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RESEARCH ARTICLE
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‘’ TO STUDY THE PERFORATION PERITONITIS CASES, DIAGNOSIS AND MANAGEMENT”.

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Abstract-

Introduction- Peptic ulcer perforation is a serious complication which affects 2-10% of peptic ulcer patients. Peptic ulcer perforation presents with an overall mortality of 10% although various authors had reported incidence between 1.3% and 20%. Being a life-threatening complication of peptic ulcer disease, it needs special attention with prompt resuscitation and appropriate surgical management if morbidity and mortality are to be contained.

Aim- was comparative study of Graham's omentopexy versus modified Graham's omentopexy in duodenal perforation.

Methods and materials- This prospective, single centre study done in NSCB Medical college jabalpur Madhya Pradesh from 2020 to 2022 for two years of periods. Total 180 patients studied

Results- There are duodenal perforation is most common found in 88.88% and then ileal perforation is 6.66%. other perforation like gastric, duodenal, jejunal, appendicular, colonic, rectal perforation also found. Most of the patients fall between 20-78 years of age in both A and B groups. The maximum number of patients were 72(40%) found in the age group of 40-50 years. There is 156 male and 24 females are present the study.

Post operative leakage was 7.5% and 1.25% respectively. There was 6.25% burst abdomen in group A and 1.25% in group B cases. 100 patients (67%) had perforation within range 0.5-1 cm in size. The postoperative complications in group A were wound infection 10[12.5%], bile leakage 6 [7.5%], respiratory complications 8 [10%], electrolyte imbalance 12 [15%], paralytic ileus 3 [3.75%], septic shock 5 [6.25%] and abdominal abscess in 5 [6.25%] and in group B were wound infection 6[7.5%], bile leakage 1 [1.25%], respiratory complications 3 [3.75%], electrolyte imbalance 5 [6.25%], paralytic ileus 2 [2.5%], septic shock 2 [2.5%] and abdominal abscess in 2 [3.75%]. Mortality rate in Group A (3.75%) and in Group B (1.25%). The overall mortality rate was 7.14%. In this study average hospital stay was 12.4 days in group A and 9.0 days in group B. conclusion- This study showed that modified Graham's patch repair is as effective as Graham's patch repair in terms of mean operative time period, timing of oral feed allow and mean hospital stay timing.

Keywords- perforation peritonitis, exploratory laparotomy, wound dehiscence.

INTRODUCTION

Peptic ulcer perforation is a serious complication which affects 2-10% of peptic ulcer patients. Peptic ulcer perforation presents with an overall mortality of 10% although various authors had reported incidence between 1.3% and 20%. Being a life-threatening complication of peptic ulcer disease, it needs special attention with prompt resuscitation and appropriate surgical management if morbidity and mortality are to be contained. [1-5]

Perforation occurs when ulcer erodes through full thickness of stomach or duodenum. Perforation is most common complication of peptic ulcer. Bleeding ulcer and use of non steroidal anti inflammatory drugs (NSAID) and/or aspirin have been inextricably linked with perforated peptic ulcer disease (PUD), especially in the elderly. More than 20% of patients over the age of 60 years presenting with a perforated ulcer are taking NSAIDs at the time of perforation. [6]

The most accepted method of surgical closure of the perforation is called Graham patch repair. In 1937, Roscoe Graham described this method. Before sutures are tied, the adjacent omentum is brought up to the perforation with the sutures untied and laid out on the anterior surface of the duodenum, and are then successively tied from the superior to inferior side, so as to tampon the perforation with the vascularised omental pedicle graft. Care should be exercised to be sure that the suture is tied sufficiently snugly to hold the omentum in place, but the tension exerted by the tied suture on the omentum should be such that the blood supply to the omentum is not impaired. The patch must be a living omental patch, and the omentum should not be strangulated. [7]

This technique was later modified and called as Modified Graham patch repair (MGPR), in which the three or four sutures are placed as described above and are then tied to close the ulcer. The omental patch placed on the tied suture, and another set of knots are tied to hold the omentum in place over the duodenal perforation closure. There is concern that the omentum will not be as intimately applied to the duodenal perforation and may not represent as good a seal as is the case 8 when the omentum is laid directly on the open ulcer bed.

AIM

This prospective, single center, interventional cohort study done in NSCB Medical college jabalpur Madhya Pradesh from 2020 to 2022 for two years period in patient admitted in surgical emergency department. Total 180 patients included in our study. The main aim of study ‘’ to study the perforation peritonitis cases, diagnosis and management’’.

