



A Retrospective Randomized Study of Gastric and Duodenal Perforation in Rajah Muthiah Medical College

Authors

Dr K.Ravichandran¹, Dr R.Ramesh², Dr K.C.M.Rajkumar³

¹Assistant Professor of Surgery, Dept of Surgery Rajah Muthiah Medical College, Annamalai University, Annamalainagar, Chidambaram, Tamil Nadu

²Professor of Surgery, Dept of Surgery Rajah Muthiah Medical College, Annamalai University, Annamalainagar, Chidambaram, Tamil Nadu

³Post Graduate Student, Dept of Surgery Rajah Muthiah Medical College, Annamalai University, Annamalainagar, Chidambaram, Tamil Nadu

ABSTRACT

Background: Gastric and Duodenal perforation are one of the most common cause of acute abdomen .They are managed by different surgical techniques in emergency procedures and the outcomes are more encouraging to the community.

Aims: To study the various incidence and outcome of findings in cases with Gastric and Duodenal perforation in emergency situations –a Retrospective randomized study.

Patients and Methods: This is a retrospective hospital based study. 56- Gastric and Duodenal perforation patients diagnosed and various incidence in different aspects are categorized and the outcome is studied and analysed.

Results: Factors deciding the outcome of Gastric and Duodenal perforation patients treated were observed and analysed for prospective approach.

Conclusion: smaller Gastric and Duodenal perforations are easily amenable to perforation closure and heals well than large perforations. Duodenal perforations are more benign than malignant.Gastric perforations are more malignant than benign.

Keywords: Duodenal Perforation, Duodenal ulcers, peritonitis, risk factors, Gastric perforation.

INTRODUCTION

Ulcer perforation was a rare disease in 19 century, however incidence greatly increased at the time of 20th century .since then the world has been epidemic of Duodenal Perforation among men. After the introduction of H2 Receptor blockers & PPI there has been sharp decline in peptic ulcer surgery. However, there is epidemiological change in perforation common in adolescent age group and female genders also .The patients

especially the younger age group and adolescent present with acute abdomen, should be carefully evaluated in order to avoid catastrophe. Gastric and Duodenal Perforation commonly encountered in surgical practice .Perforation usually seen secondary to duodenal ulcer. Perforation causes leakage of biliary juice, Gastric juice, pancreatic juice and semi digested food particles from stomach and duodenum into generalized peritoneal cavity, which causes chemical peritonitis

resulting in peritoneal irritation followed by increased peritoneal fluid secretions, causing chemical and bacterial peritonitis within 12 hours of perforation. Emergency laparotomy followed by identification of perforation, thorough peritoneal lavage, closure of perforation and closure of abdomen with subhepatic and pelvic drain.

MATERIALS AND METHODS

This study is a hospital based Retrospective Randomised study from November 2010- November 2014. Inclusion criteria was all the patients admitted to Emergency department with Gastric and Duodenal perforation. Exclusion criteria – sites other than Gastric & Duodenal intestinal perforation, perforation due to blunt injury and open injury). All patients were retrospectively analysed by 1.sex, 2.age, 3.associated risk factors, 4.site of perforation, 5.size of perforation and 6.management of perforation, 7.intra –operative findings, 8.post operative study, 9.morbidity and 10.mortality. In our study for small perforations, live pedicled omental patch closure using (cellan-jones technique) were used and for large perforations omental plugging by suturing of the live omentum to the nasogastric tube and by interrupted suture fixation of the greater omentum around the perforation site was done.

OBJECTIVES

To study the incidence in 1.sex, 2.age, 3.associated risk factors, 4.site of perforation, 5.size of perforation and 6.management of perforation, 7. intra –operative findings ,8.post operative study, 9.morbidity and 10.mortality.and the outcome in patients of Gastric and Duodenal perforations in Rajah Muthiah Medical College Hospital.

