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Comparative Study between Patients with Peptic Perforation Treated with Simple Repair of Perforation and Simple Repair Along with Definitive Surgery

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Abstract: ***Perforation of duodenal and gastric ulcer is by far the commonest surgical emergency needing operations in peptic ulcer disease. Though the incidence of duodenal ulcers is on the wane, yet perforations still constitute a significant percentage of acute ulcer related surgical emergencies. In our socio-economic conditions the relatively high incidence of peptic ulcers as compared to international figures can be explained by inaccessibility and inability to procure adequate drugs. This is reflected by the prevalence of perforations among the lower socio-economic group. Though definitive surgical treatment for acute perforations is highly effective in subsequent management of peptic ulcer, yet it has its inherent problems. Mostly increased operative time and surgical acumen are the chief factors making these definitive procedures a daunting task.The present dissertation aims to provide an insight into the relative efficacy of a simple closure of perforation vis-à-vis more definitive procedures, in respect to future ulcer recurrences and postoperative morbidity and mortality. Such type of study was not done before in tertiary care peripheral medical colleges of Indian Sub-continent on emergency basis operated patients.***

1. Introduction

Owing to the highly efficacious drug therapy for peptic ulcer disease, symptomatic recurrence after repaired peptic perforations seems to be very low. Significantly not a single patient needed re-operations for ulcer related disease.[1-69]Improvements in anaesthetic techniques and post-operative care have gone a long way in reducing post-operative morbidity. But wound related complications remain a vexing problem.[70] Also, delayed presentations of patients from far flung areas result in increased post-operative morbidity. This is borne out by the relatively high morbidity of those patients who are operated late. This is due to a combination of systemic toxaemia, fluid and electrolyte imbalances and increased bacterial colonization of the peritoneal fluid.

2. Aims &Objectives

This study has been designed to evaluate: -

1) The incidence of peptic perforation in the surgical emergency of College of Medicine & J.N.M Hospital, Kalyani, Nadia within a period of consecutive 2 years 2012-2014.
2) Incidence of symptomatic recurrence over a period of four years in patients randomised into two groups viz. those with simple repair of peptic perforation and those with repair of perforation along with definitive treatment in the form of truncal vagotomy with gastro-jejunostomy or pyloroplasty as per standard protocol.
3) Comparative study of post-operative recovery time and immediate complications among the two above mentioned groups.
4) Bacteriological study of the peritoneal exudates with reference to the duration of perforation.

Patho-Physiology

Ulcers, whether gastric or duodenal, tend to occur in alkaline mucosa. Most often, a peptic ulcer that perforates, is situated on the anterior surface of the first part of duodenum; much less frequently it is situated on the anterior surface of the stomach, usually somewhere along the lesser curvature and within 5 cm of the pylorus.

Gastric ulcer may be present in four forms:
Type 1 is the primary gastric ulcer, usually located in the proximal antrum on the lesser curvature;
Type 2 includes those that occur together with duodenal ulcers and perhaps secondary to them;
Type 3 is pre-pyloric or channel ulcer;
Type 4 occasional gastric ulcers located in the proximal stomach or in the gastric cardia.

According to Rodney Maingot, acute gastric ulcers never perforate and all gastric ulcers that do are the chronic type. In the stomach, the chronic ulcers show a remarkable tendency to be restricted to limited regions. 95% of ulcers removed surgically are situated along the lesser curvature, to within 5 cm. of pylorus, and on the adjoining posterior wall. A small number occur at the cardia i.e., where there is no acid producing glands. The few remaining ones occur at the pyloric canal.

Perforation of Peptic Ulcermay be 3 types:

i) Acute

The ulcer perforates, and the general peritoneal cavity becomes flooded with gastric and duodenal contents. This, by far, is the commonest variety.

ii) Sub-acute

Only a circumscribed area of the peritoneal cavity becomes contaminated by the leakage – "the leaking ulcer". Such localization may be dependent upon a few factors – the limited size of the perforation, the emptiness of the stomach, adhesions around the ulcer or the sealing off of the perforation, shortly after by the omentum or neighbouring viscera.

iii) Chronic

When the area is walled off by adhesions, omentum or other viscera such as the liver or colon, or the perforation is into the lesser sac with a closed epiploic foramen, a chronic abscess may form and give rise to considerable confusion in diagnosis. The patients usually present with an abdominal mass and/or signs of a sub-phrenic abscess.The reasons for the perforation of a gastric ulcer are uncertain. Acute distension following a meal, internal or external trauma have all been implicated but not conclusively proved. Psychological stimuli possibly accelerate the occurrence of perforation.

3. Materials and Methods

The present study was conducted in the College of Medicine and J.N.M Hospital, Kalyani, Nadia, during the period- April 2012 to March 2014. Patients, presenting in the Emergency and O.P.D of the Department of Surgery with features of gastro-duodenal perforation were chosen for study.

Altogether 40 cases were selected for the present study. Definitive operations could be done in 15 cases, while the rest were managed by simple closure and 01 pt. was treated with only drainage. The first authorbeing the chief emergency surgeon and all other assisting surgeons concerned were of good experience, acceptable dexterity and well conversant with definitive operations. Anaesthetists, handling the emergency operations were experienced and qualified. The cases were studied in respect of the attached proforma during the entire period of their hospital stay. After discharge, they were followed up in the outpatients' department as far as practicable and followed up to April 2018. Two patients were lost in follow-up in 2018.

