

Clinical Study of non-traumatic causes and management of generalized peritonitis

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ABSTRACT

Background: Peritonitis refers to an inflammatory response of the peritoneum in the abdominal cavity in terms of activation of local mediator cascades by different stimuli. Therefore, bacterial, viral and chemical agents may cause inflammation of the peritoneal layer. Secondary peritonitis is usually due to spillage of gastrointestinal or genitourinary microorganisms into the peritoneal cavity as a result of loss of integrity of the mucosal barrier.

Methods: Cross sectional observational study was performed. All patients admitted and treated for perforation secondary to non-traumatic hollow viscus perforation in surgical units of Department of General Surgery, Government Medical College, Nalgonda, Telangana, India, during the period of October 2019 - September 2021. A detailed history was taken and all the patients were subjected to thorough clinical examination. Patients subjected to laparotomy are followed in post-operative period to know the complications, morbidity and mortality rates. General condition at the time of admission was monitored by noting presenting complaints, pulse, BP, respiratory rate, hydration status. Operative findings were recorded. Necessary surgical intervention done is recorded; post operatively patients will be followed up for any complications. Each case will be studied as per the proforma.

Results: The most common age group was 40-60yrs (53.3%) in the present study. Major etiological factor noted is gastric perforation and next is appendicular perforation & duodenal ulcer perforation. In this study pain abdomen was the predominant symptom and was presented in all cases (100%). In this study guarding/rigidity was seen in all cases (100%). Most of the cases had a mean duration of 10-19 days of hospital stay. Mortality rate was found to be 16.6%

Conclusion: In our study, youngest age of small intestine perforation was 23 years and oldest was 80 years. Most cases had a duration of hospital stay of 10- 19 days. Main presenting complaint was pain abdomen, vomiting, fever and distension of abdomen. Risk factors for perforations were smoking, tobacco, alcohol and NSAIDs.

Keywords: Duodenal perforation; ileal perforation, small intestine perforation, Peritonitis, Appendicular perforation

INTRODUCTION

Gastro-intestinal perforation is a common emergency encountered in a surgeon's practice and is still having a high morbidity and mortality [1]. Peritonitis¹ due to hollow viscus perforation is commonly encountered in surgical practice it is defined as "Inflammation of the serosal membrane that lines the abdominal cavity and the organs contained therein". Peritonitis is often caused by introduction of an infection into the otherwise sterile peritoneal environment through perforation of bowel, introduction

of a chemically irritating material, such as gastric acid from a perforated ulcer [2-5].

Causative factors and site of perforation vary enormously. The different modes of presentation of cases may be misleading the diagnosis of its origin. Perforation of stomach and small intestine is on the increase [6]. An increasing proportion of elderly patients in western societies and availability of powerful NSAIDS continue to provide a fertile ground for upper gastro-intestinal tract ulceration and its complications. Smoking² and use of non-steroidal anti-inflammatory drugs are important risk factors for perforation. Perforation is usually seen in 3rd-4th decades, with a male preponderance and the epidemiological trend is not the same worldwide [7]. The spectrum of etiology of perforation in tropical countries continues to be different from its western counterpart. There is decrease in incidence in the west but in some countries, it has been on rise. Stress has been mentioned a possible cause [8, 9].

A small bowel perforation carries high degree of mortality and morbidity. However, the introduction of drugs like Chloramphenicol, Amoxicillin and newer generation fluoroquinolones and cephalosporin has lowered the incidence of small bowel perforation and mortality due to it [10-13]. Generally, in duodenum, anterior ulcer perforates and posterior ulcer bleeds. Typhoid ulcer perforations are in distal Ileum [14, 15]. Tuberculosis also commonly affects ileum, proximal colon and peritoneum. Risk factors are mainly immunosuppression, smoking, alcohol, tobacco chewing and poor management of enteric fever. The main aim of treatment is to control sepsis and treat the underlying cause. Surgery plays important role in the management of perforations [16-19].

MATERIALS AND METHODS

Cross sectional observational study was performed. All patients admitted and treated for perforation secondary to non-traumatic hollow viscus perforation in surgical units of Department of General Surgery, Government Medical College, Nalgonda, Telangana, India, during the period of October 2019 - September 2021. A detailed history was taken and all the patients were subjected to thorough clinical examination. Patients subjected to laparotomy are followed in post-operative period to know the complications, morbidity and mortality rates. General condition at the time of admission was monitored by noting presenting complaints, pulse, BP, respiratory rate, hydration status. Operative findings were recorded. Necessary surgical intervention done is recorded; post operatively patients will be followed up for any complications. Each case will be studied as per the proforma.

