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Operative Procedures and Postoperative Complications in Patients with Gastric Outlet Obstruction

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Abstract **Original Research Article**

Background: Gastric outlet obstruction denotes complete or partial obstruction of the distal stomach, pylorus, or proximal duodenum. This can happen as a result of an obstructing lesion, external compression, or obstruction caused by acute edema, chronic scarring and fibrosis, or a combination of the two. The most common causes of gastric outlet obstruction are gastric cancer and pyloric stenosis secondary to peptic ulceration. We have very limited research-based information regarding postoperative complications in patients with gastric outlet obstruction. ***Aim of the study:*** This study was carried out to determine the operative procedures and postoperative complications in patients with gastric outlet obstruction. ***Methods:*** Between September 2012 to February 2013, this prospective observational study was carried out in the surgery department of Rangpur Medical College Hospital, Rangpur, Bangladesh. A total of 50 patients presenting with the features of gastric outlet obstruction were included in this study. A convenient purposive sampling technic was used in sample selection. In 27 patients, surgery was performed. Registration schedules, editing computerization, preparing dummy tables, and analyzing and matching data were all part of the data processing work. ***Results:*** In the cases of benign gastric outlet obstruction, bilateral truncal vagotomy and retro colic isoperistaltic gastrojejunostomy were preferred. Distal partial gastrectomy with lymph node dissection was done in resectable antral growth of the stomach. Palliative gastrojejunostomy was done in advanced gastric and pancreatic malignancy. Gastrojejunostomy with biopsy from the duodenum and lymph node was taken from one pre-operatively diagnosed case of duodenal tuberculosis, which was made by endoscopic biopsy. Complication occurred mostly in the malignant cases; 7 (43.75%) patients developed wound infection, of which 5 (31.25%) patients developed wound dehiscence. There was a duodenal stump-blow out in one patient and died on the 16th postoperative day and 2 (12.50%) patients suffered respiratory problems due to atelectasis. ***Conclusion:*** Operative procedures depend on the etiology the disease, stage of the disease in malignant cases, general condition of the patient, available facilities and competency of the surgical team. Surgeons should be more careful in managing malignant cases of gastric outlet obstruction to avoid complications. Wound infection is the most common complication in such cases.

Keywords: Gastric, Obstruction, Duodenum, Benign, Malignant, Operative.

INTRODUCTION

Gastric outlet obstruction is the clinical and pathophysiological result of any disease process that causes a mechanical impediment to gastric emptying. Clinical entities that can cause gastric outlet obstruction are generally divided into two categories: benign and malignant. This classification facilitates discussion of management and treatment. Operation used to be the primary treatment for benign gastric outlet obstruction (GOO). Prior to the 1980s, the only treatment choices were conservative medical treatments and operative procedures. Although some individuals responded to medicines, the majority required operative procedures. In 1982, Weiland et al. [1] reviewed 87 patients with GOO. All patients were originally treated with drugs, however 56% underwent surgery during their hospital stay. During late follow-up, 98% of patients with chronic PUD and 64% with acute peptic ulcer disease (PUD) needed

