

## A CLINICAL STUDY ON GASTRIC OUTLET OBSTRUCTION

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### **ABSTRACT:**

**Introduction:** Benign disease was responsible for the majority of cases of GOO in adults until the late 1970s, of which peptic ulcer disease accounted for up to 90 percent of cases. With the decline in peptic ulcer disease, it is estimated that 50 to 80 percent of all cases of GOO are attributable to malignancy. **Materials and Methods:** During the period of study from 1st June 2021 to 31st May 2022, 52 patients with diagnosis of gastric outlet obstruction admitted in Department of Surgery, GMCH were taken up for the purpose of the study. Appropriate haematological and radiological investigations were done as required. Final diagnosis of gastric outlet obstruction has been confirmed on basis of biopsy reports. **Results and Observations:** A total of 52 cases of adults presenting with gastric outlet presentation was studied. Malignancy was seen in 30 patients, of which 23 patients had carcinoma stomach (44.2%), 4 patients had carcinoma pancreas (7.7%) and 3 had carcinoma gall bladder (5.8%). Peptic ulcer disease was seen in 20 cases (38.5%) and 2 patients (3.8%) had corrosive injury. The age ranged from 24 years to 77 years. Maximum patients belonged to the 7th decade of life. Average age of presentation in malignant group is 54.3 years while in the non-malignant group is 48.4 years. Overall average age of presentation was 51.8 years. **Conclusion:** Males are more commonly affected with gastric outlet obstructions in adults. Malignancy is more common in the age group of 60-69 years, while cicatrized duodenal ulcer is more common in the age group of 50-59 years. Malignancy is more common as compared to benign diseases causing complication like gastric outlet obstruction. Patients with gastric outlet obstruction due to cicatrized duodenal ulcer require a posterior gastrojejunostomy with or without truncal vagotomy. Malignancy cases require curative or palliative surgery depending on the stage of the disease.

**Key words:** *Gastric Outlet Obstruction, upper GI endoscopy.*

### **INTRODUCTION:**

Gastric Outlet Obstruction (GOO) represents a clinical and pathophysiological consequence of any disease process that produces a mechanical impediment to gastric emptying. Intrinsic obstruction or extrinsic compression of the pyloric channel or duodenum is the usual pathophysiology of Gastric Outlet Obstruction. 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. A recent review shows that only 37% of patients with gastric outlet obstruction have benign disease and remaining

patients have obstruction secondary to carcinoma stomach and other malignant diseases. Incidence of gastric outlet obstruction is not more than 5% among patients with peptic ulcer disease. Although GOO cases due to peptic ulcer disease are declining as compared to previous years, these cases are not uncommon in this part of the country. GOO occurs in both acute and chronic peptic ulcer disease. It may be acute outlet obstruction from inflammatory swelling and peristaltic dysfunction or chronic outlet obstruction from fibrosis or cicatrix around a pyloric channel ulcer. Gastric cancer is the most common malignancy causing GOO. The proximal stomach is now the most common site for gastric carcinoma in the west but in Japan and developing countries like India the distal gastric cancer (antrum 13% and pylorus 7%) still predominates. In the US, the distal stomach is the site of origin of about 30% of gastric cancers, which result in gastric outlet

obstruction. With the advent of upper GI endoscopy and CECT and newer treatment modalities like endoscopic stenting, endoscopic balloon dilatation, laparoscopic or endoscopic ultrasound guided gastrojejunostomy etc., the management has changed considerably in the recent times.

**AIMS AND OBJECTIVES:**

- 1.A clinical study of gastric outlet obstruction including determination of the common causes.
2. To study the age, sex and occupational distribution, its clinical manifestations and diagnosis in the study group.
3. To study the different modalities of treatment of gastric outlet obstruction.

**MATERIALS AND METHODS:**

**Type of study:** Hospital based observational study done in the Department of General Surgery, Gauhati Medical college and Hospital, Guwahati.

