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Comparative Retrospective Study of Graham's Repair vs Primary Repair with Omentoplasty in Small Duodenal Perforations

Authors
G D Yadav[@], Manjushree Sachan[#], Deepak Lohia, Ravi Lohani, Rohit Singh, Siddhant Singh
@Department of Surgery, G.S.V.M Medical College Kanpur 208002 India
Department of Pathology, G.S.V.M Medical College Kanpur 208002 India

ABSTRACT
Duodenal perforation is the common cause of peritonitis .It is considered as one of the most catastrophic complications of duodenal ulcer[5] .It is a common surgical emergency. Duodenal perforations greater than 2 cm in size are considered as large perforations[5]. Perforation is considered hazardous because of extensive duodenum tissue loss, friability of ulcer margins surrounding tissue inflammation sepsis due to peritonitis and poor general condition of patient. Giant perforations are technically difficult to repair due to complex anatomy of duodenum and marginal blood supply shared by pancreas. High intraluminal pressure, tendency of mucosa to extrude through suture line and autodigestive enzymes of pancreas and bile add to risk of breakdown of suture line.

Introduction

The study is aimed to compare the efficacy of graham's repair vs primary repair with omentopl-asty in management of duodenal perforations

Materials and Methods

Source and Data

Study was conducted in GSVM Medical College Kanpur from January 2010 to December 2015 among 200 patients. Patient demographics, presentation patterns and clinical data were retrieved from hospital records and surgical notes. Inclusion criteria: patients who underwent exploratory laparotomy and diagnosed as cases of duodenal perforation exclusion criteria: associated co-morbidities i.e. malignancy, recent mi, failure of other organ system.

Multiple perforations
Any previous gastroduodenal surgery
Perforation >2cm
Traumatic duodenal perforation

Study Design: type of study: comparative retrospective study

Period of Study: January 2010 to December 2015

Sample Size: 100 patients for graham's repair and 100 patients for primary repair with Omentoplasty

Plan of Study: patients with duodenal perforations undergoing laparotomy were divided in two groups by randomization with card selection method.

Patients were divided into two groups in group 1 and group 2 based on randomization by card selection method.

Group 1: graham's repair
Group 2: primary repair by omentoplasty
Results were analyzed by chi square chart for categorical data and T test for continuous data.
Parameters: age (15-65)yrs
Sex
Pre-op HB
Pre-op TLC
Pre-op serum protein
Pre-op creatinine
Pre-op urea

Graham's repair: the full-thickness bites were placed approximately 0.5 cm away from the edges of the perforation from one margin to the other. A theoretical hazard with the full-thickness bites is passing the needle through the posterior duodenal wall. Commonly, three or four sutures are placed perpendicularly between the edges of the perforation and are laid out on each side of the duodenum. A patch of omentum is brought without tension and positioned over the perforation, and the sutures are successively tied from the superior to the inferior aspect across the omental patch to anchor the omental graft in place
Primary repair with omentoplasty: the full thickness bites were placed approximately 0.5 cm away from edges of perforation from one margin to the other and repair done. A patch of omentum is brought without tension and positioned over stitched perforation with two seromuscular stitches to duodenum.

Methodology

Patients in the study group were subjected to a detailed history, complete medical and physical examination. Specific investigations like complete blood count, liver function test, renal function test, x ray abdomen erect, usg abdomen, chest x ray, coagulation profile

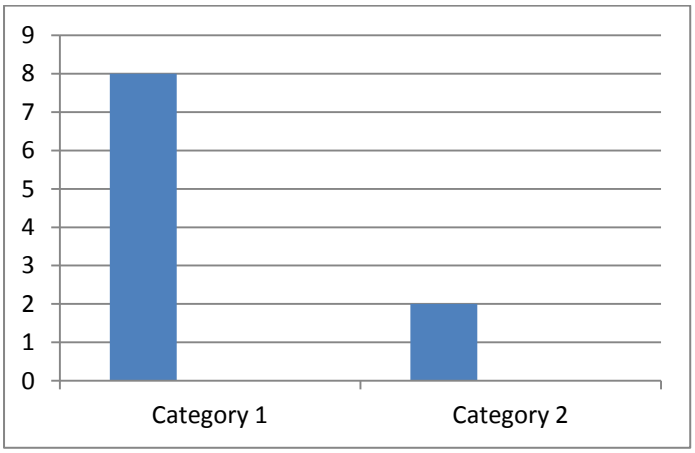
- Suture materials and techniques were same in all cases
- Precautions were taken not to leave any residual fluid in peritoneal cavity
- Two intraperitoneal drains were placed
- Postoperatively: both groups were monitored in terms of no. of days drains requirement, total drains quantity, no. of days of post-operative hospital stay, symptoms, morbidity and mortality.
- Post-operatively leak was identified by presence of bile in drains and its quantity

The patients were examined daily for clinical improvement.
Improvement in pain, BP, pulse, nausea, vomiting, abdominal distension, bowel sound, flatus, passage of stool, TLC count, length of hospital stay.

