

Carcinoma of Stomach as a Common Cause of Gastric Outlet Obstruction in Southern Odisha

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Abstract

Introduction: Carcinoma of Stomach a highly progressive tumour and common site at Antrum causing Gastric Outlet Obstruction (GOO). There are many other causes like PUD, pancreatic cancer, periampullary cancer, Bezoars etc. Due to delayed diagnosis and different clinical presentation patients are unaware of the disease. On advanced stage patients present with Gastric Outlet Obstruction. Diagnosis is conformed with upper GI endoscopy and biopsy, USG abdomen and Histopathology study of operated specimens.

Methods: A total number of 60 cases of Gastric outlet obstruction due to different causes were presented at M.K.C.G. Medical & Hospital, Surgery Department for the time period from August 2017 to July 2021. A prospective study is conducted in the department of surgery.

Observation: Most cases of GOO present in the 5th decade of life followed by 6th decade. Both malignant and benign etiologies were high in the age group. Carcinoma stomach, Adenocarcinoma variant is the commonest cause of gastric outlet obstruction in this region. Distal gastrectomy with Billroth - II reconstruction is done in 14 cases of carcinoma stomach. Rest cases of carcinoma stomach is managed by palliative operation. Vomiting and epigastric pain are the most common symptoms in the study. Anemia is found in 52% cases. A palpable mass is palpated in 25% cases. Truncal vagotomy and gastrojejunostomy is done in 21 cases of all duodenal ulcer cases causing Gastric Outlet Obstruction.

Conclusion: The present study is an insight into the presentation of GOO and its etiologies. Commonest cause of GOO in adults in this region is Carcinoma Stomach because of late presentation by the patients in this hospital.

Keywords: Gastric Outlet Obstruction, Carcinoma Stomach, Peptic Ulcer disease

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Introduction

According to Sir James Walton, GOO (gastric outlet obstruction) is described as:
- “The stomach you can hear, the stomach you can feel and the stomach you can see”

Gastric Outlet Obstruction (GOO) is clinical and pathophysiological consequence of any disease process that produce a mechanical impediment to gastric emptying which may be intrinsic or extrinsic. [1]

The common causes of obstruction are pyloric stenosis secondary to peptic ulceration and gastric cancer, latter being commoner in recent years. [2] Gastric Outlet Obstruction occurs in approximately 2% of patients with chronic duodenal ulcer. [3] Other are gastric polyps, bezoars, ingestion of caustic substances and pancreatic pseudocyst.

From the standpoint of pathology, the term pyloric stenosis is usually inaccurate at least in adult patients, since the site of obstruction is rarely situated at the pylorus itself; but is more often placed immediately proximal to the sphincter where the diagnosis of carcinoma is most probable or more distally in the duodenal bulb where the cause is almost invariably a duodenal ulcer.

But with increased awareness of the disease, change in dietary habits and availability of drugs like H₂ receptor blockers and proton pump inhibitors and recent finding of the association of H-pylori with the causation of peptic ulcer diseases and its effective irradiation with H-pylori kits, all have resulted in decreased incidence of patients requiring surgery and also the complications like pyloric stenosis have reduced. [4] At the same time the incidence of antral carcinoma of stomach producing gastric outlet obstruction has comparatively increased, which may be due to increased early diagnosis of the condition with the help of flexible fibre optic endoscope. [5].

This study has been taken up to review the changes in presentation of gastric outlet obstruction in view of changing trends in the management because of new drugs and investigatory modalities. The lack of uniformity in criteria in accepting a case of gastric outlet obstruction led to differences in incidences and clinical features in different centers, [6] still, any one of the following can be used to diagnose gastric outlet obstruction. [8-11]

1. Projectile vomiting of undigested food consumed previous day.
2. Visible gastric peristalsis (VGP)

3. Gastric succussion splash 3-4 hours after the last meal.
4. Palpable hypertrophied stomach.
5. Delayed emptying of stomach on barium meal studies.
6. A gastric residue of more than 500ml in an adult.
7. An aspirate of more than 400ml on saline load test.
8. Demonstration at operation or autopsy of grossly narrowed gastric outlet.

Aim and Objectives

To determine the causes of Gastric Outlet Obstruction in the adult rural patients coming to M.K.C.G. Medical College and Hospital, Brahmapur.