**Duration of Study:** One year (1st June, 2021 to 30 JUNE, 2022)

**Inclusion Criteria:** 1. All cases of Gastric Outlet Obstruction admitted in any of General Surgical Units of Gauhati Medical College and Hospital from 1st June,2021 to 30 june 2022 undergoing surgical intervention.

**Exclusion criteria:**

1. Patients of age <12 years are to be excluded.
2. Not operated but diagnosed cases of gastric outlet obstruction who were managed conservatively will not be included.

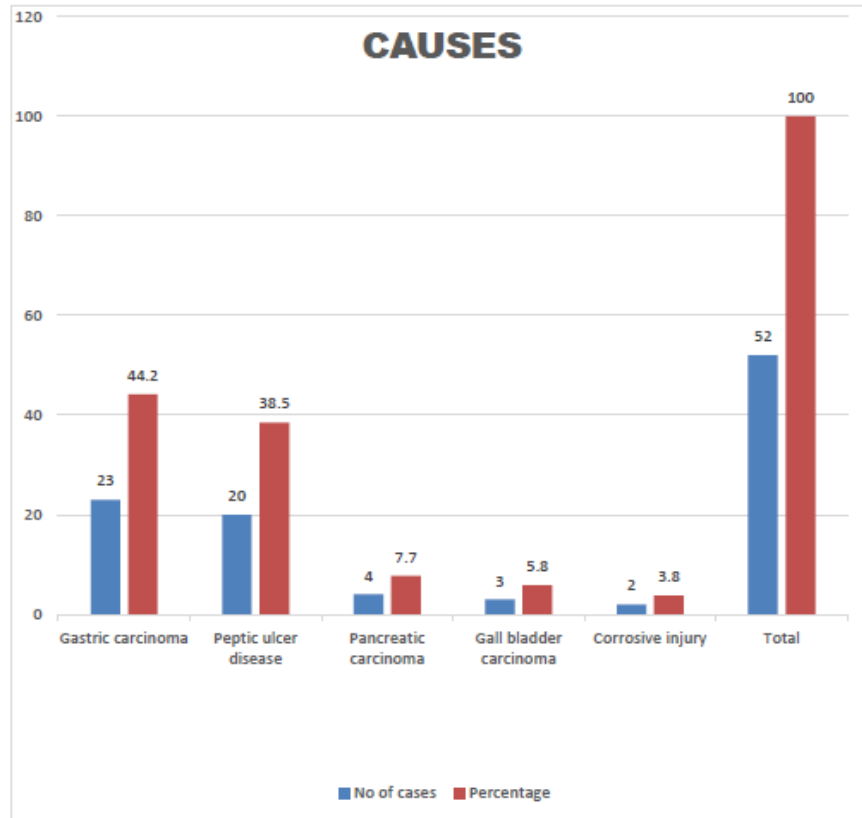
**RESULTS AND OBSERVATION:**

A total of 52 cases of adults presenting with gastric outlet presentation was studied. Malignancy was seen in 30 patients, of which 23 patients had carcinoma stomach (44.2%), 4 patients had carcinoma pancreas (7.7%) and 3 had carcinoma gall bladder (5.8%). Peptic ulcer disease was seen in 20 cases (38.5%) and 2 patients (3.8%) had corrosive injury.

