs and investigatory modalities in adult population attending to Tirunelveli Medical College Hospital in the Surgery department. Based on this aim of our study is to evaluate the age and sex incidence of gastric outlet obstruction. Also Pathological study on causes of gastric outlet obstruction and to correlate the results of upper gastrointestinal endoscopy, biopsy and peroperative findings in gastric outlet obstruction.

### MATERIALS AND METHODS

This was a pathological study on gastric outlet obstruction comprising of 34 cases of gastric outlet obstruction. The patients have been selected from Tirunelveli Medical College Hospital in the Surgery department from December 2010 to December 2011. The cases were selected with following inclusion and exclusion criteria. Inclusion Criteria comprises of cases with Peptic ulcer disease with gastric outlet obstruction. Carcinoma pyloric region with gastric outlet obstruction. We excluded cases with Infantile hypertrophic pyloric stenosis, Congenital lesion, Gastro intestinal tuberculosis.

An elaborate study of all the patients with regard to history, clinical features, routine investigations, endoscopy and biopsy report, pre operative management, per-operative findings, post operative management and complications during post operative period is managed. Patient general condition, nutrition status, hydration and co-morbid conditions were managed before surgery.

Complete haemogram, blood urea, serum creatinine, serum electrolytes, electro cardiogram, chest x-ray, blood grouping and Rh typing, bleeding time, clotting time, blood sugar (fasting and post prandial), was done. Ultra sonogram of abdomen and pelvis, upper gastro intestinal endoscopy and biopsy from the lesion, were taken. Biopsy sent for histopathological study. Criteria for diagnosing the patient clinically by Abdomen pain, Vomiting (projectile, non bilious, undigested food particles), Anorexia, Malnutrition, Visible gastric peristalsis, Succussion splash, Palpable mass, Loss of weight.

**Table 1: Etiology of gastric outlet obstruction.**

CAUSES OF GASTRIC OUTLET OBSTRUCTION	NUMBER OF PATIENTS	PERCENTAGE
CARCINOMA	26	74
DUODENAL ULCER	7	20
GASTRIC ULCER	1	6

In this study gastric carcinoma in pyloric region is the common cause of gastric outlet obstruction in 26 patients

### Preoperative management

Patient general condition, anaemia, hydration, electrolyte imbalance, comorbid conditions were managed. Informed consent obtained and patient was prepared for surgery. Post operatively patients were monitored under intensive care. Half hourly pulse, temperature, respiratory rate chart, 4<sup>th</sup> hourly blood pressure chart, input and output chart, ryles tube aspiration, drain collection, soakage of dressing were maintained. Higher antibiotics, analgesics, H<sub>2</sub> blockers, proton pump inhibitors were given. Patient was discharged after complete recovery from illness. Then patients were regularly followed and managed.

### OBSERVATIONS AND RESULTS

Gastric outlet obstruction is common in age less than 50 years is 14 (40%). In 10 patients it is due to malignancy and in 4 patients it is due to benign lesion. In age between 50 to 55 years 8 patients (24%) develop gastric outlet obstruction. In 7 patients the cause is malignant lesion and in one patient the cause is cicatrized duodenal ulcer in 1<sup>st</sup> part of duodenum. In age between 56 to 60 years 4 patients had gastric outlet obstruction and in all 4 patients cause was malignant lesion. In age between 61 to 65 years 5 patients had gastric outlet obstruction. In 3 patients the cause is malignant lesion and in 2 patients it was due to benign lesion. In age above 65 years 3 patients develop gastric outlet obstruction and the cause is malignant lesion. In this study young age to develop gastric outlet obstruction is 30 years due to cicatrized duodenal ulcer and oldest age is 75 years due to gastric carcinoma. The age incidence is 30 to 75 years with mean of 52.5 years. The young age to develop gastric carcinoma is 35 years.