operation. Jaffin et al. [2] evaluated 69 patients admitted with GOO during 1970-1979, and found that 81% of cases were caused by PUD. Although originally treated conservatively, 62% required surgical decompression throughout their hospital stay. All were originally treated conservatively, but 62% needed decompression procedures throughout their hospital stay. An extra 20% had surgery following a later obstructive event. Six of the 10 patients who did not receive operation died within three years, and three experienced recurring problems. Overall, 92% of patients who survived longer than three years required operation. With the introduction of PPIs in 1989, the treatment of PUD shifted toward non-surgical methods. Shabbir et al. [3], utilizing data from the turn of the century, found that 83% of patients on PPIs had complete clearance of pyloric peptic stenosis, with patients responding on average 9 days after starting treatment. If malignancy is suspected or confirmed, surgical options can be either curative or palliative. Laparoscopic operation has replaced the traditional open GJ as the preferred treatment option. Laparoscopic GJ is more effective than open GJ, according to multiple studies. A study found that while there was no change in operating time or blood transfusions, laparoscopic GJ resulted in fewer opiate analgesia, hospital stays, IV hydration, and morbidity [4]. Research found that laparoscopic GJ resulted in shorter hospital stays and less blood loss during surgery [5]. Choi discovered that open GJ suppressed the immune system more than laparoscopic GJ, resulting in higher levels of serum ESR, TNF-a, and IL-6 [6]. Laparoscopic GJ is preferred to open GJ when technically feasible. New surgical methods have emerged for treating malignant GOO. Two series have reported success with a partial stomach partitioning gastro-jejunostomy (PSPG). Arrangoiz et al. [7] used PSPG in 55 patients with metastatic malignancies causing GOO. The study had a positive outcome, with no deaths and only 16.4% of complications. The median patient survival time was 9 months, with 95% still able to tolerate an enteral diet 8 months after surgery. Eguchi et al. [8] reported PSPG in 18 patients with a comparable complication rate of 17%. Patients had an average latency to oral intake of 4.5 days, with a mean duration of 133 days. While surgical intervention for benign GOO was widespread in the 1970s and early 1980s, it is now unique, and the development of PPIs has significantly expanded the number of patients who can be treated merely with beneficial therapy. A Japanese group created a new procedure called modified Devine exclusion with vertical stomach repair (MDVSR) [9]. The operation involves laparoscopically transecting the stomach, vertically extending the proximal section, then re-resecting horizontally using a stapler. The objective of this study was to determine the operative procedures and postoperative complications in patients with gastric outlet obstruction.

METHODOLOGY

Between September 2012 to February 2013, this prospective observational study was carried out in the surgery department of Rangpur Medical College Hospital, Rangpur, Bangladesh. A total of 50 patients presenting with the features of gastric outlet obstruction were included in this study. All collected data were checked very carefully to identify errors in the data. Permission was obtained from the hospital authority's ethical committee. All patients provided written informed consent. They had the option to leave the study at any time. The pre-operative diagnosis was made based on history, clinical examination and investigations. Surgical intervention was done in 27 patients. Distal partial gastrectomy with lymph node dissection was done in resectable antral growth of the stomach. Palliative gastrojejunostomy was done in advance of gastric and pancreatic malignancy. Bilateral truncal vagotomy and gastrojejunostomy was done in pyloric stenosis. Gastrojejunostomy with biopsy from the duodenum and lymph node was taken from one pre-operatively diagnosed case of duodenal tuberculosis, which was made by endoscopic biopsy. Specimens collected from different operations were sent for histopathological examination in relevant cases. All the pre-and post-operative clinical as well as diagnostic findings were recorded. A standard data collection sheet was used in data collection. Before data collection, both verbal and written consent was taken from the respondents and data were checked and edited after collection. Results were calculated by standard statistical formulae. An analysis plan was developed, keeping in view the objectives of the study.

RESULT

The total number of patients in this series was fifty. Age varied from 16 to 80. The mean ±SD was 46±13.71. Maximum numbers of patients were in the 41-50 years age group. Out of 27 operative cases, 6 cases of gastric malignancy were not resectable due to locally advanced disease and so palliative gastrojejunostomy was done. There were 3 advanced cases of pancreatic malignancy compressing the CBD and duodenum. There was one uncommon case of duodenal thickening in the 1st part with a supra-pyloric caseating lymph node. In the cases of benign gastric outlet obstruction, bilateral truncal vagotomy and retro-colic isoperistaltic gastrojejunostomy were preferred. Distal partial gastrectomy with lymph node dissection was done in possible cases. Palliative gastrojejunostomy was done in advance of gastric and pancreatic malignancy. Gastrojejunostomy with biopsy from the duodenum and lymph node was taken from one pre-operatively diagnosed case of duodenal tuberculosis, which was made by endoscopic biopsy. In the 5 cases of distal partial gastrectomy, tissue from the primary tumor as well as the lymph node, was sent for histopathology. Suspicious enlarged draining lymph nodes were sent for

histopathological examination in 6 cases of irresectable gastric tumor and 3 cases of advanced pancreatic malignancy causing gastric outlet obstruction. In one pre-operatively diagnosed case of duodenal tuberculosis, a supra-pyloric caseating lymph node was sent for histopathology. Complication occurred mostly in the malignant cases; 7 (43.75%) patients developed wound infection, of which 5 (31.25%) patients developed wound dehiscence. There was a duodenal stump blowout in one patient and died on the 16th postoperative day and 2 (12.50%) patients suffered respiratory problems due to atelectasis.