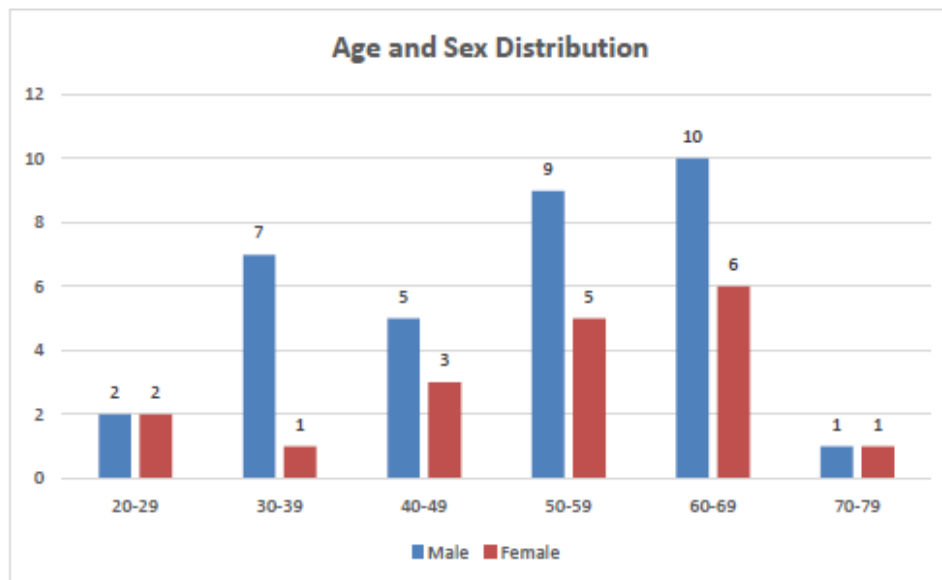
**Table No. 01: Causes**

<b>Causes of Gastric Outlet obstruction</b>	<b>No of cases</b>	<b>Percentage</b>
<b>Gastric carcinoma</b>	23	44.2
<b>Peptic ulcer disease</b>	20	38.5
<b>Pancreatic carcinoma</b>	4	7.7
<b>Gall bladder carcinoma</b>	3	5.8
<b>Corrosive injury</b>	2	3.8
<b>Total</b>	<b>52</b>	<b>100</b>

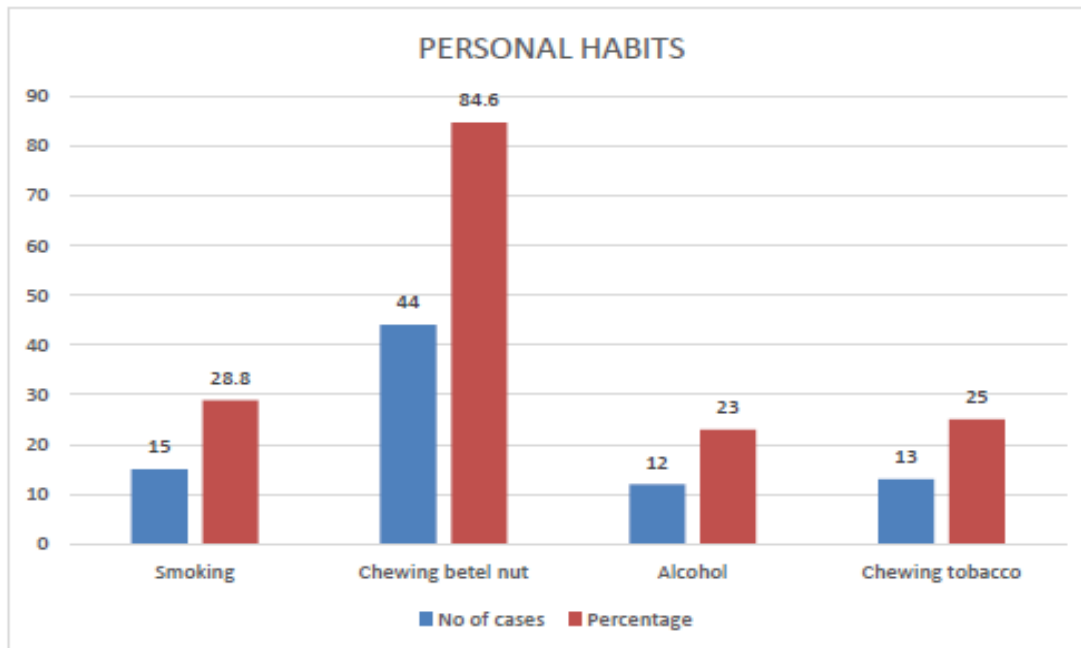
**Fig No. 1: Causes of gastric outlet obstruction**



