

GASTRIC OUTLET OBSTRUCTION- CLINICAL PRESENTATIONS AND ITS SURGICAL MANAGEMENTTejas A. P¹, Srinivas B. Kulkarni², Sagar H. C³¹Senior Resident, Department of General Surgery, Rajarajeswari Medical College and Hospital, Bangalore.²Associate Professor, Department of General Surgery, Rajarajeswari Medical College and Hospital, Bangalore.³Assistant Professor, Department of General Surgery, Rajarajeswari Medical College and Hospital, Bangalore.**ABSTRACT****BACKGROUND**

Gastric outlet obstruction (GOO) mechanically impedes gastric emptying, normal emptying of the stomach. It is a diagnostic and therapeutic challenge for general surgeons in their daily practice. This paper highlights the aetiology, clinical presentation and treatment outcome of GOO.

MATERIALS AND METHODS

A descriptive study was conducted on patients with GOO treated at Rajarajeswari Medical College and Hospital, Bangalore during September 2015 to August 2017. Data was tabulated and analysed using descriptive statistical methodology.

RESULTS

Carcinoma stomach with antral growth and cicatrised duodenal ulcer (both 41.5%) were the most common cause of gastric outlet obstruction. Males were more affected than females (2.5: 1). Most common symptom was vomiting and abdominal pain (noted among all) followed by loss of appetite (83%) and loss of weight (82.35%). 94.1% patients of Cicatrised duodenal ulcer underwent truncal vagotomy with posterior gastrojejunostomy and 5.9% underwent truncal vagotomy with antrectomy. 58.8% patients of carcinoma stomach underwent distal gastrectomy with antecolic Roux-en-Y gastrojejunostomy, 12.1% patients underwent subtotal gastrectomy with antecolic and Roux-en-Y gastrojejunostomy and 4.8% patients underwent palliative gastrojejunostomy. In corrosive antral stricture, Billroth I gastrectomy was done. Patients of pancreatic malignancy underwent palliative anterior gastrojejunostomy and pseudopancreatic cyst was treated by cystojejunostomy. The average hospital stay was 10 - 14 days and an overall mortality of 5.8% for malignant patients was noted.

CONCLUSION

Study concludes that gastric outlet obstruction is an important and a common surgical condition in a tertiary hospital. Malignancy and benign cicatrised duodenal ulcer being the most common cause.

KEYWORDS

Gastric Outlet Obstruction (GOO), Antral Growth, Gastrojejunostomy.

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BACKGROUND

Gastric outlet obstruction is any disease that mechanically impedes gastric emptying, the normal emptying of the stomach. Gastric outlet obstruction occurs in approximately 2% of patients with chronic duodenal ulcer.^[1] Gastric outlet obstruction occurs in no more than 5% of patients with peptic ulcer disease and it accounts for 5% to 8% of ulcer related complications. The peak incidence is now in a much older age.^[2]

Aetiology can be broadly divided into acquired and genetic factors. Acquired includes H. pylori infection, Nutritional (high salt, high nitrate, low vitamin A and C and smoked food), Occupational (rubber workers, coal workers), cigarette smoking, Epstein-Barr virus infection, Radiation Exposure and also prior gastric surgery for benign gastric ulcer disease. Genetic includes Type A blood, pernicious anaemia, family history,

hereditary non-polyposis colon cancer and Li-Fraumeni syndrome and certain precursor lesions like adenomatous gastric polyps, chronic atrophic gastritis, dysplasia, intestinal metaplasia and Menetrier's disease.^[1-3]

General symptoms include pain, vomiting, loss of appetite, constipation and loss of weight with ball-rolling movement in the abdomen. Its association with Ca stomach is seen by offensive vomitus containing coffee ground coloured altered blood. Patient may give history of melena and jaundice. While that with peptic ulcer have non-bilious painless vomiting usually in the evening and in advanced patients may occur at any time.

Hence, an attempt was made to study the most common presenting symptoms, surgical modalities for different aetiologies of gastric outlet obstruction.

MATERIALS AND METHODS

After obtaining Institute Ethical Committee clearance, a descriptive study was conducted enrolling a total of 41 patients of gastric outlet obstruction in adults during the period from September 2015 to August 2017 at Rajarajeswari Medical College and Hospital, Bangalore. After admission, detailed clinical history along with physical examination, noting the state of hydration and nutritional status was done. On the basis of the history and physical findings, a diagnosis of gastric outlet obstruction was made, and the patient was

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investigated. Saline load test was performed bedside in every patient.^[4]

The pre-requisites for enrolment included persistent vomiting of undigested food, gastric succussion splash heard 3 - 4 hours after the last meal, visible gastric peristalsis or palpably distended and hypertrophied stomach, overnight fasting gastric aspirate of more than 200 cc and saline load test (Goldstein) of more than 400 mL remnant. Upper Gastrointestinal Endoscopy was done in all the patients to confirm the diagnosis.

