

Original Research Article

A clinical study of gastric outlet obstruction

Ashwin K., R. Lakshmi Visruja*

Department of General Surgery, PESIMSR, Kuppam, Andhra Pradesh, India

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***Correspondence:**

Dr. R. Lakshmi Visruja,

E-mail: visruja@gmail.com

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ABSTRACT

Background: Gastric outlet obstruction (GOO) is a diagnostic and therapeutic challenge in developing countries to a Surgeon. Gastric outlet obstruction, a clinical condition impeding emptying of stomach mechanically, can be due to varied etiology. This study was taken up to know the etiological factors and management.

Methods: This was a descriptive prospective study done at Madurai Medical College for a period of 2 years from September 2009 to August 2011. A set of inclusion and exclusion criteria were defined and followed. Upper gastrointestinal endoscopy (OGD) was done in all cases while Barium meal study was done in few cases to make the diagnosis. Relevant operative procedure was done, and patients were managed post operatively.

Results: Cicatrised Duodenal ulcer (DU) was the commonest cause followed by Carcinoma Pyloric antrum (Ca PA). Majority of the patients were males (67.5%) with male to female ratio of 2.07:1. Vomiting was one of the major presenting symptoms in all the patients.

Conclusions: Cicatrised DU was the commonest cause for GOO in present study. Present study highlights the increasing incidence of Ca PA. This could be due to better management of DU at an early stage.

Keywords: Cicatrised duodenal ulcer, Carcinoma pyloric antrum, Gastric outlet obstruction

INTRODUCTION

Sir James Watson described Gastric Outlet Obstruction (GOO) as “The stomach you can hear, the stomach you can feel and the stomach you can see”.

Gastric outlet obstruction is a diagnostic and therapeutic challenge to surgeons in developing countries. GOO is a clinical condition caused by diseases impeding gastric emptying mechanically. This can be complete or incomplete obstruction of distal stomach, pylorus or proximal duodenum.¹ The causes include both benign and malignant conditions.²

GOO is the clinical and pathophysiological consequence of diseases producing mechanical obstruction to gastric

emptying.³ This may be due to external compression or due to obstruction from acute oedema, scarring and fibrosis or a combination.^{1,4}

Incidence is not precisely known in developing countries. It occurs in approximately 2% of Chronic Duodenal Ulcer (DU) patients.⁵ It accounts for 5-8% of complications of ulcer disease. In developed countries it is predominantly seen in association with malignancy and the peak incidence is more in older age.^{6,7} In recent times malignancy attributing to GOO in 50-80% of cases has been noted.^{6,8-11}

This study was taken up to review the changing scenario in the clinical presentation, etiology and the management of GOO.

METHODS

A total of 80 patients were included from Government Rajaji Hospital, Madurai attached to Madurai Medical College. This study which was done over a period of 2 years from September 2009 to August 2011. This was a descriptive prospective study.

Inclusion criteria

- Presence of projectile vomiting of undigested food material, succussion splash heard 3-4 hours after meal, visible gastric peristalsis, presence of mass with above features
- Gastric overnight aspirate of >200ml in fasting state.
- Positive saline load test: Retention of more than 400 ml of normal saline 30minutes after administration of 750ml of NS
- OGD demonstrating Gastric outlet obstruction

Exclusion criteria

- Patients <18 years
- Pregnant women
- patients with any history of previous cancer.

Gastric contents were aspirated through Ryle’s tube after an overnight fast. Saline load test was performed in all cases. 750ml of normal saline was infused through Ryle’s tube, which was then clamped and released after half an hour, volume of aspirate was noted down. Any volume >400 ml was considered significant.

Detailed history, physical examination and investigation for pre-operative assessment was done in all cases. Upper Gastro-Intestinal endoscopy was done in all cases for diagnostic confirmation. Biopsies were taken wherever required. Barium meal examination was done in few cases of corrosive stricture as the scope couldn’t be passed beyond. Intra operative findings were noted down and case was followed up in the post-operative period.

Pre-operative dehydration was corrected with intravenous fluids. Gastric decompression was done by continuous drainage of gastric contents through Ryle’s tube. Oral fluids were allowed according to the tolerance of patient. Stomach wash was given preoperatively using Normal saline. Anaemia and hypoproteinemia was corrected using Packed cell and Fresh frozen plasma transfusion.