Inclusion criteria

- Age group : 20-80 years
- All patients presented with generalized peritonitis of non-traumatic causes.

Exclusion criteria

- Cases of traumatic perforative peritonitis.
- Cases with previous history of abdominal surgeries.

RESULTS:

60 patients presenting to Kamineni institute of medical sciences, Narketpally with generalized peritonitis secondary to non-traumatic hollow viscous perforation were studied.

Table -1: distribution of cases according to age group (n=60)

AGE (YEARS)	NUMBER OF CASES	PERCENTAGE
20-30	10	16.66
31-40	8	13.33
41-50	15	25.5
51-60	17	28.35
61-70	9	15
71-80	1	1.66
TOTAL	60	100

The most common age group was 40-60 yrs (53.3%) in the present study.

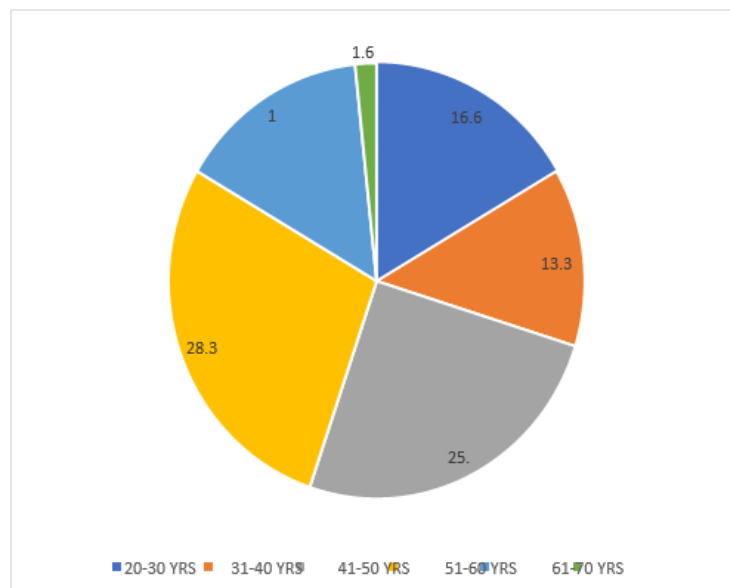
**Fig-1: pie chart showing distribution of cases according to age group percentages**

Table -2: distribution of gender according to etiology (n= 60)

Causes	Males		Females		Total	
	NO.	%	NO.	%	NO.	%
DUODENAL ULCER PERFORATION	8	16.66	2	16.66	10	16.66
GASTRIC ULCER PERFORATION	20	41.66	3	25	23	38.33
CAECAL PERFORATION	3	6.25	0	0	3	5
ILEAL PERFORATION	5	10.45	0	0	5	8.33
APPENDICULAR PERFORATION	8	16.66	7	58.34	15	25
COLONIC PERFORATION	2	4.16	0	0	2	3.34
GALL BLADDER PERFORATION	2	4.16	0	0	2	3.34
TOTAL	48	80	12	20	60	100

In this study 48 cases were males (80%) and 12 cases were females (20%). Major etiological factor noted is gastric perforation and next is appendicular perforation & duodenal ulcer perforation.