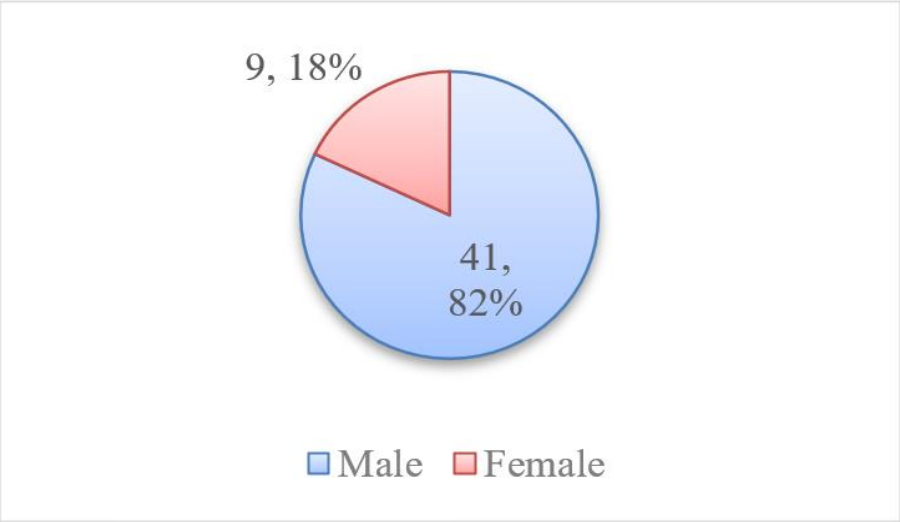

Figure 1: Sex distribution of the patients (N=50)

Table 1: Presenting complaints of the patients (N=50)

Presenting complaints	n	%
Vomiting	50	100
Epigastric pain	33	66
Epigastric fullness	31	62
Haematemesis and/or melaena	17	34
Epigastric lump	13	26
Heart burn	21	42
Dyspepsia	24	48
Loss of appetite	31	62
Weight loss	33	66
Jaundice	03	06
Evening rise in temperature	01	02
Convulsion	01	02

Table 2: Findings of pre-operative diagnosis (N=50)

Findings	n	%
Gastric malignancy	26	52
Chronic duodenal ulcer	20	40
Pancreatic malignancy	03	06
Duodenal tuberculosis	01	02

Table 3: Operative findings (n=27)

Findings	n	%
Benign pyloric stenosis	12	44.44
Resectable antral growth of stomach	05	18.51
Irresectable growth of stomach	06	22.22
Growth in the head of the pancreas with dilated CBD	03	11.11
Duodenal thickening with caseating lymph node	01	3.70
Total	27	100

Table 4: Operative procedures (n=27)

Name of the operation	n	%
Bilateral truncal vagotomy and gastrojejunostomy	12	44.44
Palliative gastrojejunostomy	09	33.33
Distal partial gastrectomy with lymph node dissection	05	18.51
Gastrojejunostomy with biopsy from duodenum & lymph node	01	3.70
Total	27	100

Table 5: Histopathological findings of operative specimens (n=15)

Findings	n	%
Adenocarcinoma of stomach	5	33.33
Metastatic adenocarcinoma of stomach origin	6	40
Metastatic adenocarcinoma of pancreatic origin	3	20
Caseation necrosis with multi-loculated giant cells in lymph nodes suggestive of tuberculosis	1	6.66
Total	15	100