**Fig no. 2: Age and Sex distribution of gastric outlet obstruction**

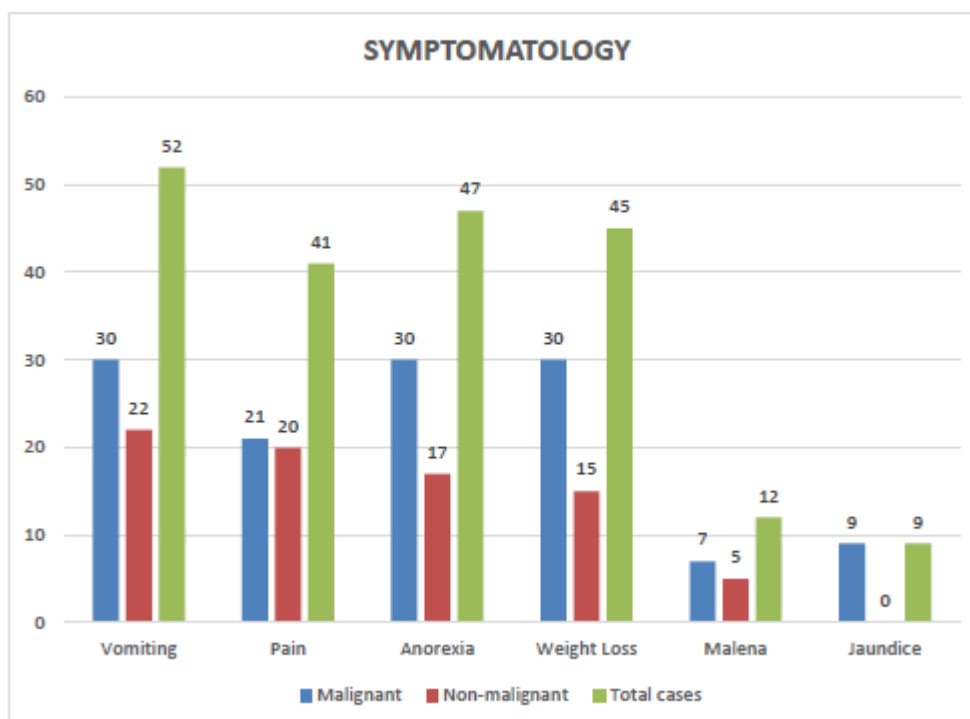


The age ranged from 24 years to 77 years. Maximum patients belonged to the 7th decade of life. Average age of presentation in malignant group is 54.3 years while in the non-malignant group is 48.4 years. Overall average age of presentation was 51.8 years.



There were 15 smokers (28.8%), 44 who chewed betel nut (84.6%), 13 who chewed tobacco of any form (25%) and 12 who consumed alcohol regularly (23%).

**Fig No 5: SYMPTOMATOLOGY**



*Vomiting* was the main symptom present in all the patients. Vomiting was both spontaneous and induced; frequency was about 2-3 times daily. Vomitus mainly

consisted of undigested food and was non bilious. Duration of this symptom was longer in the benign group but was more severe than the malignant group.

*Pain* was the next important symptom and was seen in 78.8% of patients (n = 41). In the benign cases 20 out of 22 had pain (90.9%) and among malignant cases 21 out of 30 patients had pain (70%).

*Anorexia* was present in all malignant cases and in 17 out of 22 of the benign cases.

*Weight loss* was seen in 45 patients. All the malignant cases and 15 of 22 benign cases had history of loss of weight.

*Malena* was seen in 7 out of the 30 malignant cases and 5 out of the 22 benign cases.

*Jaundice* was seen in 9 out of 30 malignant cases and none seen in the benign group. The patients with jaundice were the ones with CA pancreas(n=4) and ca GB(n=3) and 2 cases of advanced CA stomach.

