

A CLINICOPATHOLOGICAL STUDY ON GASTRIC OUTLET OBSTRUCTION IN ADULTS

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ABSTRACT

BACKGROUND

Gastric outlet obstruction (GOO) is a clinical and pathophysiological consequence of any disease process that produces a mechanical impediment to gastric emptying which may be extrinsic or intrinsic. GOO may be caused by a heterogeneous group of diseases that include both benign and malignant conditions.^{1,2} Until the late 1970s, benign disease was responsible for the majority of cases of GOO in adults. By contrast, in recent decades, 50 to 80 percent cases have been attributable to malignancy.

Aim-1. To study the incidence of various aetiologies causing GOO. 2. To observe the benign versus malignant conditions as aetiological cause. 3. To follow the surgeries done for cases of GOO and to study their surgical outcome.

MATERIALS AND METHODS

This prospective study has been conducted on patients attending to Surgical Department, Government General Hospital, Kakinada during the period of July 2012 to August 2014. 55 patients of GOO have been studied.

RESULTS

Out of 55 cases studied, 35 are due to malignant causes out of which 28 are due to Carcinoma stomach, 7 due to other malignancies and 20 cases due to cicatrising duodenal ulcer. Most of cases of GOO present in the 5th decade of life followed by 6th decade. Both malignant and benign aetiologies were high in this age group. Carcinoma stomach male to female ratio is 2:1 and chronic duodenal ulcers are seen in ratio of 6:1. Vomiting and epigastric pain are the most common symptoms in this series. Visible gastric peristalsis is seen in 30 cases accounting to 63% of total cases. Dehydration is other common presentation seen 54% of cases followed by anaemia in 53% of cases. Succussion splash is heard in 36% of cases, palpable mass in 25% of cases and ascites in 15% of cases. Truncal vagotomy and gastrojejunostomy is done in 19 cases (34%) of cases. Distal gastrectomy with Billroth II reconstruction is done in 13 cases of Ca stomach (23% of total cases). Palliative gastrojejunostomy is done in 14 cases (25%). Total gastrectomy in 1 case feeding jejunostomy in one case. Palliative gastrojejunostomy with hepaticojejunostomy is done in 6 cases and in one case palliative cholecystojejunostomy with gastrojejunostomy was done.

CONCLUSION

- The present study gives an insight into presentation of GOO and its aetiology.
- Commonest cause of GOO in adults is carcinoma stomach followed by cicatrising duodenal ulcer.
- GOO is common in males in 5th decade.
- UGIE is the 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 of upper gastrointestinal malignancy.

KEYWORDS

Gastric Outlet Obstruction, Causes, Surgeries.

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BACKGROUND

Gastric outlet obstruction (GOO) is a clinical and pathophysiological consequence of any disease process that produces a mechanical impediment to gastric emptying which may be extrinsic or intrinsic.³

GOO was described by Sir James Walton as "The stomach you can hear, the stomach you can feel and the stomach you can see".

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As part of the initial workup, the possibility of functional non-mechanical causes of obstruction, such as diabetic gastroparesis, should be excluded. Once a mechanical obstruction is confirmed, benign and malignant processes should be differentiated because definitive treatment is based on recognition of the specific underlying cause. Diagnosis and treatment should be done expeditiously, because delay may result in further compromise of the patient's nutritional status.

Until introduction of effective ulcer therapy, cicatrising duodenal ulcer was the commonest cause of GOO and malignancy was attributed to only 20% of the cases. But, now in the era of H₂ blockers and proton pump inhibitors, incidence of duodenal ulcer has been decreasing as symptomatic ulcers begin to respond to medical treatment, although this has not reflected to changes of complication like bleeding and perforation. At the same time, the incidence of

antral carcinoma of stomach producing GOO has comparatively increased,⁴ which may be due to increased early diagnosis of the condition with the help of flexible fiberoptic endoscope.

Any one of the following can be used to Diagnose GOO

- Projectile vomiting of undigested food consumed previous day.
- Palpable hypertrophied stomach.
- Visible gastric peristalsis.
- Gastric succussion splash 3-4 hours after the last meal.
- Delayed emptying of stomach on barium meal studies.
- A gastric residue of more than 500 mL in an adult.
- An aspirate of more than 400 mL on saline load test.
- Demonstration at operation of grossly narrowed gastric outlet.