Gastric outlet obstruction is common in male patients. In this study 20 male patients (57%) develop gastric outlet obstruction. In 14 male patients the cause is malignant lesion and in 6 male patients it is due to benign lesion. 14 female patients (43%) develop gastric outlet obstruction. In 12 female patients the cause is malignant lesion and in 2 female patients it is due to benign lesion. In this study malignancy is most common cause of gastric outlet obstruction in both sexes. In this study in age less than 60 years gastric outlet obstruction is more common in female patients (14 female patients and 12 male patients). In this study 3 male patients (100%) above 65 years develop gastric outlet obstruction. In age between 50 to 55years the cause of gastric outlet obstruction is equal in both sexes (4 patients in each sex).

(74%). In 8 patients the cause is benign lesion. In 7 patients the cause is cicatrized duodenal ulcer in 1<sup>st</sup> part

of duodenum. In 1 patient it is due to chronic gastric ulcer in pyloric region.

In this study majority of patients (14) were having blood group B (41%) and next common in blood group is A (23%). In benign lesion 4 patients had B blood group, 2 patients had O blood group, 1 patient had AB and A blood group each. In malignant lesion 10 patients had B blood group, 7 patients had A blood group, 6 patients had O blood group, 3 patients had AB blood group.

In this study the common symptom in gastric outlet obstruction was vomiting in 33 patients (97%). Vomiting

is projectile, effortless, non bilious and vomitus contains undigested food particles. In 7 patients vomiting was blood stained and 5 patients had history of passing black tarry stools. The next complaint was abdomen pain (91.1%) followed by anorexia (88.2). Pain was dull aching in nature. In case of carcinoma stomach pain was aggravated immediately after food intake and relieved by vomiting. In duodenal ulcer patients abdomen pain appears 2 hours after food intake and relieved by taking food or medicines. In 30 patients they had a history of reduced food intake. Patients developed early satiety and pain after taking food.

**Table 2: Distribution of Symptoms.**

SYMPTOMS	NUMBER OF PATIENTS	PERCENTAGE
ABDOMEN PAIN	31	91.1
VOMITING	33	97
ANOREXIA	30	88.2
HAEMETEMESIS	7	20.5
MALENA	5	14.7

The common sign in gastric outlet obstruction was dehydrated and malnourished patients (79.4%). Next common sign is pallor (64.7%). Visible gastric peristalsis is seen 12 (35.2%) patients. In 14 (41.1%) patients succussion splash was present. Patients with gastric

carcinoma were more malnourished and dehydrated than patients with benign lesion. Patients with gastric carcinoma lost weight in short duration than benign lesion.

**Table 3: Distribution of signs.**

SIGNS	NUMBER OF PATIENTS	PERCENTAGE
PALLOR	22	64.7
DEHYDRATION	27	79.4
VISIBLE PERISTALSIS	12	35.2
SUCCUSSION SPLASH	14	41.1
WEIGHT LOSS	23	67.6

All the patients were subjected to endoscopy and biopsy. Ulceroproliferative growth was present in 15 patients. In 9 patients it was of ulcerative growth. In 4 patients endoscopy could not be passed beyond pyloric end. 2

patients had polypoid growth in pyloric region. In one patient 1<sup>st</sup> and 2<sup>nd</sup> part of duodenum was dilated. In all patients biopsy was taken and sent for histopathology study.

**Table 4: Endoscopic findings.**

ENDOSCOPY	NUMBER OF CASES	PERCENTAGE
ULCEROPROLIFERATIVE	15	46
ULCERATIVE	9	27
POLYPOID	2	3
DUODENAL ULCER	3	9
PYLORIC STENOSIS	4	12
DUODENUM	1	3

Truncal vagotomy with posterior gastro jejunostomy was done for patients with duodenal ulcer and gastric outlet obstruction. Among carcinoma stomach patients 6 of them underwent partial gastrectomy with gastrojejunostomy. In 2 patients carcinoma stomach total gastrectomy with oesophagus jejunum anastomosis was done. In 3 patients of gastric carcinoma distal gastrectomy with gastrojejunostomy was done. In one patient with gastric carcinoma subtotal gastrectomy was

done. In 14 patients advanced gastric carcinoma palliative anterior gastrojejunostomy was done. Palliative procedure was done because the tumor was inoperable during surgery. In 1 patient with advanced gastric carcinoma feeding jejunostomy was done. Per operative finding was identified and noted. Specimen was sent for histopathology study. In this study the biopsy reports of the specimen were 14 patients had moderately differentiated adenocarcinoma, 10 patients had poorly

differentiated adenocarcinoma, 2 patients had well differentiated adenocarcinoma, 7 patients had

hypertrophied nerve bundle of vagus nerve, 1 patient had chronic gastric ulcer.