**Table No. 12: UGIE findings**

<b>UGIE Findings</b>	<b>Malignant</b>	<b>Non-Malignant</b>
1. Cicatrised duodenal ulcer	0	15
2. Antero pyloric cicatrization	0	5
3. Narrowed pyloric opening without intrinsic lesion	7	0
4. Narrowed pyloric opening with active ulceration	0	2
5. Antral Growth	16	0
6. Pyloric growth	7	0

**Table No 13: CECT Findings:**

<b>CECT Findings</b>	<b>Malignant</b>	<b>Non Malignant</b>
1. Antral growth	15	0
2. Dilated stomach	16	14
3. Free fluid	4	0
4. Pyloric growth	8	0
5. Hepatic metastasis	6	0
6. Intraperitoneal metastasis	5	0
7. Cholelithiasis	0	1
8. GB mass	3	0
9. Pancreatic mass	4	0

CECT abdomen was done in all the 30 malignant cases and 15 non-malignant cases (out of 22). Among the 30 malignant cases antral growth was seen in 15 cases whereas pyloric growth was seen in 8 cases. 4 cases showed features of CA pancreas while 3 cases showed features of CA gall bladder. In 10 cases of ca stomach were seen to have advanced disease with lymph node infiltrations, hepatic and other intraperitoneal metastasis.

**BIOPSY :** Biopsy specimen for histopathological examination were taken during UGI endoscopy in 45 cases. Rest of the cases (4 cases ca pancreas and 3 cases of ca gall bladder) biopsy specimen could not be obtained due to absence of intraluminal lesions.

There were 22 patients in the benign group. Of the 22 cases, 2 patients had corrosive injury and had already undergone endoscopic balloon dilatation with intralesional steroid injection in the Dept. of Gastroenterology which had failed. They underwent retro colic gastrojejunostomy.

**BENIGN CAUSE :** 12 patients had biopsy proven H. pylori infection and these patients underwent medical management of H. pylori and retrocolicgastrojejunostomy, one of these patients had incidental finding of cholelithiasis and underwent cholecystectomy simultaneously. Rest of the benign cases (n = 8) underwent truncalvagotomy with retrocolicgastrojejunostomy.

**MALIGNANT CAUSE:** There were 30 cases in the malignant group. Of these, 4 patients had ca pancreas and 3 patients had ca gall bladder and disease was

advanced in the form of lymph node infiltrations, hepatic and intraperitoneal metastasis. 5 of these 7 pts underwent palliative antecolicgastrojejunostomy. 2 patients underwent only feeding jejunostomy due to poor general condition. 23 patients had ca stomach and of them 10 cases had advanced disease and palliative antecolicgastrojejunostomy was done in 8 cases and 2 underwent feeding jejunostomy due to poor general condition. 13 cases underwent partial gastrectomy with gastrojejunostomy with lymph node dissection.

## DISCUSSION:

In the present study of 52 cases, 20 were sequelae of peptic ulcer disease and 30 were cases of malignancy, out of which 23 were cases of gastric malignancy, 4 cases of pancreatic malignancy and 3 cases of gall bladder malignancy. 2 cases were of corrosive injury. 30 patients (57.7%) of the present series were patients of malignant gastric outlet obstruction. The trend of an increased proportion of patients with gastric outlet obstruction having malignancy was first noticed in the late 1980s.

The present series is well in conformity with the series of **Shone et al, 1995** [1]. The present series had 30/52 (57.7%) cases of malignancy while Shone et al reported (19/33) (61%) cases of malignancy. The present study may not reflect the true picture as many patients of malignancy with gastric outlet obstruction may attend a cancer centre.