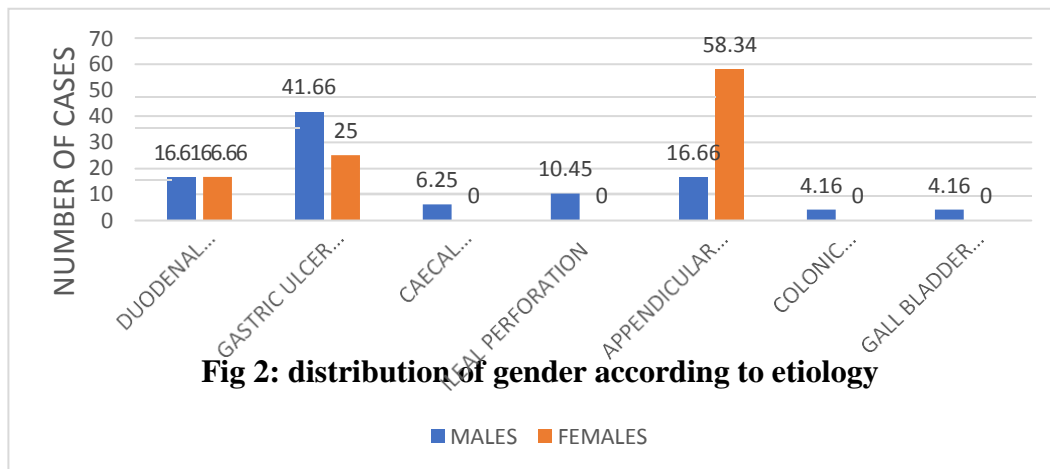


Table-3: distribution of cases according to symptoms (n=60)

SYMPTOMS	NUMBER OF CASES	PERCENTAGES
PAIN ABDOMEN	60	100
VOMITING	42	70
DISTENSION OF ABDOMEN	30	50
CONSTIPATION	56	93.3
DIARRHEA	4	6.6
FEVER	32	53.3

In this study pain abdomen was the predominant symptom and was presented in all cases (100%). The next common symptom was constipation (93.9%) followed by vomiting (70%) distention of abdomen (50%).

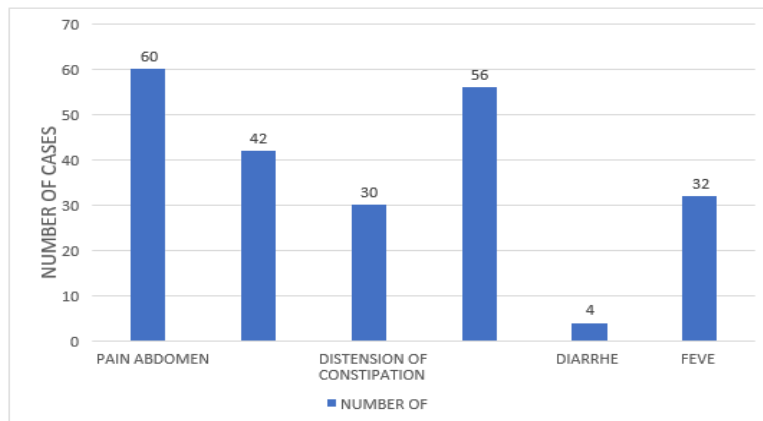


Fig-3: distribution of cases according to symptoms

Table-4: distribution of cases according to signs (n=60)

Signs	Number of cases	Percentage
Guarding/rigidity	60	100
Tenderness	60	100
Distension	35	58.3
Obliteration of liverdullness	56	93.3
Bowel soundsabsent	60	100
Bowel soundssluggish/present	0	0
Tenderness on digital rectal examination	3 5	58.3

In this study GUARDING/RIGIDITY was seen in all cases (100%). Tenderness was present in all cases (100%) at the relevant quadrant. Obliteration of liver dullness was seen in (93%) of cases. Bowel sounds are absent in all cases. Distension &tenderness on DRE was found to be in (58%) of cases.

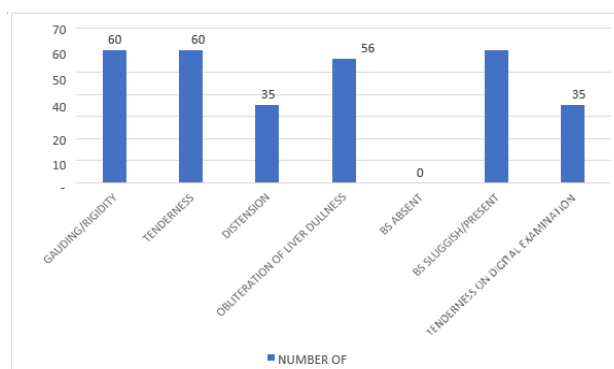


Fig-4: distribution of cases according to signs

Table-5: distribution of cases according to type of surgeryperformed (n=60)

Surgery	Number of Cases	Percentages
Simple closure with graham's	33	55

Patch		
Resection with end to end Anastomosis and loop ileostomy/end colostomy	9	15
Resection of terminal ileum (5cms) with caeectomy with loop Ileostomy and end colostomy	1	1.67
Appendectomy with drainage	15	25
Cholecystectomy with drainage	2	3.33
Total	60	100

In this study: 33cases (55%) underwent simple closure with mental patch. 9 cases (15%) underwent resection with end-to-end anastomosis & loop ileostomy/end colostomy. 15cases (25%) underwent appendectomy with drainage. 2cases (3.33%) underwent cholecystectomy with drainage. One case (1.66%) underwent resection of terminal ileum (5cm) with cecectomy with loop ileostomy and end colostomy.