**Table 5: Type of surgical procedure.**

SURGERY	NUMBER OF CASES	PERCENTAGE
AGJ	14	41
TV/PGJ	7	20
PG/GJ	6	18
DG/GJ	3	9
TG/OJ	2	6
SG/GJ	1	3
FJ	1	3

### PEROPERATIVE FINDINGS

In benign lesion 4 patients had dilated stomach with cicatrized ulcer in 1<sup>st</sup> part of duodenum. 3 patients had dilated stomach with cicatrized ulcer in pyloric antrum. One patient had ulcer in pyloric antrum with stenosis in pylorus region. In malignant lesion 14 patients had growth in pyloric region with dilated stomach. In 4 patients there was ulceroproliferative growth in pyloric region. 2 patients had ulcerative mass in pyloric region. 2 patients had mass in pyloric antrum with tumor fixed to posterior stomach bed structures and the tumor was inoperable. 2 patients had metastases to liver, sigmoid colon, omentum, peritoneal deposits and the tumor was inoperable. One patient had polypoid growth in pyloric region. In one patient there was ascites with serosal involvement and the tumor was inoperable.

### DISCUSSION AND ANALYSIS

The observations and results of this study were compared with previous studies and the results were analysed. This study includes 34 cases of gastric outlet obstruction in adults. Young age of presentation is 30 years and old age is 75 years. Average age of presentation is 52.5 years. Male patients accounted for 57% of the cases and female patients accounted for 43%. In less than 50 years old, 6 were male patients and 8 were female patients. In 10 patients the cause was malignant and 4 patients had benign lesion. This study shows that the malignant lesion occurs in young age. In age between 50 to 55 years 4 patients were male patients and 4 patients were female. In 7 patients the cause is malignant lesion and in 1 patient the cause is benign lesion. In age 56 to 60 years old patients there were 3 cases and the cause is malignant lesion. In age between 61 to 65 years there were 6 patients and in 4 patients the cause is malignant lesion. In 2 patients the cause is benign lesion. Malignancy is the cause in 3 patients above 65 years old. In 14 patients the blood group is "B" and in 8 patients the blood group is "A". In 8 patients the blood group is "O" and in 4 patients the blood group is "AB".

The causes of gastric outlet obstruction in 34 patients were as follows In 26 patients the cause was carcinoma stomach, In 7 patients the cause was cicatrized duodenal ulcer, In 1 patient the cause was chronic ulcer in pyloric antrum. In carcinoma stomach 14 patients had moderately differentiated adenocarcinoma. 10 patients

had poorly differentiated adenocarcinoma, 2 patients had well differentiated adenocarcinoma.

In 33 patients vomiting was the main complaints and it was projectile, effortless, non bilious and contains undigested food particles. 31 patients developed abdomen pain which was dull aching and continuous in nature. Patient developed pain immediately after taking food and was relieved by vomiting. 30 patients had reduced food intake and had early satiety due to which patients were dehydrated and malnourished. 7 patients had episodes of blood vomiting and 5 patients had malena.

Clinically 27 patients were dehydrated due to increased frequency of vomiting. Hence patients were malnourished and emaciated. 23 patients had weight loss and the weight loss is rapid in malignant lesion. 22 patients were pallor and anaemic on investigations. In 14 patients there were succussion splash and dilated stomach clinically. In 12 patients there were visible gastric peristalsis from left hypochondrium to right hypochondrium. Some patients had palpable mass in epigastric region.

All patients were subjected to upper gastrointestinal endoscopy and biopsy was taken from the lesion and sent for histopathological study. In 15 patients there was ulceroproliferative growth in pyloric region, in 9 patients there was ulcerative growth in pyloric region, in 4 patients there was pyloric stenosis and the scopy could not be passed beyond the pyloric region, in 3 patients there was duodenal ulcer in 1<sup>st</sup> part of duodenum, in 2 patients there was polypoid growth in pyloric region, in one patient the 1<sup>st</sup> and 2<sup>nd</sup> part of duodenum was dilated. Many patients had dilated stomach with food debris. The present study results and findings were compared and analysis was done.