MATERIAL AND METHODS

This prospective, single center, interventional cohort study done in NSCB Medical college jabalpur Madhya Pradesh from 2020 to 2022 for two years period in patient admitted in surgical emergency department. Total 180 patients included in our study.

Inclusion criteria

All the patients of bowel perforation were included

Exclusion criteria

1) Patient in severe sepsis,
2) Patients who are not interested in the study

Giant duodenal ulcers > 2cm in diameter, posterior duodenal ulcers and sealed duodenal ulcer perforation. Total 200 patients enrolled in the study in which 40 patients excluded. Total 160 patients were taken and divided in two groups. Each group consisted of 80 patients. Group A underwent Graham Patch repair and Group B underwent Modified Graham Patch repair. Their outcome was collected in preformed proforma and data so collected were subjected to SPSS 19 for analysis.

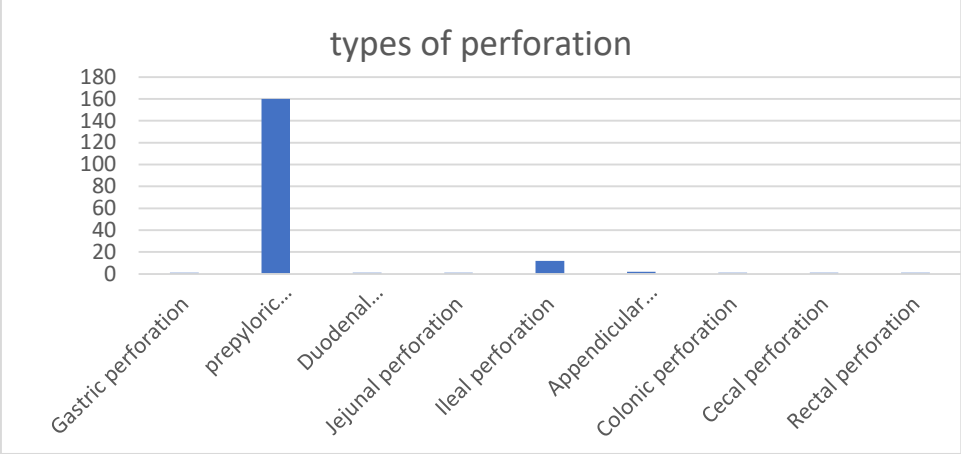
All patients were admitted with acute abdomen in emergency department, vital checked after proper resuscitation with IV fluids, nasogastric aspiration, urinary catheterization, analgesics & antibiotics proper history taken, thorough clinical examination, radiological investigations (Ultrasonography of abdomen pelvis & X-Ray chest PA view showing both dome of diaphragm to look for air under right diaphragm) that signifies hollow viscus perforation. All operative findings and post-operative complications were recorded. All operations carried out under general/regional anaesthesia. After confirmation of the site of perforation peritoneal lavage was done with 4-5 litres of warm normal saline. Special attention was made to irrigate the sub hepatic pouch, the lesser sac, the paracolic gutters & pelvis. After omentopexy, two drains, one in Morrison's pouch and other in pelvis, were placed & fixed. The midline abdominal wound was closed with mass closure technique.
Patients were randomized into groups while they were on operated table using random number table. Mostly the size of perforation was found between 0.5 cm to 1 cm. The perforation of duodenum more than 2 cm in size was dealt with other surgical procedures i.e. Jejunal serosal patch & antrectomy. In Graham's omentopexy, the 3-4 full thickness suture bites with 2-0 vicryl were placed approximated 0.5 cm away from one margin to other sutures. A vascularized omental patch was laid over the sutures are successively tied from superior to inferior aspect across the omental patch to anchor the omental graft in place. ln modified Graham's omentopexy, the perforation was closed with vicryl2-0 through & through sutures-The suture were tied to approximate the wall defect without cutting through the duodenal wall-Then a vascularized segment of omentum brought on the top of the closed perforation and with second set of suturesBoth groups were compared in terms of postoperative complications and surgical outcome-Post operatively, all patients were prescribed for 2 weeks treatment of standard triple drug therapy to eradicate Helicobacter Pylori. All patients were followed up for a period for 12 months on outpatient department.

RESULTS

-There are duodenal perforation is most common found in 88.88% and then ileal perforation is 6.66%. other perforation like gastric, duodenal, jejunal, appendicular, colonic, rectal perforation also found.

TABLE- 1 TYPES OF PERFORATION

Types of perforation	Numbers	Percentages
Gastric perforation	1	0.55%
Prepyloric perforation	160	88.88%
Duodenal perforation	1	0.55%
Jejunal perforation	1	0.55%
Ileal perforation	12	6.66
Appendicular perforation	2	1.1%
Colonic perforation	1	0.55%
Cecal perforation	1	0.55%
Rectal perforation	1	0.55%
Total	180	100



Graph- Types of perforation

-Most of the patients fall between 20-78 years of age in both A and B groups. The maximum number of patients were 72(40%) found in the age group of 40-50 years.