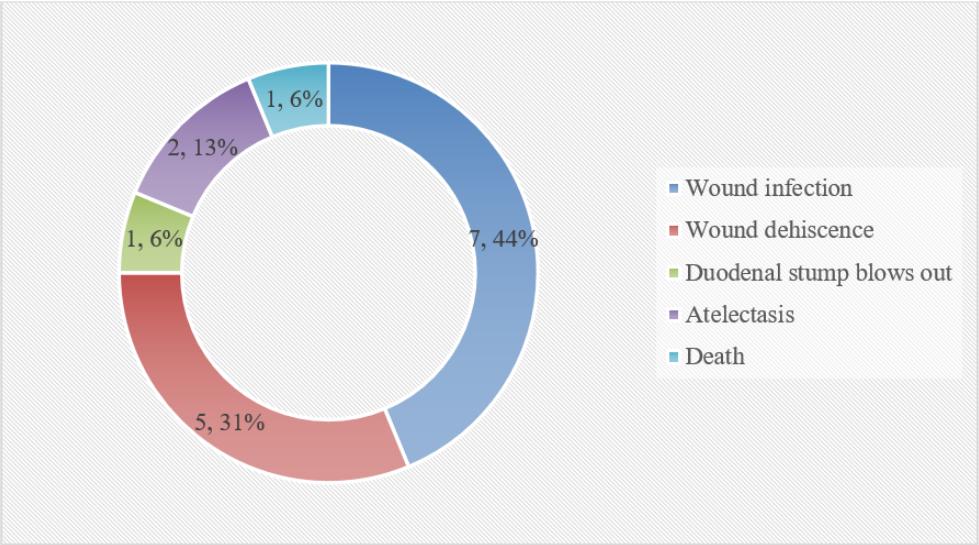

Figure 2: Post-operative complications of operative cases (n=16)

DISCUSSION

This study aimed to determine the operative procedures and postoperative complications in patients with gastric outlet obstruction. Gastric outlet obstruction is frequently linked to cancer and peptic ulcer disease [10]. Pyloric stenosis caused by peptic ulceration was previously more common. With the decrease in the incidence of peptic ulceration and the introduction of effective medical treatments, gastric outlet obstruction should now be considered malignant until proven otherwise, at least in the Western world [11]. In this study, males appear to be more affected than females. The significant differences in male-female ratios in the Western world reflect the influence of habits and occupations of males and females in our country [12]. The occurrence of gastric outlet obstruction due to duodenal ulceration appears to have decreased as well [13]. Until 1970, benign disease was responsible for the vast majority of adult cases of gastric outlet obstruction, with malignancy accounting for only 10 to 39 percent of cases [14], [12]. A common cause of malignant gastric outlet obstruction is pancreatic adenocarcinoma with extension to the duodenum or stomach [15]. According to the current study, there is still a high incidence of long-term complications of peptic ulcer disease in our country due to incomplete or maltreatment of peptic ulcers. In 27 patients, surgery was performed. There were 13 benign cases and 14 malignant cases among these patients. In 12 cases, a bilateral truncal vagotomy and drainage procedure were performed, and a single case had a gastro-jejunostomy with a biopsy from a duodenal lesion and lymph node. Curative resection was possible in 5 of the 14 malignant cases, and palliative gastrojejunostomy was performed in 9 cases. This denotes the late presentation of malignant diseases to a surgeon, which may be due to self-care, a poor referral system, or a lack of cancer screening programs in the risk group. There were 6 cases of gastric malignancy and 3 cases of pancreatic malignancy among the 9 irresectable cases. The most common postoperative complications were wound infection and dehiscence. Atelectasis, duodenal stump blows out, and death were among the less common complications. All of these complications were common in malignant cases and were within the expected range.

Limitation of the study:

This study had a single focal point and small sample sizes. Additionally, the study was completed in a very condensed amount of time. Therefore, the findings of this study may not reflect the exact scenario of the whole nation.

CONCLUSION & RECOMMENDATION

As per the findings of this study, we can conclude that etiology of gastric outlet obstruction are mostly due to malignant diseases. Operative procedures are considered on various factors. Surgeons should be more careful in managing malignant cases of gastric outlet obstruction to avoid complications. Wound infection is the most common complication in such cases. Prompt diagnosis and treatment are essential for such patients. To get more specific results, we would like to recommend conducting similar studies in several places with larger-sized samples.

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