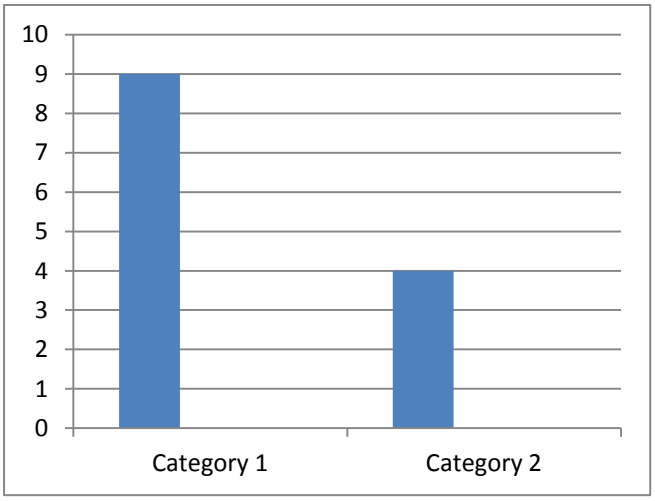
Result and Observation

This is the comparative retrospective study with mean age 47.8 yrs (15-65) in graham's omentoplasty and 49.4yrs (15-65) in primary repair and omentoplasty. Statistically. There was no significant difference between mean age of two groups. The ratio between male and female was 19:1 .In the study group, there was history of NSAIDS intake in 55% patients. Most of the patients were belonged low socioeconomic status. The mean value of TLC on admission in group 1 was 20400 cells/mm3(15500-30100) and in group 2 was 21900 cells/mm3(16700-29400).The mean value of TLC at 72 hrs in group 1 was 9100 cells/mm3(7500-12500) and in group 2 was 9600 cells/mm3 (7100-12700).The mean Hb at admission in group 1 was 10.1gm%(9.5-12.1) and in group 2 was 9.9gm%(9.5-12.4).The mean serum protein in group 1 was 7.1 gm%(5.5-8.2) and in group 2 was 7.2 gm%(5.6-7.9). The mean serum urea in group 1 was 28 mg/dl(21-38) and in group 2 was 30 mg/dl (22-36). The mean creatinine in group 1 was 1.1 mg/dl (0.6-1.4) and in group 2 was 1.2 mg/dl (0.7-1.6).The mean Postoperatively stay in the hospital in group 1 was 12.1 days and in group 2 was 12.3 days. There are 8 patients postoperatively which were leak in group 1 and 3 patients in group 2.Mean operative time in group 1 was 100 min and 80 min in group 2.

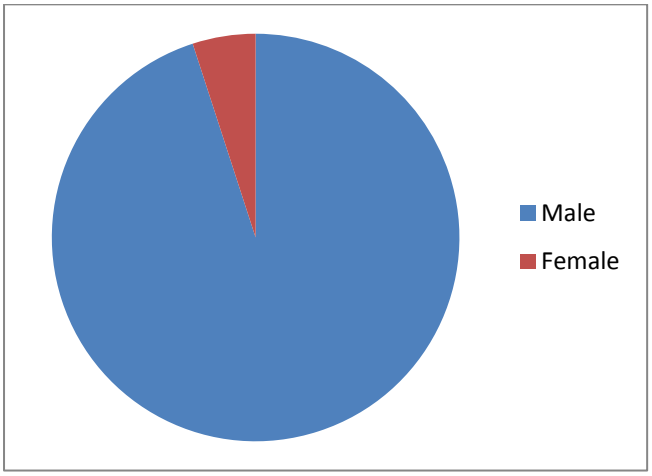
Parameters	Group 1	Group 2
1.mean operative time	100 min	80 min
2.intestinal fistula	8	2
3.wound Infection	15	13
4.lung complication	16	19
5.mortality	9	4
6.mean hospital stay	12.1 days	12.3 days
7.oral feeding	4.9 days	5.1 days



Intestinal Fistula



Mortality



Male: Female

Discussion

In our study the mean age of the patients was 48.6 years (15-65) with maximum number of patients (n=134) were in the age group of 40 to 60 years. Duodenal perforation has been reported mostly in the age group of 40-60 years of age. ln our study highest incidence was in 5th decade similar to other studies[6]. Duodenal perforation once so common 3-4 decade ago has drastically decrease the incidence due to advent of ppi and anti H. pylori drugs. Although perforated duodenal ulcer is a surgical emergency. Simple closure or even non operative management is acknowledged the most appropriate management who are markedly debilitated or in shock. Conservative treatment is known as the Taylor method and consists of nasogastric aspiration, antibiotics, intravenous fluids and nowadays H.pylori triple therapy[12,13]. It has been estimated that about 40-80% of the perforations will seal spontaneously and overall morbidity and mortality are comparable[11,12,13,14] simple closure is associated with high failure rate. ln our study most of the were male. Duodenal perforation is more common in male[10].lt may be due to more stressful life. ln our study 60% patients are smokers and 55% are alcoholic.

Strong association between ulcer perforation and smoking was reported in several studies. [7,8]Smoking is a causal factor for ulcer perforation. The risk was increased by a factor of 10 in smokers among both men and women.

Smoking prevalence of 84% and 86% have been reported among patients with duodenal ulcer perforations[9] and smokers have a three-fold higher mortality rate from PU than non-smokers‘s. Duodenal perforation are more common in low socioeconomic status. Average no. of hospital stay day in group 1 was 12.1 days and in group 2 was 12.3 days .Postoperatively in group 1 16 patients were with wound infection and in group 2 18 patients. Oral feeding was started in group 1 at 4.9 day and in group 2 was at 5.1 day. Respiratory tract infection was present in 17.5% patients .In group 1 was in 16% patients and in group 2 was in

19%. Respiratory tract infection are most common complication postoperatively[2,3,4] .

Conclusion

Duodenal perforation is the surgical emergency.it is very well managed operatively. Debilated patients can be managed by conservative methods .Duodenal perforation patients can be managed operatively with many procedure .Exploratory laparotomy with Primary repair of perforation and omentoplasty has low leakage rate as compared to grahams repair in above study.

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