The routine history taking was performed along with all necessary investigations.
To select the cases for definitive procedure, the following criteria were carefully assessed.

1) Good general state.
2) Absence of shock or early recovery on resuscitative treatment.
3) Short time interval between occurrence of perforation (<12 hours) and operation.
4) Degree of peritoneal soiling at operation.

All patients were approached through supra umbilical midline incision. The repair of perforation was done by full thickness interrupted stiches with polyglactin suture (1-0) and was reinforced with omental on lay. In 15 cases selected for definitive procedure a truncal Vagotomy was performed. Among those 15 cases in 9 cases anterior gastro-jejunostomy was performed as the drainage procedure and in 6 cases pyloroplasty was performed as the drainage procedure. Thorough peritoneal toileting done in every cases with at least 4 litres of normal saline and abdominal tube drain was placed before closing with No-1 polypropylene. In one case omentum was found to be densely adhere at supra-colic compartment and search for perforation site was not possible and it seemed that perforation site was sealed and for that reason only a drain was given after abdominal toileting. Post-operative measures are copy-book procedures. (Figure:1-2)

In 25 cases where no definitive procedure was performed, H. Pylori eradication therapy for 2 weeks followed by 4 weeks course of proton pump inhibitors (PPI's) was given. Each patientwas asked to attend OPD at 3 monthly intervals or on recurrence of dyspeptic symptoms. All patient in whom definitive procedure was not performed were categorized with Visick grading and only one patient who was graded as Visick grade IV on follow-up was undergone upper GI endoscopy.

Visick Grading

Visick Grade	Category	Definition
I	Excellent	No symptoms, perfect result.
II	Very good	Patient considers results perfect, but interrogation elicits mild occasional symptoms easily controlled by minor adjustment of diet.
III	Satisfactory	Mild or moderate symptoms not controlled by care, causing some discomfort which does not interfere seriously with life or work, but patient and surgeon satisfied with result.
IV	Unsatisfactory	Moderate or severe symptoms or complications which interfere considerably with work or enjoyment of life; patient or doctor dissatisfied with result. Includes all cases with proved recurrent ulcer and those submitted to further operation, even though the latter may have been followed by considerable symptomatic improvement.

4. Results and Analysis

Age and Sex distribution (Table-1)

Age Range (Yrs.)	Male	Female
20 to 30	5	1
31 to 40	6	1
41 to 50	9	3
51 to 60	8	2
61 to 70	3	0
71 to 80	2	0

Time Interval between onset of acute pain & presentation (Table-2)

Time Interval	No of Patients
0 to 12 hrs	15
13 to 24 hrs	5
25 to 48 hrs	16
> 48 hrs	4

Organisms isolated from peritoneal fluid culture (Table-3)

Type of Organism	No.
E Coli	6
Klebsiella	4
Staphylococcus	2
Streptococcus	4
Pseudomonas	2
Mixed	3
No Growth	19

Site of perforation (Table-4)

Site	Male	Female
Gastric	4	1
Duodenal	28	6

Type of Operations done (Table-5)

Type of Operation	No.
Truncal Vagotomy & Gastrojejunostomy (TVGJ)	9
Truncal Vagotomy & Pyloroplasty (TV & P)	6
Simple Repair	24
Lavage and Drain	1

Mean operative time (Table-6)

Type of Operation	Mean Duration (mins)
Simple Repair	~59
Truncal Vagotomy & Gastrojejunostomy (TVGJ)	~99
Truncal Vagotomy & Pyloroplasty (TV&P)	~83

Wound complications (Table-7)

Type of Complication	Number of cases	
	Definitive surgery group	No definitive surgery group
Superficial infection	3	7
Dehiscence	0	2
No Infection	12	16

Total length of hospital stays (Table-8)

Operation	Mean Stay (days)
Repair with TV&GJ	9.2
Repair with TV&P	8.7
Simple repair	10.9
Lavage & Drain	8.0

5. Conclusions

Thus, the present study concludes that simple repair specially of duodenal perforations followed by *H. pylori* eradication therapy for two weeks and a course of PPI's for four weeks, produces equivalent results as that of definitive operations and at the same time being less complicated and utilizing less resources. Also, with the declining number of elective peptic ulcer operations immediate vagotomy with bypass might prove to be a more difficult procedure than before, for most surgical residents, the front-line personnel managing patients with duodenal ulcer perforations. With advent of laparoscopic perforation repair, though not performed in our institution a re-evaluation between simple closure and definitive surgery- assumes more significance as simple closure is the only practical and tested laparoscopic procedure in perforations. Obviously laparoscopic definitive repair is bound to be more technically demanding and significantly time consuming. This issue is further complicated by controversies regarding *H. pylori* infection in perforated peptic ulcer. Notwithstanding the classic report by a Reinbach et al that perforated duodenal ulcer is not associated with *H. pylori* infection, several reports including the one by Metzger et al showed the difference of *H. pylori* infection in peptic ulcer perforations is as high as 73 -80%. Thus, it seems reasonable that *H. pylori* eradication prevents recurrence of ulcer after simple closure of duodenal ulcer perforations. The present study also validates this finding with most of the patients (88%) placed in visick grade I and II category with *H. pylori* eradication therapy after simple closure. Re infection with *H. pylori* though remain a vexing problem. Thus, it seems reasonable to perform a simple closure of duodenal perforations along with *H. pylori* eradication therapy for the treatment of perforated duodenal ulcer.

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