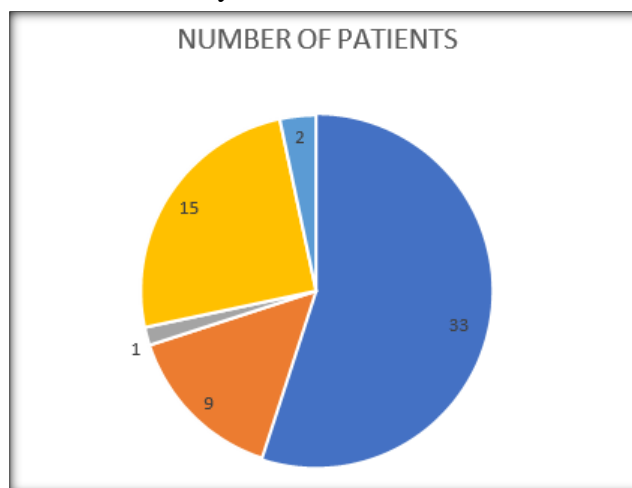


Fig-5: pie chart showing distribution of cases according to surgery performed

Table -6: distribution of cases according to complications (n=60):

complications	number of patients	percentage
Wound infection	15	25
Dehiscence	7	11.6
Burst abdomen	3	5
Ec fistula	3	5
Systemic complications	12	20

In this study the commonest complication were wound infection (25%) and systemic complications (20%) followed by wound dehiscence (11.6%), burst abdomen (3%), ECfistula (3%).

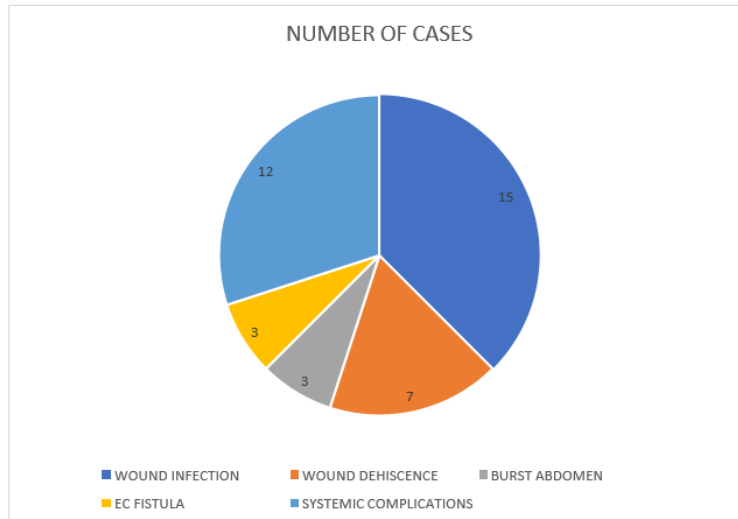


Fig-6: pie chart showing distribution of cases according to complications

Table -7: distribution of cases according to duration of hospital stay

Duration of hospital stay (days)	Simple closure with grahams patch (33cases)	Resection anastomosis with loop ileostomy or colostomy (9 cases)	Resection with caecectomy (1case)	Appendectomy with drainage (15cases)	Cholecystectomy with drainage(2 cases)
<10	3	0	1	12	0
10-19	21	3	0	3	1
20-30	9	4	0	0	0
>30	0	2	0	0	1