MATERIALS AND METHODS

This prospective study has been conducted on patients attending to Surgical Department, Government General Hospital, Kakinada during the period of July 2012 to August 2014. 55 patients of GOO have been studied.

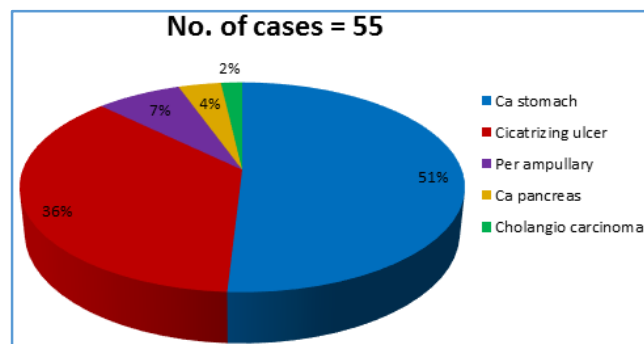
RESULTS

Out of 55 cases studied, 35 are due to malignant causes out of which 28 are due to Carcinoma stomach, 7 due to other malignancies and 20 cases due to cicatrizing duodenal ulcer.

Distribution of Aetiologies

Aetiology	No. of Cases	Percentage
Ca stomach	28	51%
Cicatrizing ulcer	20	36%
Periampullary	4	7%
Ca head of pancreas	2	3%
Cholangiocarcinoma	1	2%
Total	55	100%

Etiology of GOO



Age Distribution	Number	%
21-30	4	7%
31-40	7	12%
41-50	7	12%
51-60	23	41%
61-70	10	18%
71-80	4	7%

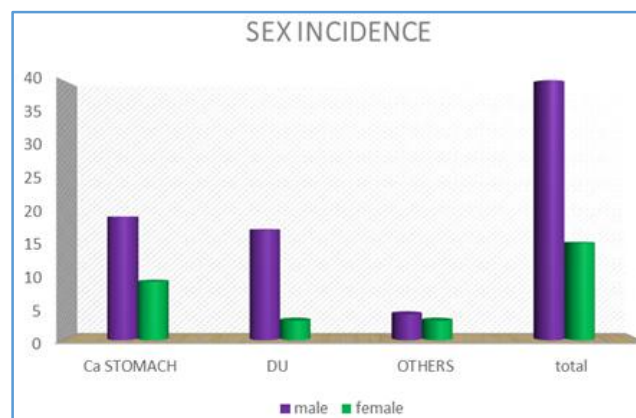
Most of cases of GOO present in the 5th decade of life followed by 6th decade. Both malignant and benign aetiologies were high in this age group.

Sex Distribution in GOO

Sex	Number	Ca Stomach	DU	Others
Male	40(72%)	19(67%)	17(85%)	4(57%)
Female	15(28%)	9(33%)	3(15%)	3(43%)

Out of 55 cases studied, 40 cases were male and 15 were female with a male to female ratio of 2.7:1. With regards to individual aetiologies carcinoma stomach male to female ratio was 2:1 and chronic duodenal ulcers are seen in ratio of 6:1.

Distribution of Aetiology According to Sex



Symptoms in GOO

Symptom	Number	%
Vomiting	55	100%
Pain	44	80%
Anorexia	31	56%
Weight loss	33	60%
Haematemesis	16	29%
Melaena	12	22%
Jaundice	9	16%

Vomiting and epigastric pain are the most common symptoms in this series. The most common clinical features of GOO include vomiting, epigastric pain, abdominal distension and weight loss.⁵ Vomiting being spontaneous, projectile and non-bilious seen in 100% patients of cicatrizing ulcer and Ca stomach. Bilious vomiting is found in GOO due to periampullary Ca and Ca head of pancreas.

Other symptoms include anorexia (64%), weight loss (64%), haematemesis (40%), melaena (25%).