Table No 1: Causes in other studies

Study group	No of cases	Malignant			% Malignant	Non Malignant					% Non Malignant
		Gastric	Pancreatic	Others		Peptic ulcer disease			%PUD	Others	
						Duodenal	Gastric	Others			
1. Balint and Spence 1959 [25]	118	13	-	-	11	95	7	-	86	3	89
2. Godlstein et al, 1966[14]	217	12	1	-	6	182	7	9	91	6	94
3. Ellis, 1987 [33]	225	69	2	-	32	139	7	-	65	8	68
4. Johnson and Ellis, 1990 [16]	9	6	-	1	78	2	-	-	22	-	22
5. Shone et al, 1995 [18]	33	12	7	1	61	4	4	4	36	1	39
6. Chowdhury et al, 1996 [21]	49	37	1	-	78	4	-	4	16	3	22
7. Present series	52	23	4	3	57.7	17	3	-	38.4	2	42.3

The age range of patients in the present series was 27-77 years, average being 51.8. Malignant gastric outlet obstruction cases were observed to have a higher mean age (mean 54.3 years, range 29-77 years) than the non-

malignant ones (mean 48.4 years, range 27-67 years). The highest number of cases belonged to the 60-69 years age group and 50-59 years age group (16 cases and 14 cases respectively).

**Shone et al, 1995** revealed a male: female ratio of 1.4:1 while **Chowdhury et al, 1996** in their series of 49 cases of gastric outlet obstruction observed a male: female ratio of 4.4:1. The similar ratio in the present series and the series of Chowdhury et al probably relates to the similar demographical distribution in the two studies. [1] [2]

**LIFESTYLE** - Majority of the patients in their study were in habits of smoking, alcohol consumption, chewing betel nut with tobacco. It was observed that a high incidence of GOO in excessive users of alcohol and tobacco in one or the other form either singly or in combination with alcohol

**SYMPTOMS - Vomiting** was present in all cases of the present series, 59.6% had this symptom for more than 3 months duration. 63.3% of the cases with malignancy

reported vomiting less than 3 months duration, while 90.9% of the non-malignant group reported this symptom for more than 3 months. Nausea and/ or vomiting was present for variable periods in the series, however duration of only the daily, repetitive, unrelenting vomiting (signifying the onset of obstruction) has been represented. Typical projectile vomiting occurred in 17 of 22 benign (77%) and 24 of 30 malignant (80%) gastric outlet obstruction of the study.

**Balint and Spence, 1959** reported copious vomiting in 51% of his cases while in 89% it was a presenting symptom of the disease. **Kreel and Ellis, 1965** in 100 patients revealed projectile vomiting in 70% of peptic ulcer group, while in malignant group 74% had projectile vomiting. [3] [4]

**Table No: 2: Incidence of vomiting in other studies**

Sl. No.	Study Groups	No of cases	No of cases with vomiting	Percentage
1.	<b>Balint and Spence, 1959 [25]</b>	118	97	97
2.	<b>MoodyCornel&amp;Beal,1962 [26]</b>	70	54	17
3.	<b>Kozoll and Meyer, 1964 [22]</b>	885	794	90
4.	<b>Kreel and Ellis, 1965 [13]</b>	100	80	80
5.	<b>Goldstein et al, 1966 [14]</b>	217	180	83
6.	<b>Johnson and Ellis, 1990 [16]</b>	9	5	56
7.	<b>Chowdhury et al, 1996 [21]</b>	49	45	92
8.	<b>Present series</b>	52	52	100

**Pain** was present in 41 (78.8%) patients of the present series. 20 out of 22 benign cases (90.9%) of gastric outlet obstruction in the present study reported epigastric pain for a mean duration of 6.3 years (range 9 months – 10 years).

**Anorexia and weight loss** were recorded in 90% (47 cases) and 86% (45 cases) patients respectively in this series. 100% of malignant and 77% of non-malignant obstruction patients reported loss of appetite, while

recent loss of weight was reported by 100% malignant and 68% non-malignant conditions

**RADIOLOGICAL INVESTIGATION CT Scan:** performed in all cases of malignant gastric outlet obstruction revealed the nature of the growth with morphological characteristics, described nodal status, visceral/intraperitoneal invasion and was found to be

helpful in staging the growth. Most of the cases revealed widespread metastasis. In these cases, the findings of the CT scan were quite accurate, although no definite inferences can be drawn from such a small series.