Most of the cases had duration of 10-19 days of hospital stay

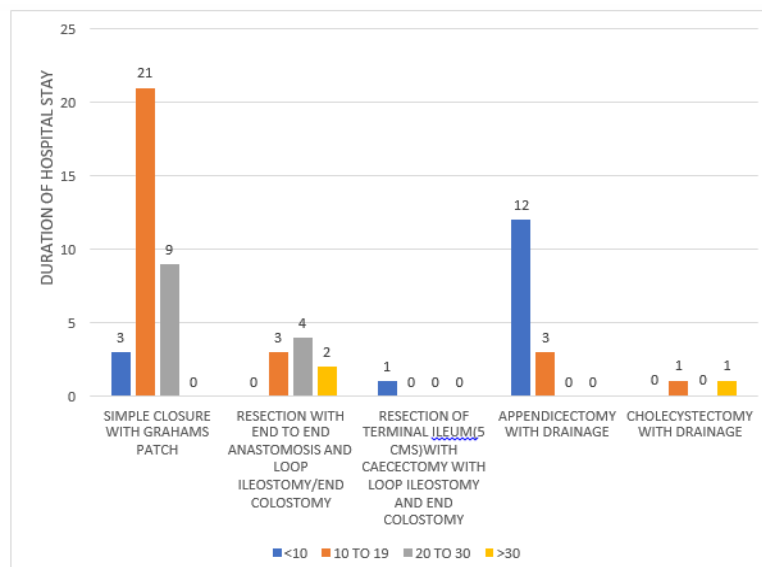


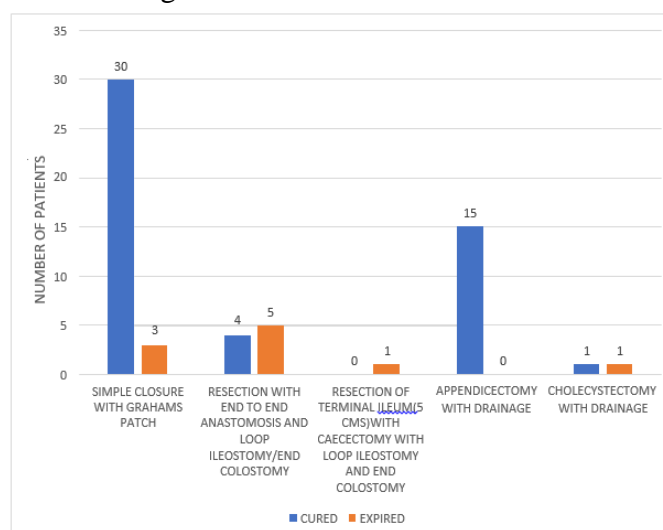
Fig-7: distribution of cases according to duration of hospital stay

Table-8: distribution according to type of surgery and outcome

Type of surgery performed	Cured		Expired		Total	
	NO.	%	NO.	%	NO.	%
Simple closure with graham's patch	30	90.9	3	9.09	33	55
Resection with end to end anastomosis and with loop ileostomy or colostomy	4	44.4	5	55.5	9	15
Resection of terminal ileum (5 cms) with caecectomy with loop ileostomy and end colostomy	0	0	1	0	1	1.6
Appendicectomy with Drainage	15	100	0	0	15	25
Cholecystectomy With drainage	1	50	1	50	2	3.33
Total	50	83.3	10	16.6	60	100

In this study:

Ases underwent simple closure with graham's patch and it was associated with 9% mortality 9 cases underwent resection with end to end anastomosis and with loop ileostomy or colostomy it was associated with 55.5% mortality 15 cases underwent appendicectomy with drainage it was associated with 100% curative rate. Cases underwent resection of terminal ileum (5 cms) with caecectomy with loop ileostomy and end colostomy it was associated with 100% mortality. Cases underwent cholecystectomy with drainage it was associated with 50% mortality.

**Fig-8: distribution according to type of surgery and outcome**

DISCUSSION

Table- 9: mean age group:

Authors	Years	Mean age in years
John Boey et al	1978-1981	48.80
Navez B et al	1990-1995	49
Present study	2019-2021	47.07

The most common age group was 40-60yrs (53.3%) in the present study, in which the mean age group is around 47yrs, which in comparison to other studies is much similar [20, 21].

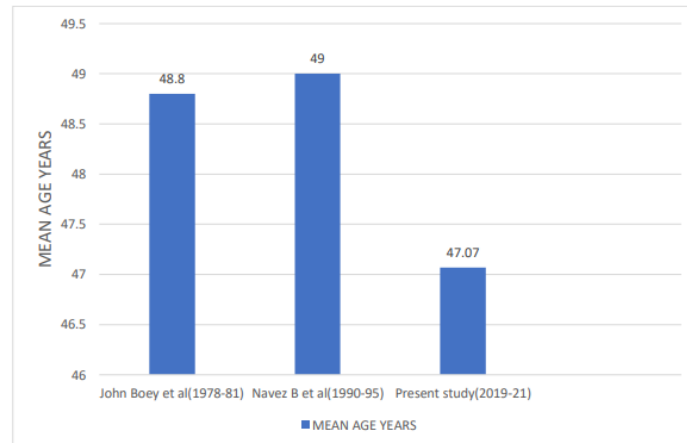


Fig- 9: Mean age group:

Table- 10: gender incidence

Authors	Gender		Male-female ratio
	Male	Female	
John Boey et al	158	26	6:1
Navez B et al	110	121	0.9:1
Present study	48	12	4:1

In the present study higher incidence was seen in male population with m: f ratio of 4:1. The results of the present study are compared with the study done by other authors as shown in the above table.