Anaesthesia applied in the study was general anaesthesia. For surgery all intra operative findings were noted meticulously.

Post-operative period

- Temperature, pulse, blood pressure and respiratory rate chart.
- Stomach was decompressed using Ryle’s tube aspiration.
- IV fluids were infused until the patients were started on oral fluids.
- Oral feeds were started after 5th post-operative day starting with fluids gradually changing to solid foods according to tolerance of patients.
- Patients were ambulated as early as possible, routine antibiotics were given.
- All details were recorded in proforma and master chart was made

Ethical committee clearance from the institution was taken. Data was collected, tabulated and analysed using descriptive statistical methodology.

RESULTS

A total of 80 patients were included in our study. Higher incidence was seen in the age group 41-50 years of age. The commonest cause in present study was cicatrised Duodenal ulcer (DU)- 46.25% followed by carcinoma pylorus- 38.75% (Table 1).

Table 1: Age and etiology.

Age group	Carcinoma pyloric antrum	Cicatrised duodenal ulcer	Corrosive antral stricture	Others
18-20	0	0	1 (14.2%)	0
21-30	0	2 (5.40%)	2 (28.5%)	0
31-40	5 (16.12%)	10 (27.02%)	2 (28.5%)	0
41-50	8 (25.80%)	15 (40.50%)	2 (28.5%)	0
51-60	11 (35.48%)	6 (16.21%)	0	3 (60%)
61-70	5 (16.12%)	4 (10.81%)	0	2 (40%)
71-80	2 (6.45%)	0	0	0

Higher the age (>50yrs), the etiology of GOO was carcinoma pyloric antrum more common than DU. In the age group <50yrs, incidence of cicatrised DU was found

higher than Ca PA as the etiology for GOO. Youngest case of GOO secondary to Ca PA was in 32yr old patient in our study (Table 2).

Majority of the patients were males (67.5%) with male to female ratio of 2.07:1. Male to female ratio in Ca PA was 2.1:1 and in cicatrised DU was 3.1:1.

Smokers were 62.5% of the patients and they were found to have GOO secondary to cicatrised DU. Out of 80 patients, 47.5% were alcoholics. It was seen to be more

prevalent in low socioeconomic status population (Figure 1).

Vomiting was the predominant symptom in this study (100%) as common was abdominal pain, followed by loss of appetite which was seen in 93.54% of Ca PA patients and 70.27% of DU patients. History of acid peptic disease was noted in 70% of patients.

Table 2: Sex and etiology.

Sex	Total no.	Carcinoma antrum	Cicatrised duodenal ulcer	Corrosive antral stricture	Others
Males	54	21	28	3	2
Females	26	10	9	4	3

Table 3: Signs.

Signs	Total no. (%)	Carcinoma antrum (%)	Cicatrising ulcer (%)	Corrosive antral stricture (%)	Others (%)
Pallor	49 (69.25)	26 (83.87)	13 (35.13)	7 (100)	3 (60)
Dehydration	32 (40)	11 (35.48)	18 (48.64)	2 (28.5)	1 (20)
VGP	42 (52.5)	16 (51.61)	25 (67.56)	0	1 (20)
Epigastric tenderness	28 (35)	5 (16.12)	26 (70.27)	7 (100)	0
Mass	22 (27.5)	20 (64.51)	0	0	2 (40)
Succussion splash	41 (51.25)	10 (32.25)	28 (75.67)	1 (14.2)	2 (40)

Table 4: Surgical procedures done.

Procedure	Number of cases	Percentage
Carcinoma antrum		
Billroth II gastrectomy	9	29.04%
Anterior Gastrojejunostomy	16	51.61%
Anterior Gastrojejunostomy with jejunostomy	1	3.22%
Feeding jejunostomy	4	12.9%
Cicatrising duodenal ulcer		
Truncal vagotomy with posterior gastro jejunostomy	35	94.59%
Truncal vagotomy with posterior gastro jejunostomy with cholecystectomy	2	5.40%
Corrosive antral stricture		
Antrectomy with Billroth II anastomosis	2	28.5%
Antrectomy + coloplasty + feeding jejunostomy	2	28.5%
Anterior Gastrojejunostomy with feeding jejunostomy	1	14.28%
Antrectomy + feeding jejunostomy	1	14.28%
Feeding jejunostomy	1	14.28%
Others		
Triple bypass	4	60%
Anterior gastrojejunostomy	1	20%

Malena (10%) and hematemesis (5%) were found in some of the patients (Table 3).