RESULTS

Chart-1 A Sex incidence

sex	Number of cases	%
Male	48	85.7
Female	8	14.3

Chart-1B Sex incidence

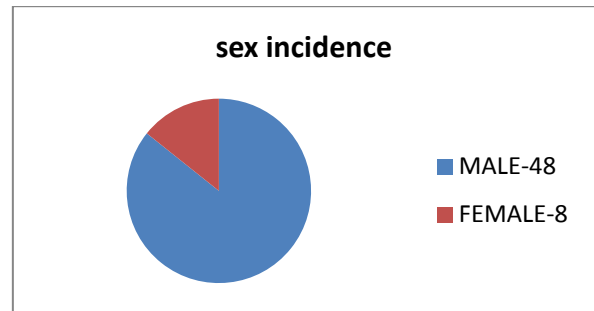


Chart-2A Age incidence

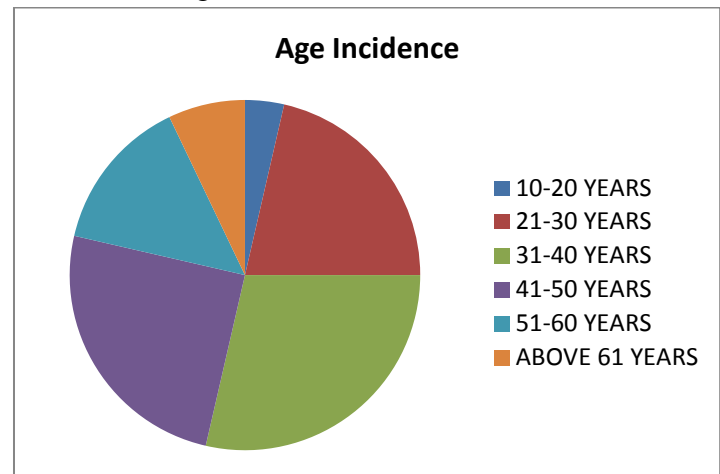


Chart-2B Age incidence

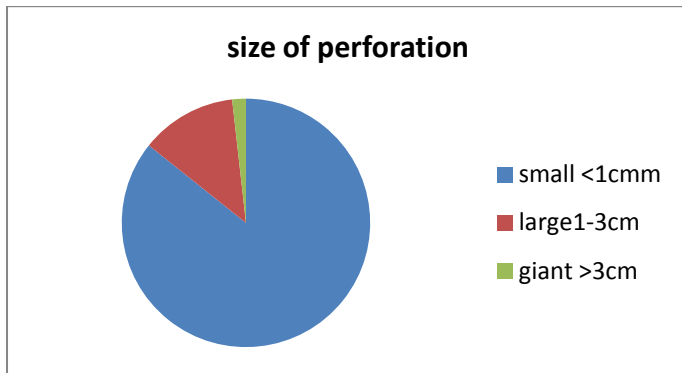
Total number of patients		56	
Age group	No: of patients	%	
10-20 Years	2	3.6	
21-30 Years	12	21.4	
31-40 Years	16	28.6	
41-50 Years	14	25	
51-60 Years	8	14.3	
Above 60 Years	4	7.1	

Chart-3 Risk factor wise incidence

Total number of patients		56	
Risk factor	No: of patients	%	
Alcohol	18	32.1	
Smoking	12	21.4	
Peptic ulcer	15	26.8	
NSAIDS	8	14.3	
NSAIDS+Steroid	3	5.4	

Chart 4 Site of perforation

Total number of patients		56	
Site	No: of patients	%	
Duodenum	48	85.7	
Gastric	8	14.3	

Chart-5A size wise incidence**Chart-5 B** size wise incidence

Total number of patients		56	
Size of perforation	cases	%	
Small	<1cm	48	85.7
Large	1-3cm	7	12.5
Giant	>3cm	1	1.8

Chart-6A Perforation Management

Type of Management	Number of cases	%
Conservative	0	0
Surgical	56	100

Chart-6B Surgical Management

Surgery	Number of cases	%
Cellan-jones omental patch closure	52	92.9
Omental plugging with nasogastric tube	4	7.1

7. Intra –Operative Findings

The peritoneal cavity was very much soiled in large and giant perforations and less in small perforations. Sometimes there was Dry peritonitis in very small perforations <3mm & in early sealed perforation. Flakes and the Greater omental adhesion was the usual guide to the site of perforation. White to yellow flakes, easily and less easily separable flakes were found. The greater the interval between perforation and surgery, the greater the dense adhesions in perforation and inter loop adhesions. Less adherent flakes were of shorter duration and densely adherent flakes were of longer duration since perforation. More air under the diaphragm in Gastric and less air under the diaphragm in Duodenal perforations were found respectively, in x-ray Abdomen erect view.