-There is 156 male and 24 females are present the study.

Sex	Number	Percentage
Male	156	86.6%
Female	24	13.33
Total	180	100

-we divide divide prepyloric perforation into two groups- group A and group B. First group done graham’s patch repair and second group done modified graham’s patch repair.

Preoperative and intraoperative data analysis

Factors	Group -A		Group -B	
	Number	Percentage	Number	Percentage
Time interval between onset of symptoms and operation				
≤24 hrs	32	40	30	37.5
24-48 hrs	44	55	46	57.5
≥48 hrs	4	5	4	5
Size of perforation				
≤0.5cm	18	22.5	20	25
0.5-1cm	52	65	48	60
≥1cm	10	12.5	12	15
Associated comorbidities				
Present	18	22.5	16	20
Absent	62	77.5	64	80
Preoperative shock				
Present	12	15	10	12.5
Absent	68	85	70	87.5

-from this study most of the patients operated between 24-48 hours in both of the group. Size of the perforation is 0.5-1cm most of the patient. Associated comorbidities present in 22.5% in group A and 20% patients in group B. Preoperative shock present in 15% in group A and 12.5% patients in group B.

Postoperative Outcomes of technique

Outcomes	Group -A [N=80] Graham’s omentopexy	Group -B [N=80] Modified- graham’s patch omentopexy	P – value
Mean operative time [minutes]	70±8	75±9	≤0.05
Bile leal/fistula	6 [7.5%]	1 [1.25%]	0.1221
Wound infection	10 [12.5]	6 [7.5%]	0.4292
Respiratory complications	8 [10%]	3 [3.75%]	0.2114
Electrolyte imbalance	12 [15%]	5 [6.25%]	0.1237
Paralytic ileus	3 [3.75%]	2 [2.5%]	1
Septic shock	5 [6.25%]	3 [3.75%]	0.7168
Abdominal abscess	5 [6.25%]	2 [2.5%]	0.4395
Mean hospital stays[days]	12±1.4	9±1.2	≤0.05
Oral feed allows [days]	5±0.6	4±0.7	≤0.05
Re-exploration	5 [6.25%]	1 [1.25%]	0.2119
Bursts abdomen	5 [6.25%]	1 [1.25%]	0.2119
Death	3 [3.75%]	1 [1.25%]	0.6126

-Comparisons of two groups was made in term of mean operative time, bile leak/fistula, wound infection, respiratory complications, electrolyte imbalance, paralytic ileus, septic shock, abdominal abscess, mean hospital stays, oral feed allow, re-exploration and death.
-The postoperative complications in group A [graham’s patch omentopexy] were wound infection 10[12.5%] cases, bile leakage 6 [7.5%] cases, respiratory complications 8 [10%] cases, electrolyte imbalance 12 [15%] cases, paralytic ileus 3 [3.75%] cases, septic shock 5 [6.25%] cases and abdominal abscess in 5 [6.25%] cases.
-The postoperative complications in group B [modified graham’s patch omentopexy] were wound infection 6[7.5%] cases, bile leakage 1 [1.25%] cases, respiratory complications 3 [3.75%] cases, electrolyte imbalance 5 [6.25%] cases, paralytic ileus 2 [2.5%] cases, septic shock 2 [2.5%] cases and abdominal abscess in 2 [3.75%] cases.
- this study significant value found in mean operative time, mean hospital stay and oral food allow from the day of surgery in both groups, which is clearly better in modified graham’s patch omentopexy group and significant.
-re-exploration found in 5[6.25%] in group A and 1 [1.25%] in group B patients, which is also improved in group B patients.
- Death rates found in group A is 3 [3.75%] and 1 [1.25%] in group B patients which is also improved in group B patients.

DISCUSSION

In the present study a total of 160 patients were treated for acute perforated duodenal ulcer in our hospital over a period of 2 year. These were divided into 2 groups. Group A and Group B, each consisted of 80 patients. They underwent Graham patch repair and Modified Graham patch repair respectively.