Blood group A type was seen in 45.16% of Ca PA patients and blood group type O was found in 48.6% of DU patients.

OGD was done in all cases and showed GOO. All patients with cicatrised DU showed features of GOO. 12 patients with Carcinoma stomach showed fungating growth in antrum and 19 patients had prepyloric ulcer/growth. Antral stricture was noted in 5 patients with corrosive acid poisoning and in 2 more patients

endoscope could not be passed because of oesophageal stricture (Table 4).

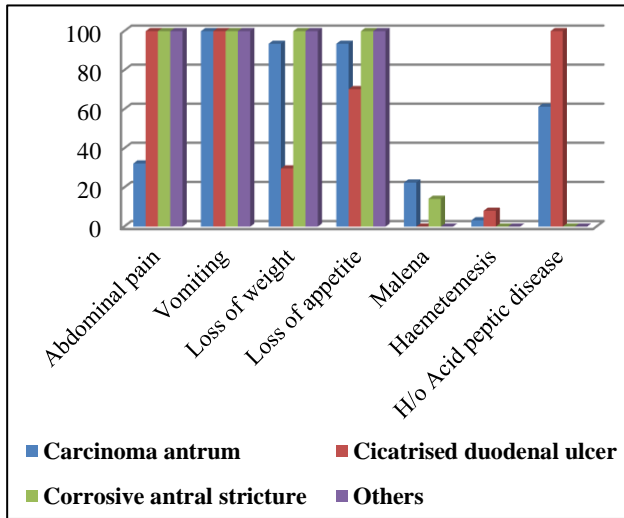


Figure 1: Symptom distribution.

In the post-operative period, all the patients were managed with intravenous fluids, antibiotics, Ryle’s tube aspiration and analgesics. Oral sips were allowed after removal of Ryle’s tube. Patients were gradually changed over to semi solid and solid diet depending on their tolerance. Sutures were removed after 10th postoperative day.

All patients of carcinoma stomach were referred to medical oncology department for further chemotherapy. Follow up was done for a period of 3 months. One patient who underwent coloplasty came with anastomotic stricture which was managed with endoscopic dilatation. Three patients who underwent Truncal Vagotomy and Posterior Gastro-Jejunostomy (GJ) came with complaints of dumping syndrome, patient was advised diet therapy. Two patients who underwent Billroth II gastrectomy came with complaints of biliary gastritis, which were managed with bile chelating agents.

Few patients had complications during follow up period.

DISCUSSION

The lack of uniformity in criteria in accepting a case of GOO leads to differences in incidence and clinical features in different centres (Table 5).

The commonest cause of GOO in our study was cicatrised DU followed by Ca PA which is similar to studies done by Dogo D et al, Ellis H et al, Balint JA et al.¹²⁻¹⁴ This is unlike few studies which showed Ca PA as the commonest cause of GOO.^{1,6,15,16}

In the recent times, Ca PA incidence has increased probably attributable to successful treatment of DU.

Highest incidence was seen in the 5th decade in present study, similar to other studies.^{4,17} Benign GOO in present study was in younger age while malignant GOO was seen in elderly age group. Malignant GOO was similarly reported in elderly by other studies.^{1,2,6} In a series of Fisher et al,¹⁸ average age was 54yrs for Ca PA and male to female ratio was 2:1 which was similar to present study.¹⁸ A study by Yogiram B et al, showed male to female ratio of 5.5:1.¹⁹

Table 5: Comparison of aetiology in various studies.

Cause	Present study (%)	Dogo D et al ¹² (%)	Ellis H et al ¹³ (%)	Balint JA et al, ¹⁴ (%)
Carcinoma pylorus	38.75	15	30	11.02
Cicatrised duodenal ulcer	46.25	65.7	65	80.5
Corrosive antral stricture	14	-	-	-
Others	8	18.4	5	8.5

Higher incidence in males may be due to higher consumption of gastric irritants by them.

GOO was reported more in low socio-economic status population in present study similar to a study in North Eastern Ethiopia.⁴

Table 6: Incidence of symptoms in cicatrised duodenal ulcer patients.