Since upper GI endoscopy was confirmatory in most of the patients, Barium meal study was taken up in very few patients. Other routine investigations which were carried out in all patients included haemoglobin percentage, blood grouping, blood urea, serum creatinine, serum electrolytes, stool examination, urinalysis etc. Gastric lavage with normal saline was carried out four times daily for at least a week before surgery. During this period of local preparation, the patient was allowed only fluids orally.

General anaesthesia and epidural anaesthesia were administered for surgeries and all the surgical findings were meticulously recorded. Post-op management by Ryle's tube aspiration and intravenous fluids till the stomach recovered its normal tone and bowel sounds appeared. Oral feeding with fluids was then commenced, solids being given later. Early ambulation was encouraged, especially in elderly patients. Routine antibiotics were given during the immediate post-operative period. Data was collected, tabulated and analysed using descriptive statistical methodology.

RESULTS

Of the total 41 patients 17 patients had malignant growth in the antrum, 17 had cicatrised duodenal ulcer, 4 had pancreatic mass with extrinsic compression and 3 had corrosive antral strictures as the cause for gastric outlet obstruction (Table No. 1).

Causes	Number of Patients	Percent (%)
Carcinoma Pyloric Antrum	17	41.5
Cicatrised Duodenal ulcer	17	41.5
Extrinsic compression	4	10
Corrosive injury	3	7
Total	41	100

Table 1. Distribution according to Aetiologies of Gastric Outlet Obstruction

Majority of patients were in the age group of < 40 years (34.1%) followed by 41 - 50 years (24.4%). Most commonly affected were males (78%) than females (22%). In this series 16 patients (39%) were farmers, 10 (25%) patients were manual labourers, 9 (22%) patients were housewives, 3 (7%) patients were tailor/ shopkeeper and 3 (7%) were drivers. The association of smoking and alcohol were consistently seen amongst all patients (100%) of Ca pyloric antrum and cicatrising duodenal ulcer (Table No. 2) and (Table No. 3). Hb% in 37 (90%) patients was < 11 gm%. Urine routine, blood urea and serum creatinine were within normal limits. Blood group O (56.1%) was most common followed by blood group A (24.4%). Majority of duodenal ulcer patients were having O blood group (76.5%) and among the pyloric antrum

malignancy patients 8 patients (47.1%) were having O blood group and 6 patients (35.3%) were having A blood group.

Disease	Smoking	Alcohol	Total
Antral cancer	12(70.6%)	10(58.9%)	17 (100%)
Duodenal ulcer	13(76.5%)	12(70.6%)	17 (100%)
Others	2(28.6%)	3(42.9%)	7 (100%)

Table 2. Distribution of Patients according to Smoking and Alcohol Habits

Signs	Total No. of Patients No. (%)	Carcinoma Pyloric Antrum No. (%)	Cicatrised Duodenal Ulcer No. (%)	Others No. (%)
Pallor	27(65.9)	15(88.2)	6(35.3)	6(85.7)
VGP	31(75.6)	10(58.8)	17(100)	4(57.1)
Succussion splash	28(70.7)	10(58.8)	15(88.2)	3(42.8)
Palpable mass	15(36.6)	10(58.8)	-	5(71.4)

Table 3. Frequency of Signs

In present study, 29 (70.7%) patients had abnormal serum electrolytes (hyponatraemia, hypokalaemia and hypochloreaemia), of which 88.3% (15 of 17 patients) of duodenal ulcer had abnormal serum electrolytes and 8 of 17 (47.1%) patients of carcinoma pyloric antrum showed electrolyte imbalance. Electrolyte disturbance is more pronounced in outlet obstruction secondary to ulcer disease than the malignancy. Upper gastrointestinal endoscopy was done in all patients. 17 (41.5%) patients had pyloric carcinoma, which was confirmed with biopsy. 17 (41.5%) had cicatrised duodenal ulcer. 4 (10%) patients had outlet obstruction due to extrinsic compression. 3 (7%) patients had antral stricture following corrosive injury. Ultrasonography and CT scan was done in patients with malignancy.

In cicatrised duodenal ulcer 16 of 17 patients (94.1%) underwent truncal vagotomy with posterior gastrojejunostomy, 1 case underwent truncal vagotomy with antrectomy. In carcinoma stomach, 10 patients underwent distal gastrectomy with antecolic Roux-en-Y gastrojejunostomy, 5 patients underwent subtotal gastrectomy with antecolic Roux-en-Y gastrojejunostomy and 2 patients underwent palliative gastrojejunostomy. In corrosive antral stricture, Billroth I gastrectomy was done. 2 patients of pancreatic malignancy underwent palliative anterior gastrojejunostomy and 2 patients underwent cystojejunostomy for pseudopancreatic cyst (Table No. 4).