Signs in GOO

Signs	Number	%
VGP	35	63%
Pallor	29	53%
Dehydration	30	54%
Succussion splash	20	36%
Palpable mass	14	25%
Ascites	8	15%

Visible gastric peristalsis is seen in 30 cases accounting to 63% of total cases. Dehydration is other common presentation seen in 54% of cases followed by anaemia in 53% of cases. Succussion splash is heard in 36% of cases, palpable mass in 25% of cases and ascites in 15% of cases.

Surgical Procedures

Procedure	Ca Stomach	Duodenal Ulcer	Others
GJ +TV	0	19 (34%)	0
DG+B-II	13 (23%)	0	0
Total gastrectomy	1 (2%)	0	0
Palliative GJ	14 (25%)	0	0
Feeding jejunostomy	0	1 (2%)	0
Palliative GJ + HJ	0	0	6 (10%)

Truncal vagotomy and gastrojejunostomy is done in 19 cases (34%). Distal gastrectomy with Billroth II reconstruction is done in 13 cases of Ca stomach that is 23% of total cases. Palliative gastrojejunostomy is done in 14 cases (25%). Total gastrectomy in 1 case feeding jejunostomy in one case. Palliative gastrojejunostomy with hepaticojejunostomy is done in 6 cases and in one case palliative cholecystojejunostomy with gastrojejunostomy was done.

DISCUSSION

The discussion is mainly on observations made from presenting symptoms, signs, investigations, surgery performed and followup of 55 cases of GOO who attended Surgical Department, Government General Hospital, Kakinada, for a period of 2 years.

The commonest cause of GOO is malignancy which is seen in 35 cases (64%) of which 28 (51%) are due to Ca stomach and 7 (13%) are other malignancies and second common cause being cicatrising duodenal ulcer seen in 20 cases (36%).

Previously, duodenal ulcer was the most common cause of GOO. With regards to individual incidences, carcinoma stomach is the most common malignancy with 51% in present study and is comparable to various other studies.

Incidence in Various Studies

Aetiology	Present Study	Jaka et al ⁶	Essoun & Dabuko ⁷	Ranka Kshitiz et al
	%	%	%	%
CA Stomach	51	42.9	55	59
CDU	36	28.3	25	22.5
Others	13	28.8	13.8	18.5

Age

In this study, majority of the patients were in 5th decade with mean age being 53.8 and for malignancy mean age is 57.4 and for benign cause being 47.05 with a standard deviation 12.91 which is comparable to Jaka et al⁸ where the mean age for GOO was 52 years and mean age for chronic duodenal ulcer was 34 years and malignant GOO was 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 50-60 years. In duodenal ulcer,

maximum incidence is found in 5th decade (30%) followed by 3rd decade (25%). The youngest age of presentation was 22 years and oldest was 70 years with a mean age of 47.05 years which is comparable to 54 years in a study done by Fisher et al.⁹

Age Distribution in Various Studies

Age Distribution	Present Study	Essoun & Dabuko ⁶	Ranka Kshitiz et al	Jaka et al ⁸
	%	%	%	%
21-30	7	1.8	5	6
31-40	12	11.2	7.5	14.1
41-50	12	23.3	17.5	20.7
51-60	41	18.6	40	23.9
61-70	18	28.9	30	12
71-80	7	9.3	0	3.8

Sex

GOO is most common in males 72% and females 28%.

Sex Distribution in GOO

Studies	Sex	Percentage of GOO	CA Stomach	DU
		%	%	%
Present Study	Male	72	67	85
	Female	28	33	15
Ranka Kshitiz et al	Male	70	73	66
	Female	30	27	33
Jaka et al	Male	66.3		
	Female	33.7		
Essoun & Dabuko ⁶	Male	68.22		
	Female	31.77		

Occupation

29 patients were manual labourers and farmers and most of them belong to low socioeconomic status who gave history of irregular dietary habits. The series Donald D Kozoll and Karl A Meyer¹⁰ also showed the same pattern as in non-skilled day labourers.

36 patients have a history of tobacco consumption in form of smoking and chewing and alcohol intake.

Vomiting (100%) and epigastric pain (80%) are the most common symptoms in this series.