**UPPER GASTROINTESTINAL ENDOSCOPY:** showed antropyloric growth in 22 out of 30 patients of malignancy (23 being gastric cancer). But in all the cases who underwent UGI endoscopy the endoscope could not be passed beyond the pylorus. The exact nature of the lesion was defined, biopsy taken and concomitant conditions visualized and noted.

**Mohandas and Nagral, 2000** at the Tata Memorial Institute, Mumbai stated that more than 98% of gastric cancers in India are diagnosed in an advanced stage and in those subjected to surgery; more than 70% have serosal infiltration. [5]

**Shone et al, 1995** described non-passage of the esophagogastroduodenoscopy into the first part of the duodenum as a criterion to categorize patients as gastric outlet obstruction. **Johnson, 1995** while reiterating Shone et al (1995) findings suggested that all patients presenting with gastric outlet obstruction should have upper-intestinal endoscopy and biopsy of stricture performed to exclude malignancy before embarking upon any therapeutic intervention. [1] [6] Biopsy, either endoscopic, specimen biopsy was performed in 45 cases of the series. Adenocarcinoma of stomach (well, moderate or poorly differentiated) was shown in 23 (100%) of the malignancy cases, among which 3 (13%) cases had signet-ring type of malignancy. 22 of the patients showed features of benign diseases

**Shone et al, 1995** in a study of 33 patients of gastric outlet obstruction revealed adenocarcinoma of the stomach in 11 (55%) of the malignancy cases while 7 (35%) cases showed pancreatic adenocarcinoma.

**Chowdhury et al, 1996** in 49 cases of gastric outlet obstruction revealed adenocarcinoma in 36 (95%) of the patients. [1] [2]

### **CHOICE OF OPERATION:**

#### **Non-Malignant Group:**

8 out of 20 (40%) patients of the present series who had presented with peptic ulcer causing gastric outlet obstruction, underwent bilateral truncalvagotomy and gastrojejunostomy for relief of obstruction.

**Forrest et al, 1985** recommended truncalvagotomy plus posterior gastroenterostomy to resolve the problem of benign pyloroduodenal stenosis caused by duodenal ulcer disease. **Ellis, 1986** had substantiated this while showing vagotomy- antrectomy to be an excellent drainage procedure. [7]

#### **Malignant Group:**

In the present series where 10 of 23 (43.5%) the cases with ca stomach cases showed advanced disease at

operation. In 8 cases palliative gastrojejunostomy was done. 2 cases underwent feeding jejunostomy. In the rest 13 cases subtotal gastrectomy with gastrojejunal anastomosis with either D1 or D2 lymph node resection was carried out.

**Mohandas and Nagral, 1999** from Mumbai stated that more than 98% of all gastric cancers in India are diagnosed in an advanced stage, and in those subjected to surgery, more than 70% had serosal infiltration. However, **Branum and Fink, 1997** stated that gastrojejunostomy can be performed if resection of an obstructing lesion is not possible at exploration, although they reported better results following palliative resection. [8] [9]

Out of 7 cases (23.3%) who had carcinoma of gall bladder or pancreas 5 underwent palliative gastrojejunostomy and 2 cases had feeding jejunostomy alone.

### **CONCLUSION:**

The present study is a clinical observational study of gastric outlet obstruction conducted in the department of General Surgery, Gauhati Medical College and Hospital from 1st June 2021 to 30 June 2022. Based on the data and results obtained in the present study, the following conclusions can be drawn. Males are more commonly affected with gastric outlet obstructions in adults. Malignancy is more common in the age group of 60-69 years, while cicatrized duodenal ulcer is more common in the age group of 50-59 years Malignancy is more common as compared to benign diseases causing complication like gastric outlet obstruction Electrolyte abnormalities are more frequently encountered in patients who present with prolonged vomiting Upper GI endoscopy, barium meal and ultrasonography are the investigational tools to diagnose gastric outlet obstruction Patients with gastric outlet obstruction due to cicatrized duodenal ulcer require a posterior gastrojejunostomy with or without truncalvagotomy. Malignancy cases require curative or palliative surgery depending on the stage of the disease

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