Symptoms	Present study (%)	Yogiram B et al, ¹⁹ (%)	Weiland D et al, ²³ (%)
Abdominal pain	100	87	86
Vomiting	100	80	91
Loss of weight	65	69.2	52
Loss of appetite	82.5	84	-
Constipation	-	23	-

In present study, 62.5% of patients were smokers and 47.5% of them had a history of alcohol consumption which is close to another study by Kozoll et al.²⁰

Most common symptom was non bilious vomiting seen in 100% of the patients which is similar to other studies (Table 6).^{2-4,11,21,22}

Weight loss was noted in 59.5% of patients in series of Kozoll DD et al, and 32% in series of Dworken HJ et al, suggesting weight loss to be significant in patients with pyloric obstruction.^{20,24}

Ca PA had vomiting as major symptom followed by loss of weight (93.54%) and loss of appetite (93.54%). About 70% of patients had history of acid peptic disease which was similar to observations of Ellis H et al.¹³ Weight loss was significant suggesting long standing nature of the disease in present study.

Pallor was noted in 61.25% of patients. Majority (83.87%) of patients with carcinoma stomach were anaemic probably due to decreased intake and microscopic blood loss and cancer cachexia.

Visible gastric peristalsis was noted in 67.56% of patients with cicatrised DU. Yogiram B et al, noted the presence of visible gastric peristalsis in 74% of patients.¹⁹ Visible gastric peristalsis was noted in 51.61% of patients with carcinoma antrum.

In 64.51% of patients with carcinoma antrum, epigastric mass was palpable. Succussion splash was seen in 75.67% of patients with cicatrising DU. Succussion splash was not a major (32.25%) finding in patients with malignancy which is similar to observation made by Ellis H et al.¹³

About 45.16% of patients with carcinoma pyloric antrum belonged to 'A' blood group. Blood group 'O' was the major (48.6%) group noted in patients with cicatrising DU. This is significant as persons with 'O' blood group are about three times more likely to develop acid peptic disease.

Upper gastrointestinal scopy was done in all cases mandatorily. All patients with duodenal ulcer sequelae showed features of GOO. A total of 12 patients with carcinoma stomach showed fungating growth in antrum and 19 patients had prepyloric ulcer/growth. Antral stricture was noted in 5 patients with corrosive acid poisoning. Extraneous compression over duodenum was noted in patients with carcinoma head of pancreas and carcinoma gall bladder. 2 patients with corrosive acid poisoning had oesophageal stricture, hence scope could not be passed beyond.

Barium meal examination was done in 2 patients with corrosive oesophageal stricture as OGD could not be passed beyond stricture.

In this study, 51.61% of patients with Ca PA underwent Anterior GJ as a palliative by pass procedure as tumor was inoperable. A total of 29.04% patients underwent Billroth II gastrectomy. 4 patients underwent feeding jejunostomy. 94.59% of patients with cicatrised DU underwent truncal vagotomy with posterior GJ. Two patients had associated gall stone disease, which was treated by Truncal vagotomy with posterior GJ with cholecystectomy.

Two patients with corrosive antral stricture underwent antrectomy with coloplasty and feeding jejunostomy.

Two patients underwent antrectomy with Billroth II anastomosis. Three patients of carcinoma head of pancreas underwent triple bypass procedure. Patient with carcinoma gall bladder underwent anterior gastrojejunostomy.

Gastrojejunostomy (GJ) was the most common type of procedure done in our study similar to other studies.²⁵⁻²⁷

Ryle's tube was inserted in all patients post operatively for continuous drainage of gastric contents. Oral fluids were started after 5th day after removal of Ryle's tube. Later on, patient was changed to solid diet gradually.

All cases of carcinoma stomach, carcinoma head of pancreas and carcinoma gallbladder were referred to Department of Medical Oncology for further therapy.

Post-operative complications were seen in few of the patients. No immediate post-operative mortality was seen in our study. One patient who underwent coloplasty came with stricture at the site of anastomosis in neck which was managed by endoscopic dilatation. Three patients who underwent Truncal Vagotomy and Posterior GJ came with complaints of dumping syndrome, patient were advised diet therapy. Two patients who underwent Billroth II gastrectomy came with complaints of biliary gastritis, who were managed with bile chelating agents.

Limitation of our study was poor follow up visits and delayed presentation of the patients.

CONCLUSION

Cicatrised DU was the commonest cause for GOO in current study. Present study highlights the increasing incidence of Ca PA. This could be due to better management of DU at an early stage. Increasing incidence of carcinoma may be due to changing dietary habits and environmental factors in developing countries.

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