Other symptoms include anorexia (64%), weight loss (64%) which is compared to 52% in study by Michael L Schwartz.⁷ Weight loss was seen in 59.5% of patients in the series of Donald D. Kozoll and Karl A. Meyer¹⁰ and 32% in the series of Harvey J. Dworken and Harold P. Roth¹¹ and 93% in study by Jaka et al.⁸ Most of them are malnourished in spite of good appetite due to increased abdominal pain on food intake.

Distribution of Symptoms in GOO

Symptoms	Present Study	Ranka Kshitiz et al	Jaka et al
	%	%	%
Vomiting	100	100	100
Pain	80	89	56
Anorexia	56	84	
Weight loss	60	84	93
Haematemesis	29		
Melaena	22	35	

2 cases were previously operated for duodenal perforation. 10 of 20 cases gave positive history of previous acid peptic disease and used proton pump inhibitors as over-the-counter medication. None out of 20 cases had taken anti-Helicobacter pylori treatment.

Pain, vomiting bile, progressive jaundice, itching, anorexia and weight loss are commonly found in periampullary carcinoma. Jaundice is noted in 2 cases of Ca stomach and not found in duodenal ulcer, probable cause being periportal nodes compressing CBD or infiltration.

Distribution of Signs

Signs	Present Study	Jaka et al
	%	%
VGP	63	
Pallor	53	80
Dehydration	54	54.9
Succussion splash	36	78.3
Palpable mass	25	25

Surgery

In present study, all cases of cicatrising duodenal ulcer underwent truncal vagotomy with posterior retrocolic loop gastrojejunostomy except one case who underwent feeding jejunostomy in the view of poor general condition unfit for general anaesthesia.

In Ca stomach (antrum), 13 cases (46%) underwent Billroth II procedure, 14 cases (50%) underwent palliative anterior gastrojejunostomy and 1 case underwent total gastrectomy with oesophagojejunal anastomosis, as antral tumour was found extending along the lesser curvature tumour free margin could not be attained by distal gastrectomy. Most common surgical procedure performed is gastrojejunostomy in 70% (33) which is 61.9% in a study by Jaka et al⁸.

All 6 cases of periampullary carcinoma and carcinoma head of pancreas presenting with GOO were inoperable, 5 cases underwent palliative hepaticojejunostomy and gastrojejunostomy. One case underwent cholecystojejunostomy and palliative gastrojejunostomy. One case of cholangiocarcinoma of supraduodenal CBD with GOO underwent hepaticojejunostomy and anterior gastrojejunostomy. Gastrojejunostomy should be performed prophylactically in addition to a biliary bypass in patients with unresectable periampullary adenocarcinoma¹². 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 Procedures in GOO

Procedure	Present Study	Ranka Kshitiz et al	Essoun & Dabuko ⁶
	%	%	%
GJ +TV	34	12	25
DG+B-II	23	38	13
Total Gastrectomy	2	0	0
Palliative GJ	25	28	30
Feeding Jejunostomy	2	10	0
Palliative GJ + HJ	10	0	0

Six cases of Ca stomach got wound infection with discharge which was conservatively managed. No complication was found during 1 year followup of gastrojejunostomy for duodenal ulcer. 1 case of Ca stomach presented with pain abdomen and on upper GI endoscopy it was found to be GJ stomal ulcer which proved to be a malignant ulcer on biopsy.

One case of periampullary carcinoma developed bile leak, was conservatively managed for 2 weeks which was subsided, 2 cases of Ca stomach died in post-operative period, 1 case of cholangiocarcinoma died in post-operative period.

Followup

All cases of peptic ulcer followed postoperatively till date showed no complaints. 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 followup. Remaining 15 cases were receiving chemotherapy.

CONCLUSION

- The present study gives an insight into presentation of GOO and its aetiology.
- Commonest cause of GOO in adults is carcinoma stomach followed by cicatrising duodenal ulcer.
- GOO is common in males in 5th decade.
- UGIE is the 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 of upper gastrointestinal malignancy.
- UGIE can be proposed as a screening modality to identify the condition at an early stage.

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