Material and Methods

This prospective study is conducted in Department of surgery. M.K.C.G. Medical College and Hospital, Brahmapur. All consecutive patients from both the sex and all age groups, presenting with clinical features of Gastric Outlet Obstruction are studied, admitted to the General Surgery Department of M.K.C.G. Medical College and Hospital, Brahmapur, during the period from August 2017 - July 2021. An ethical clearance for this study was obtained from the M.K.C.G. Medical College & Hospital Ethical and Research committee and all the patients gave written consent for the study.

Inclusion Criteria

All patients admitted in M.K.C.G. Medical College & Hospital, General Surgery department of both sexes with sign and symptoms of gastric outlet obstruction.

Exclusion Criteria

- Patients unwilling
- Patients age below 14 years
- Pregnant female

Observation

Distribution of etiologies

Out of 60 cases studied 30 were due to carcinoma stomach, 8 were due to other malignancies, 22 due to cicatrizing ulcer.

| ETIOLOGY | NO. OF CASES | PERCENTAGE |
|---------------------|--------------|------------|
| Ca stomach | 30 | 50% |
| Cicatrizing Ulcer | 22 | 37% |
| Periampullary Ca | 5 | 8% |
| Ca head of Pancreas | 2 | 3% |
| Cholangio carcinoma | 1 | 2% |
| Total | 60 | 100% |

Age distribution of GOO

Most cases of GOO present in the 5th decade of life followed by 6th decade. Both malignant and benign etiologies were high in the age group.

| AGE DISTRIBUTION | NUMBER | PERCENTAGE |
|------------------|--------|------------|
| 14-20 | 2 | 3% |
| 21-30 | 3 | 5% |
| 31-40 | 6 | 10% |
| 41-50 | 8 | 13% |
| 51-60 | 24 | 40% |
| 61-70 | 12 | 20% |
| 71-80 | 5 | 8% |

Sex Distribution in Goo

Out of 60 cases studied 42 cases are males and 18 cases are females with male to female ratio approximately 3:1. With regards to individual etiologies carcinoma stomach male to female ratio is around 2:1, and chronic duodenal ulcers ratio being 4:1.

| SEX | NUMBER | Ca STOMACH | DU | OTHER |
|--------|----------|------------|---------|---------|
| MALE | 42(70%) | 20 (67%) | 18(81%) | 4 (50%) |
| FEMALE | 18 (30%) | 10(33%) | 4(19%) | 4 (50%) |

Symptoms in Goo

| SYMPTOMS | NUMBER | PERCENTAGE |
|-------------|--------|------------|
| VOMITING | 60 | 100% |
| PAIN | 48 | 80% |
| ANOREXIA | 33 | 55% |
| WEIGHT LOSS | 36 | 60% |
| HEMATEMESIS | 18 | 30% |
| MALENA | 13 | 22% |
| JAUNDICE | 8 | 14% |

Vomiting and epigastric pain are the most common symptoms in the study. Vomiting is spontaneous, projectile in nature, non billious among cases of cicatrizing ulcer and Ca stomach. Bilious vomiting is seen in cases of peri ampullary carcinoma or

carcinoma head of pancreas. The most common clinical pictures in GOO are vomiting, epigastric pain, abdominal distension, and weight loss. Other symptoms include anorexia, weight loss hematemesis, malena. [12-17]

Signs in GOO

| SIGNS | NUMBER | PERCENTAGE |
|-------------------|--------|------------|
| V.G.P. | 38 | 64% |
| Palor | 31 | 52% |
| Dehydration | 32 | 55% |
| Succussion Splash | 22 | 35% |
| Palpable mass | 15 | 25% |
| Ascites | 9 | 15% |

Visible gastric peristalsis is seen in 38 cases accounting to 64% of total study population. Dehydration is seen in 55% of cases. Anaemia is found in 52% cases. Succussion splash is heard in only 35%. A palpable mass is palpated in 25% cases. Ascites is found in 15% cases.

Dyselectrolytemia

Causes number of cases percentage

Benign 16.71%

Malignant 18.47%

Considering sodium, potassium, and chloride level in blood the patients were categorized as having electrolytes imbalance or not. It was found that 16 out of 38 cases (47%) of malignant causes of gastric outlet obstruction showed electrolyte imbalance in blood reports, whereas in benign cause it was seen among 16 patients out of 22 mounting to 71%.