Age: Most of the patients fall between 20-78 years of age in both A and B groups. The maximum number of patients in group A were 30(37.5%) found in the age group of 40-50 years. Similarly, the maximum number of patients in group B was 28(35%), found in the age group of 40-50 years. Reviews from Africa which had an average of 64.80 (SD 11.4) years.[9] Study conducted by Dakubo shows age ranged from 4-87 years with mean age of 40.90. [10] Gugliminotti described age varied from 20 to 65 years. [11], while Mehboob described mean age 31.4 years with peak incidence in 3 decades.[17]

Sex: There is 146 male and 14 females are present the study. In group A there were 72(90%) males and 8(10%) females. In group B there were 74(92.5%) males and 6(7.5%) females. Incidence of male was more as compared to study done by Plumer and Ohene in 2004 and 2006 respectively. [18]

Post operative leakage: Overall post operative complication in Graham patch and Modified Graham patch repair was low. Post operative leakage was 7.5% and 1.25% respectively. The p value from chi square test came out to 0.1221 which is not significant. This was similar to the study done by Nuhu et al. in 2009 where only 4 post operative leakages were present in 55 patients undergoing emergency exploratory laparotomy.

Burst abdomen: Similarly, there was 6.25% burst abdomen in group A and 1.25% in group B cases. The p value from chi square test was 0.2119 which is not significant. Chalya et al. concluded in a retrospective and prospective study of clinical profile and outcome of surgical treatment of perforated peptic ulcers in Northwestern Tanzania: A tertiary hospital experience. Total 84 patients (n=84) were included who had undergone Emergency Laparotomy with Graham's patch repair with omentopexy for duodenal ulcer perforation. Post operative complications were recorded in 25(29%) patients. Of these surgical sites infection was in 12(48%) patients, post operative pyrexia was in 9(36%) patients, wound dehiscence and burst abdomen was in 5(20%) patients and incisional hernia in 2(8%) patients. Overall complications rate in their series were higher than our series. [20]

Size of perforation: The size of the duodenal perforation determines the amount of peritoneal contamination. The perforation >1cm has incidence of leakage, morbidity& mortality when compared with small perforation.[13] In this study out of 160 patients, 100 patients (67%) had perforation within range 0.5-1 cm in size similar result showed in Nishikant et al 75.5% had perforation within 0.11-0.5cm. [30]
The postoperative complications in group A [graham’s patch omentopexy] were wound infection 10[12.5%] cases, bile leakage 6 [7.5%] cases, respiratory complications 8 [10%] cases, electrolyte imbalance 12 [15%] cases, paralytic ileus 3 [3.75%] cases, septic shock 5 [6.25%] cases and abdominal abscess in 5 [6.25%] cases. The postoperative complications in group B [modified graham’s patch omentopexy] were wound infection 6[7.5%] cases, bile leakage 1 [1.25%] cases, respiratory complications 3 [3.75%] cases, electrolyte imbalance 5 [6.25%] cases, paralytic ileus 2 [2.5%] cases, septic shock 2 [2.5%] cases and abdominal abscess in 2 [3.75%] cases.
The similar results of post-operative complications were also shown in other studies by Raj put et al and satapathy et al. [24,25]

Mortality: In this study mortality rate in Group A Graham's omentopexy is 3 patients (3.75%) and in Group B Modified Graham' Omentopexy is 1 patient (1.25%). The overall mortality rate was 7.14% associated with late presentation while in other studies by A Nuhu et a1,[14] all was 16.4% and satapathy et al,[25] ln another study by Umran–Muslu et al, the mortality is 3.9%.[26] Mortality rate in literature varies with the range of 6.5-20%.

Average Hospital stay: In this study average hospital stay was 12.4 days in group A Graham's Omentopexy and 9.0 days in group B Modified Graham's Omentopexy similar in other series the average hospital stay was 9+-1.4 days.

Recurrence: In follow–up of 12 months one patient from Group A Graham's Omentopexy was readmitted with recurrence of symptoms and in modified Graham's Omentopexy Group B had better outcome without any recurrence.

Predisposing factors to complications: The most important factors predisposing to complications are delay in admission to the hospital, associated diseases and shock on admission. Mortality &

morbidity can be reduced by early admission, prompt resuscitation, and treatment of associated disease, early surgical intervention and prophylaxis of complications.

CONCLUSION

This prospective, single center, interventional cohort study done in Birsa Munda government medical Shahdol Madhya Pradesh from 2021 to 2023 for two years period in patient admitted in surgical emergency department. Total 180 patients included in our study. The main aim of study ‘’ comparison between Graham’s patch omentopexy and modified Graham’s patch omentopexy’’. The analysis of results of present study consisting of altogether 160 patients undergoing duodenal ulcer perforation repair showed that modified Graham's patch repair is as effective as Graham's patch repair in terms of mean operative time period, timing of oral feed allow and mean hospital stay timing. It is concluded that modified Graham's patch repair is better and effective procedure than Graham's patch repair.

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