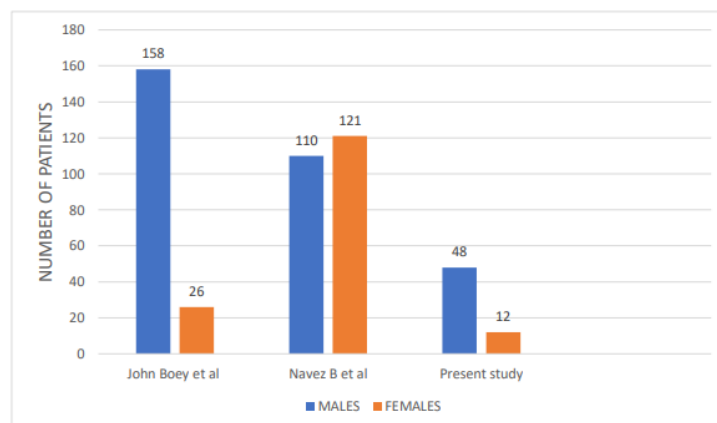
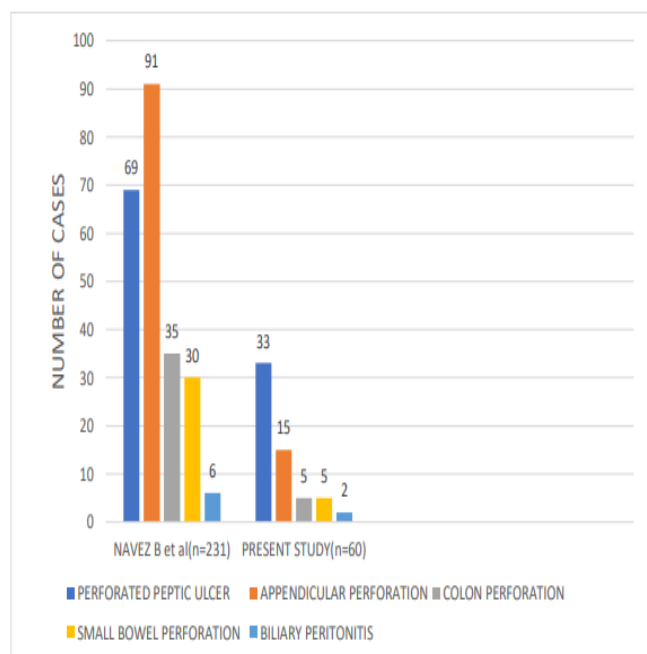


Fig 10: gender incidence

Table-11: causes of generalized peritonitis

Causes	Navez b et al(n=231)	Present study(n=60)
Perforated pepticulcer	69(29.8%)	33(55%)
Appendicularperforation	91(39.39%)	15(25%)
Colon perforation	35(15.15%)	5(8.33%)
Small bowel perforation	30(12.98%)	5(8.33%)
Biliary peritonitis	6(2.59%)	2(3.33%)

**Fig-11: causes of generalized peritonitis**

In this study, the leading cause for peritonitis was peptic ulcer perforation 33cases (23 gastric ulcer perforation and 10 duodenal ulcer perforation) This is due to the habit of consumption of high spicy food, NSAIDs ,smoking and alcohol in this region [22-24].