Surgical Procedure

| PROCEDURE | Ca Stomach | Duodenal Ulcer | Others |
|-------------------|------------|----------------|--------|
| Gj + TV | 0 | 21 | 0 |
| DG + B-II | 14 | 0 | 0 |
| Total Gastrectomy | 1 | 0 | 0 |

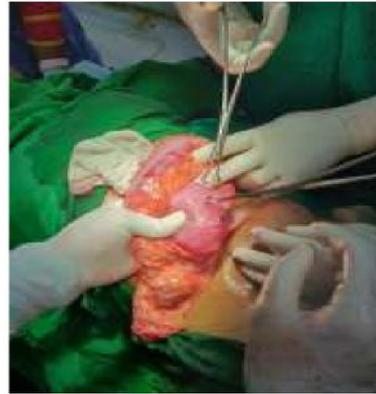
| | | | |
|---------------------|----|---|---|
| Palliative GJ | 10 | 0 | 0 |
| Feeding Jejunostomy | 5 | 1 | 0 |
| Palliative Gj+HJ | 0 | 0 | 7 |
| Palliative Cj+Gj | 0 | 0 | 1 |

Truncal vagotomy and gastrojejunostomy is done in 21 cases of all duodenal ulcer cases. Distal gastrectomy with billroth-II reconstruction is done in 14 cases of carcinoma stomach. Rest cases of carcinoma stomach is managed by palliative gastro jejunostomy in 10 cases, feeding

jejunostomy in 5 cases and total gastrectomy was possible in only 1 case. Palliative gastrojejunostomy and hepaticojejunostomy done in 7 cases and palliative gastrojejunostomy and cholecystojejunostomy done in 1.



(a)



(b)



(c)



(d)



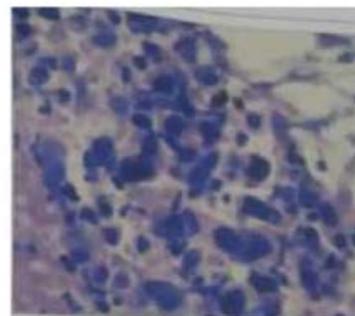
(e)



(f)



(g)



(h)

(a) (b) (c) (d): Intra operative pictures of distal gastrectomy with gastrojejunostomy

(e) (f) (g): Lymph node Metastasis due to Ca. Stomach

(h) Histo Pathology study of resected Gastric mass - Adenocarcinoma

Discussion and Analysis

The discussion is mainly on observation made from presenting symptoms, signs, investigations, surgery performed and follow up of GOO cases attending Department of General Surgery M.K.C.G. Medical College & Hospital for a period of three years.

| | |
|--------------------------------------|----------|
| GOO Secondary to Ca Stomach | 30(50%) |
| GOO Secondary to peptic ulcer | 22 (37%) |
| GOO Secondary to Ca Head of Pancreas | 2 (3%) |
| GOO Secondary to Cholangiocarcinoma | 1(2%) |

The commonest cause of GOO is malignancy which is seen in 38 cases (63%) of which 30 (50%) are due to carcinoma stomach and rest 8(13%) due to other malignancies and second most common cause being cicatrizing duodenal ulcers seen in 22 cases (37%)

Previously Duodenal ulcer was the most common cause of GOO. These observations show increase in carcinoma related GOO and reduction in peptic ulcer related GOO. These findings correlate with Derek Frederickson et al⁵⁸ and Mc-Quaid et al study (2010)¹⁶

which says malignancy accounts in 50-80% cases and 61% in Dallas N shone et al study (2008)¹⁷ and 72.9% according to study by S.Essoun, J.C.B. Dakubo [18]. With regards to individual incidences carcinoma stomach is the most common malignancy with 50% in present study and is comparable to 42.9% as per JAKA et al⁶¹ and 55% as per S.Essoun, J.C.B. Dakubo [18]. Cicatrizing ulcer in duodenum is the most common benign condition seen in 37% in present study and comparable to 28.3% to JAKA et al and 25% as per S.Essoun, J.C.B. Dakubo.

| ETIOLOGY | PRESENT STUDY | JAKA et al. | ESSOUN & DABUKO | RANKA KSHITIZ et al. |
|------------|---------------|-------------|-----------------|----------------------|
| | % | % | % | % |
| CA stomach | 50 | 42.9 | 55 | 59 |
| CDU | 37 | 28.3 | 25 | 22.5 |
| Others | 13 | 28.8 | 13.8 | 18.5 |

Incidence of Etiologies in Various Studies

In this study majority of the patients were in 5th decade with mean age being 54 years. For malignancies mean age is found to be 58 and for benign diseases mean age is 47.5 years with a standard deviation of 12.8 which is comparable to JAKA et al¹⁹ where the mean age for GOO is 52 years and mean age for GOO is 52 years and mean age for chronic duodenal ulcers is 34 years and malignant GOO is 56 years.