Comparison of etiological factors in various studies From various studies the commonest cause of gastric outlet obstruction was found to be malignant lesion. The present study values are close to values observed in Mishra study. The cause of rise in malignancy was due to the use of H2 blockers, proton pump inhibitor, eradication of helicobacter pylori infection.

In present study upper gastrointestinal endoscopy was done in 34 cases (100%), and biopsy sent for histopathological study. 26 patients (74%) had carcinoma

antrum pyloric region, 7 patients (20%) had cicatrized duodenal ulcer, 1 patients (6%) had gastric ulcer in pyloric region.

**Table 6: Comparison with other studies.**

Etiology	Present Study		Johnson et al <sup>4</sup>		Ishra University <sup>5</sup>		JSLs Study <sup>6</sup>		Mishra Study <sup>7</sup>	
	No:	%	No	%	No	%	No	%	No	%
Malignant	26	74	20	61	27	51.9	16	57	56	76
Benign	8	26	13	39	25	48.1	12	43	18	24
Total	34	100	33	100	52	100	28	100	74	100

In this study 7 patients with cicatrized duodenal ulcer underwent truncal vagotomy with posterior gastrojejunostomy. One patient with gastric ulcer in pyloric region underwent distal gastrectomy with gastro jejunostomy. Among 26 patients with gastric carcinoma in pyloric region, 14 of them with advanced gastric carcinoma underwent anterior gastro jejunostomy as a palliative procedure. In all these patients the tumor was in operable and curative surgery was not possible. In 6 patients partial gastrectomy with gastro jejunostomy was done. In 2 patients total gastrectomy with oesophagus jejunostomy and feeding jejunostomy was done. In 3 patients distal gastrectomy with gastro jejunostomy was done. In one patient subtotal gastrectomy with gastro jejunostomy was done. One patient with advanced gastric carcinoma underwent feeding jejunostomy as a palliative procedure.

## CONCLUSION

The present study is a pathological study on gastric outlet obstruction. The observations from the data and results obtained in the present study were Male patients are more commonly affected by gastric outlet obstruction. Carcinoma in pyloric antral region was the most common cause of gastric outlet obstruction. Vomiting and dehydration are the common symptoms and signs of gastric outlet obstruction.

Upper gastro intestinal endoscopy and biopsy are the Gold standard investigation for gastric outlet obstruction. It has been used for both diagnostic purpose and taking biopsy from the lesion. Patient general condition, correction of anemia, fluid and electrolyte imbalance and preparation of stomach must be done preoperatively. Patients with gastric outlet obstruction due to cicatrized duodenal ulcer require truncal vagotomy with posterior gastrojejunostomy.

In patients with carcinoma pyloric antral region require curative surgery in early stage or a palliative surgery depending on the stage of the disease. All patients above 40 years with symptoms of dyspepsia should undergo upper gastro intestinal endoscopy and biopsy examination.

## CONCLUSION

The present study is a pathological study on gastric outlet obstruction. The observations from the data and results

obtained in the present study were Male patients are more commonly affected by gastric outlet obstruction. Carcinoma in pyloric antral region was the most common cause of gastric outlet obstruction. Vomiting and dehydration are the common symptoms and signs of gastric outlet obstruction. Upper gastro intestinal endoscopy and biopsy are the Gold standard investigation for gastric outlet obstruction. It has been used for both diagnostic purpose and taking biopsy from the lesion. Patient general condition, correction of anemia, fluid and electrolyte imbalance and preparation of stomach must be done preoperatively. Patients with gastric outlet obstruction due to cicatrized duodenal ulcer require truncal vagotomy with posterior gastrojejunostomy. In patients with carcinoma pyloric antral region require curative surgery in early stage or a palliative surgery depending on the stage of the disease. All patients above 40 years with symptoms of dyspepsia should undergo upper gastro intestinal endoscopy and biopsy examination.

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