In our study more than 32% of the cases did not have air under the diaphragm, probably due to smaller size, lesser leak and early sealing of perforation by greater omentum. Mostly in posterior gastric perforations the Greater sac was less soiled or even dry. Peritoneal fluid collection were there in perforation site, paracolic gutters and more in Morrison's pouch and pouch of Douglas.

8. Post-Operative period Study

Usually, lesser leak and younger aged patient walk out nicely without complications. Aged patients with more co-morbid illness go for complications like perforation-closure site leak, drainage site infection, burst abdomen, thrombophlebitis, pulmonary embolism, post-operative myocardial failure, post-operative respiratory failure and septicemia.

Chart-8 Post-Operative complications

Post-Operative complications	Number of cases	%
Perforation-closure site leak	2	3.6
Drainage site infection	5	8.9
Burst abdomen	6	10.7
Thrombophlebitis	5	8.9
Pulmonary embolism	0	0
Post-operative myocardial failure	0	0
Post-operative respiratory failure	0	0
Septicemia	2	3.6

9. Morbidity .

Anaemia, hypoproteinemia, malnutrition, Diabetes mellitus, liver failure, renal failure, CAD, COPD, Asthmatic bronchitis all decide the fate of patient.

Chart-9 Morbidity

CO-MORBID FACTORS	NUMBER OF CASES	%
	TOTAL:56	
Anaemia	12	21.4
hypoproteinemia,	4	7.1
Malnutrition	24	42.8
Diabetes mellitus,	16	28.6
liver failure	2	3.6
CRF	0	0
CAD	4	7.1
COPD	8	14.3
Asthmatic bronchitis	18	32.1

Chart-10 Mortality

Site of perforation	Saved	%	Death	%	Cause
Duodenum	44	78.6	4	7.1	Septicaemia
Gastric	5	8.9	3	5.4	Septicaemia

A retrospective study of 56 patients of Gastric and Duodenal Perforation admitted between November 2010- November 2014 in Dept of Surgery Rajah Muthiah Medical College were studied and the incidence in various factors were categorized. After analysis we found that Gastric/ Duodenal perforation occurred in 56 patients out of that 48 (85.7%) were males, 8(14.3%) were females. Age incidence included from 10 to 60 years and above. 1st peak occurred at age group 30-40years and 2nd peak between 40-50 years.

DISCUSSION

This study was conducted on 56 patients with perforated Gastric and Duodenal ulcer. 48(85.7%) patient were males, 8(14.3%)were females .The age of the patient presenting with perforated duodenal ulcer ranged between 10-60 years and above, and our study showed there were incidence of Gastric and Duodenal perforation in younger age group also. Patients are most commonly males, but significant number of females patients and adolescent age group are also rarely reported. Alcohol and Smoking were the major risk factors followed by peptic ulcer, acute and chronic ingestion of NSAIDS and steroids. The study reveals acute or chronic ingestion of NSAIDS almost always predisposes to Gastric and duodenal ulcer perforation.

The time of perforation, perforation to presenting time to hospital, admission in hospital to surgery interval, interval between perforation and surgery, pre-operative shock, anaesthesia time, type of anaesthesia, anaesthesia complications on the operation table, operative time, size of perforation, advancing age, sex, co-morbid illness, post operative complications, perforation site closure leaks, are the factors that usually decide the mortality.

CONCLUSION

Duodenal and Gastric perforation are the most common Abdominal emergency occurring in routine surgical practice .It is more prevalent in male patients and the incidence is highest in 31-40 years age group. The risk factors are alcoholism, smoking, peptic ulcer, acute and chronic ingestion of NSAIDS, and steroids. NSAIDS alone have a high incidence of perforation. Addition of steroids increases the incidence of perforation by many folds. In our study the age was directly proportional to the size of perforation. As for as stomach and duodenum are concerned the more proximal the perforation the greater the chance of malignancy and the more distal it is benign.