In carcinoma stomach with GOO youngest age of presentation is 30 years and oldest being 73 years. Majority of cases were in age group 5-60 years. In duodenal ulcer maximum incidence is found in the 5th decade followed by 3rd decade. The youngest age of presentation is 18 years and

oldest being 70 years with a mean age of 46 years which is comparable to FISHER et al²⁰ study where mean age is 54 years.

Age Distribution in Various Studies

GOO is most common in males 70% and females 30% which is comparable to study by Essoun & Dakubo¹⁸ in which 68.22% in males and 57.14% in females. With regards to individual's etiologies incidence in males in Ca stomach is 76.27% compared to 67% in present study and incidence of peptic ulcer in males is 42.8% when compared to 81% in present study.

In duodenal ulcer men out numbered women by 4.2:1 while it is 2:1 in study by YOGIRAM & CHOWDHURY²¹ and 1.2:1 in study conducted by JAKA et al. GOO is common in

males (70%) than females (30%) in the present study which is similar to study conducted by JAKA et al [19]. This higher incidence in males, worldwide can be

explained as because of more consumption of gastric irritants by males compared to females. [20-24]

| AGE DISTRIBUTION | PRESENT STUDY | ESSOUN & DAKUBO et al | RANKA KSHITIZ | JAKA et al |
|------------------|---------------|-----------------------|---------------|------------|
| | % | % | % | % |
| 14-30 | 8 | 1.8 | 5 | 6 |
| 31-40 | 10 | 11.2 | 7.5 | 14.1 |
| 41-50 | 13 | 23.3 | 17.5 | 20.7 |
| 51-60 | 40 | 18.6 | 40 | 23.9 |
| 61-70 | 20 | 28.9 | 30 | 12 |
| 71-80 | 8 | 9.3 | 0 | 3.8 |

Distribution of Symptoms in Goo

| SYMPTOMS | PRESENT STUDY | RANKA KSHITIZ et al | JAKA et al |
|--------------|---------------|---------------------|------------|
| | % | % | % |
| Vomiting | 100 | 100 | 100 |
| Pain | 80 | 89 | 56 |
| Anorexia | 55 | 84 | |
| Weight Loss | 60 | 84 | 93 |
| Haematemesis | 30 | | |
| Malena | 22 | 35 | |

One Case was previously operated for duodenal perforation. 10 out of 22 cases gave positive history of previous acid peptic disease and used proton pump inhibitors as over counter medication. None out of 22 cases had taken anti helicobacter pylori treatment.

Pain, vomiting bile stained, progressive jaundice, itching, anorexia, and weight loss are commonly found in periampullary carcinoma. Symptoms of GOO, such as nausea vomiting are reported in 11% to 50% of patients with pancreatic cancer at the time of Diagnosis (DiMugno et al, 1999)

Jaundice is noted in 1 case of Ca stomach and not found in duodenal ulcer probable cause being periportal nodes compressing CBD or infiltration. Palor was present in 71% Ca Stomach and 25% duodenal ulcer which is comparable to 62% in a ca stomach in MICHAEL. L. SCHWARTZ t

al and 80% of cases in study by JAKA et al. Dehydration is seen 55% of case similar to study JAKA et al.

Visible gastric peristalsis (VGP) is seen in 64% of cases GOO of which 75% cases of duodenal ulcer and 60% of cases of ca stomach compared to YOGIRAM and CHOWDHARY see in 74% of duodenal ulcer. Succussion splash is seen in 35% of cases in present study which is observed in 64% cases of GOO in study by HAROLD ELLIS and 78.3% cases in study conducted by JAKA et al. VGP and succussion splash was seen in less commonly in Ca stomach than Duodenal ulcer corresponding to observation made by Harold elis. Electrolyte disturbances seen in 10 cases (17%) when compared to MICHAEL.L. SCHWARTZ et al it is 30% and 57.6% in study by JAKA et al. Palpable mass is found in 15 cases (25%) of GOO comparable to 25% in study by JAKA et al.