Disease	Procedure	No.	%
Duodenal ulcer (Cicatrised)	Truncal vagotomy + posterior gastrojejunostomy	16	94.1
	Truncal vagotomy + Antrectomy	1	5.9
Carcinoma pyloric antrum	Distal gastrectomy + antecolic Roux-en-Y gastrojejunostomy	10	58.8
	Subtotal gastrectomy + antecolic Roux-en-Y gastrojejunostomy	5	29.4
	Palliative gastrojejunostomy	2	11.8

Table 4. Distribution according to Surgical Procedure Underwent

Post-Op Care

Wound infection developed in 8 patients who were treated by repeated dressing and appropriate antibiotic, 6 patients reported respiratory tract infection which was treated by chest physiotherapy and review of antibiotics. Rest of the patients had an uneventful postoperative period. Patient's average duration of stay was 10 - 14 days.

One patient with Ca stomach died due to poor general condition and electrolyte abnormality during the third post-operative period. Patients were followed up for a period of 3 to 6 months. 10 patients of Ca stomach were put on chemotherapy with 5-fluorouracil. 5 patients of Ca stomach were lost for follow-up. One case of duodenal ulcer disease had symptoms at the end of 1 month and underwent revision gastrojejunostomy procedure.

DISCUSSION

In our study conducted over a period of two years the incidence of Carcinoma pyloric antrum and cicatrised duodenal ulcer were equal (17 patients), while in study by Harold Ellis^[5] series and Balint Spence^[6] series incidence of gastric outlet obstruction secondary to cicatrised duodenal ulcer was more common than Carcinoma pyloric antrum.

These observations reveal that the incidence of gastric outlet obstruction secondary to chronic duodenal ulcer could have reduced, while that of malignancy has relatively gone up. In our study, age of occurrence ranged from 20 to 73 years. In case of obstruction secondary to duodenal ulcer, the maximum age incidence is between 5th - 6th decades and men outnumbered women by 2.5: 1 as compared to the series of Fisher et al,^[7] where the average age was 54 with a span from 20 - 89 and men outnumbered women by 2: 1 and as compared to 5.5: 1 observed by Yogiram and Chowdhary.^[8]

This higher incidence in males worldwide can be explained as because of more consumption of gastric irritants by males compared to females.

About 39% of the patients were farmers and 29% were labourers who gave a history of irregular diet habits, which seemed to contribute to disease process. The series of Donald D Kozoll and Karl A Meyer^[9] also showed the same pattern with the non-skilled day labourer group listed most frequently with obstruction. The higher incidence of use of alcohol and tobacco is seen in these patients and are significant risk factors for the disease process.

Abdominal pain was mainly present in the upper abdomen and in 4 patients there was radiation to the back suggesting involvement of the pancreas. Duration of abdominal pain in chronic duodenal ulcer varied from two months to five years. Those patients with long history gave past history suggestive of APD. In 37 patients, the duration of pain was less than 1 year, of which 17 were malignant patients. This corresponds to observations of Yogi Ram and Chowdhary.^[8]

In carcinoma antrum patients, the duration of abdominal pain varied from 2 months to 7 months. 14 of 17 patients gave prior history suggestive of acid peptic disease suggesting malignancy developing in gastric ulcer. This corresponds to observations of Richard Robin and Harold Ellis.^[5] In the present study, 41 patients were subjected to serum electrolyte estimation. Of which 29 patients (70.7%) showed electrolyte imbalance. In the series of Maichel L Schwartz^[10] electrolyte imbalance was present in 30%. Blood group O

(56.1%) was most common followed by blood group A (24.4%).

Upper gastrointestinal endoscopy was done in all patients. 17 (41.5%) patients had pyloric carcinoma, which was confirmed with biopsy. 17 (41.5%) had cicatrised duodenal ulcer. 4 (10%) patients had outlet obstruction due to extrinsic compression. 3 (7%) patients had antral stricture following corrosive injury. Ultrasonography and CT scan was done in patients with malignancy.

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In corrosive antral stricture, Billroth I gastrectomy was done. 2 patients of pancreatic malignancy underwent palliative anterior gastrojejunostomy and 2 patients underwent cystojejunostomy for pseudopancreatic cyst. Wound infection developed in 8 patients who were treated by repeated dressing and appropriate antibiotic, 6 patients reported respiratory tract infection which was treated by chest physiotherapy and review of antibiotics. Rest of the patients had an uneventful postoperative period. Patient's average duration of stay was 10 - 14 days. Patients were followed up for a period of 3 to 6 months. 10 patients of Ca stomach were put on chemotherapy with 5-fluorouracil. 5 patients of Ca stomach were lost for follow-up.

One case of duodenal ulcer disease had symptoms at the end of 1 month and underwent revision gastrojejunostomy procedure.

CONCLUSION

Study concludes that gastric outlet obstruction is an important and a common surgical condition in tertiary hospital. Malignancy and benign cicatrised duodenal ulcer being the most common cause.

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