In our data gastric/duodenal perforations are classified into three main groups

(1) small perforations < 1 cm (best outcome); (2) large perforations 1-3 cms (poor outcome); and, (3) giant perforations > 3 cm size(very poor come). In Giant perforations omentopexy may be deemed unsafe, and other options may be thought to be necessary.

In our study for small perforations, live pedicled omental patch closure using (cellan-jones technique) were used and for large perforations omental plugging by suturing of the live omentum to the nasogastric tube and by interrupted suture fixation of the greater omentum around the perforation site was done.

Other surgical options such as partial gastrectomy, jejunal serosal patch, jejunal pedicled graft, proximal gastrojejunostomy, or, even, gastric disconnection were not adopted. The risk factors need to be carefully taken into account in order to reduce the morbidity and mortality as they only usually decide the outcome.

REFERENCE

1. McIlrath DC, Larson RH: Surgical management of Large Perforations of the

1. Duodenum. Surg Clin North Am. 1971, 51: 857-61.PubMedGoogle Scholar
2. Jani K, Saxena AK: Management of Large Sized Duodenal Peptic Perforations by Omental Plugging – A New Technique: A Prospective Randomised Study of 100 patients. Ind J Surg. 2000, 62: 134-8.Google Scholar
3. Hermansson M, von Holstein CS, Zilling T: Surgical approach and Prognostic factors after peptic ulcer perforation. Eur J Surg. 1999, 165: 566-72. 10.1080/110241599750006479.View ArticlePubMedGoogle Scholar
4. Yamada T, Deitch E, Specian RD, Perry MA, Sartor RB, Grisham MB. Mechanisms of acute and chronic intestinal inflammation induced by indomethacin. Inflammation 1993;17:641–662. [PubMed]
5. Wallace JL. NSAID gastroenteropathy: Past, present and future. Can J Gastroenterol 1996;10:451–458.[PubMed]
6. Donovan A J, Berne T V, Donovan J A. Perforated duodenal ulcer. An alternative therapeutic plan. Arch Surg. (1998); 133:1166–1171. [PubMed]
7. Gutthann S P, Garcia Rodriguez L A, Raiford D S. Individual nonsteroidal antiinflammatory drugs and other risk factors for upper gastrointestinal bleeding and perforation. Epidemiol. (1997);8:18–24. [PubMed]
8. Karanjia ND, Shanahan DJ, Knight MJ: Omental patching of a large perforated duodenal ulcer: a new method. Br J Surg. 1993, 80: 65-View Article PubMed Google Scholar
9. Rajesh V, Sarathchandra S, Smile SR: Risk factors predicting operative mortality in perforated peptic ulcer disease. Tropical Gastroenterol. 2003, 24: 148-50.Google Scholar
10. Nussbaum MS, Schusterman MA: Management of Giant Duodenal Ulcer. Am J Surg. 1985, 149: 357-61.View Article PubMed Google Scholar
11. Walley BD, Goco I: Duodenal Patch Grafting. Am J Surg. 1980, 140: 706-8. 10.1016/0002-9610(80)90064-1.View Article PubMed Google Scholar
12. Lau W Y, Leung K L, Kwong K H, Davey I C, Robertson C, Dawson J J, Chung S C, Li A K. A randomized study comparing laparoscopic versus open repair of perforated peptic ulcer using suture or sutureless technique. Ann Surg. (1996); 224:131–138. [PMC free article] [PubMed]
13. Matsuda M, Nishiyama M, Hanai T, Saeki S, Watanabe T. Laparoscopic omental patch repair for perforated duodenal ulcer. Ann Surg. (1995);221:236–240. [PMC free article] [PubMed]
14. Cellan-Jones CJ: A rapid method of treatment in perforated duodenal ulcer. BMJ. 1929, 36: 1076-7.View Article Google Scholar
15. Chaudhary A, Bose SM, Gupta NM, Wig JD, Khanna SK: Giant Perforations of Duodenal Ulcer. Ind J Gastroenterol. 1991, 10: 14-5.Google Scholar