Distribution of Signs

| SIGNS | PRESENT STUDY | JAKA ET AL |
|-------------------|---------------|------------|
| V.G.P. | 64 | |
| Palor | 52 | 80 |
| Dehydration | 55 | 54.9 |
| Succussion Splash | 35 | 78.3 |
| Palpable mass | 25 | 25 |

In present study all cases of

In present study all cases of cicatrizing duodenal ulcer underwent truncal vagotomy with posterior retro colic loop gastrojejunostomy except 1 patient who underwent feeding jejunostomy due to his poor condition to be fit for general anesthesia. [25-26] In Ca stomach cases 14 cases underwent billroth - II procedure, 10 cases underwent palliative anterior gastrojejunostomy and 5 cases has to undergo feeding jejunostomy because of advance nature of the disease. Only one case a total gastrectomy was performed as tumor was seen extending on to lesser curvature and tumor free margin was not attainable by distal gastrectomy only. The most common procedure performed is

gastrojejunostomy in 31 cases (54%) which is 61.9% in study by JAKA et al.

All 8 cases presented with periampullary carcinoma and carcinoma head of pancreas presenting as GOO were inoperable, 7 cases underwent palliative hepaticojejunostomy and gastrojejunostomy. One case of periampullary carcinoma underwent cholecystic jejunostomy and palliative gastrojejunostomy. Gastro jejunostomy should be performed in every case in addition to biliary bypass in patients with unresectable periampullary adenocarcinoma [27]. The presence of GOO is not an independent factor of poor prognosis, but a reflection of the aggressive biologic behaviour of pancreatic head adenocarcinoma.

Surgical Procedure in Goo

| PROCEDURE | PRESENT STUDY | RANKA KSHITIZ etal | ESSOUN & DABUKO |
|---------------------|---------------|--------------------|-----------------|
| | % | % | % |
| Gj + TV | 35 | 12 | 25 |
| DG+B-II | 31 | 38 | 13 |
| Total Gastrectomy | 2 | 0 | 0 |
| Palliative GJ | 16 | 28 | 30 |
| Feeding Jejunostomy | 10 | 10 | 0 |
| Palliative GJ+HJ | 12 | 0 | 0 |

Six cases of carcinoma stomach developed wound infection with discharge which was conservatively managed. No complication was found during 1 year follow up of gastrojejunostomy for duodenal ulcer. [28] 1 case of Ca stomach presented with pain abdomen in post operative period and upper GI endoscopy found it to be

Gi stomal ulcer. One case of periampullary carcinoma developed bile leak, conservatively managed for 2 weeks which was subsided, 2 cases of Ca stomach and one case of cholangiocarcinoma died in early post-operative period. All cases of carcinoma stomach were referred to radiotherapy department for adjuvant chemotherapy

treatment. All cases of cicatrizing duodenal ulcer were discharged post operatively after 8-10 days and advised anti H Pylori regimen and proton pump inhibitors. [28-30]

Follows UP

All cases of peptic ulcer followed postoperatively till date showed no complications. 3 cases of periampullary and 4 cases of Ca stomach died within 1 month of surgery before receiving adjuvant treatment. 7 cases of carcinoma stomach died within 6 months of follow up. Remaining cases were receiving chemotherapy.

Summary

Most common cause of Gastric outlet obstruction is malignancy i.e., 63% of which Ca stomach is 50%. Periampullary carcinoma 8%, carcinoma head of pancreas 3%, cholangial carcinoma 2%. Most common benign cause is duodenal ulcer 37%. Males are more commonly affected M:F = 3:1. Most common presenting symptoms are vomiting and pain abdomen and signs being anaemia dehydration and visible gastric peristalsis. Smoking and alcohol are associated with Carcinoma Stomach.

VGP and succession splash is more seen in case of benign disease than malignant. 15 cases presented with a mass per abdomen, presence of mass favours the malignancy, electrolyte imbalance in malignant cases is highly compared to other studies due to lack of awareness. 15 cases of Ca stomach were operable and operated at time of presentation, other cases were inoperable underwent any palliative measures. The surgical procedure done in all cicatrizing duodenal ulcer patients is truncal vagotomy and gastrojejunostomy and there is no recurrence symptoms in any cases. Periampullary carcinoma and Ca pancreas developing GOO is inoperable case and so underwent palliative treatment and they have poor prognosis.

Conclusion

The present study is an insight into the presentation of GOO and its etiology. Commonest cause of GOO in adults is carcinoma stomach followed by cicatrizing duodenal ulcer. GOO is common in males in 5th decade. UGI endoscopy is investigation of choice. Malignant GOO had poor prognosis and mostly palliation is done. It focuses on the fact that there is delayed presentation with patients with upper gastrointestinal malignancy. UGIE can be proposed as screening modality to identify the condition at an early stage.

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