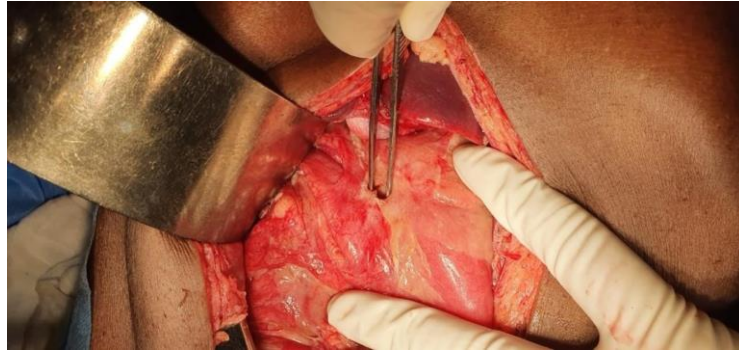


Fig - 12 Showing Gastric Perforation

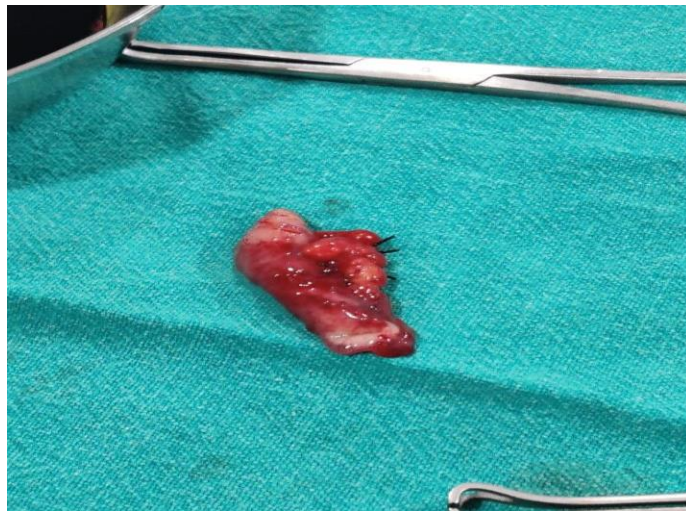


Fig -13 Appendectomy with foci of pus in appendicular perforation

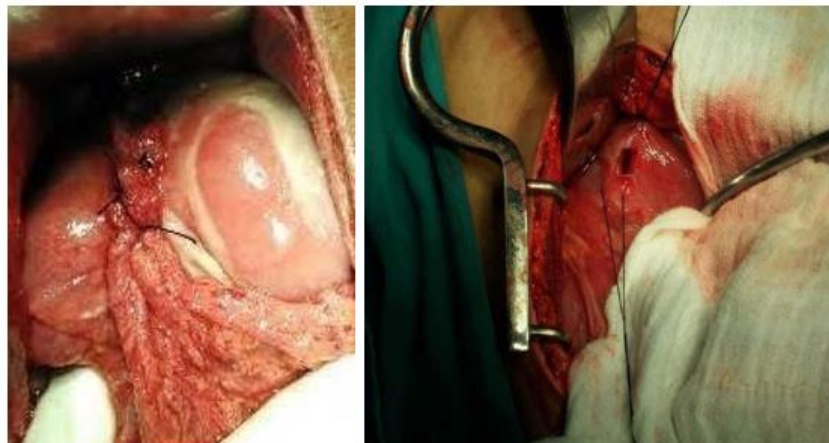


Fig: 14 peptic ulcer perforation closure by Grahams patch

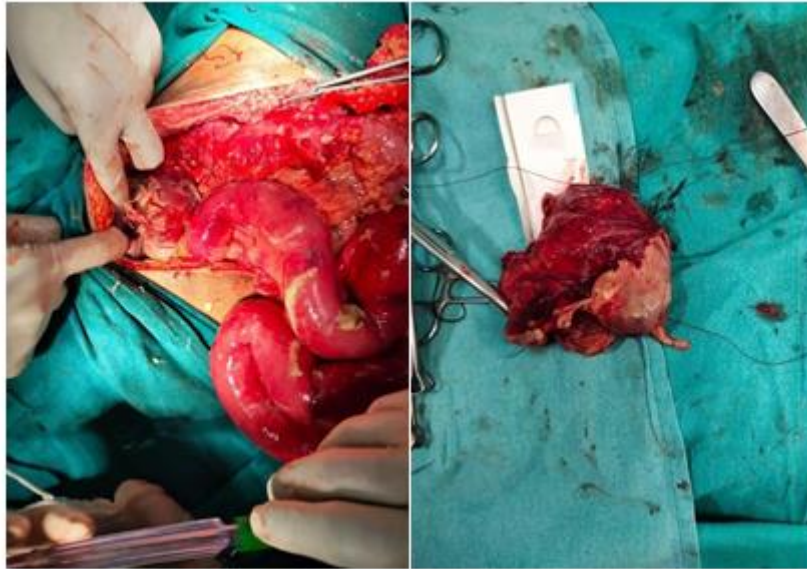


Fig: 15 Cecal Perforation with Gangrene with Cecectomy Specimen

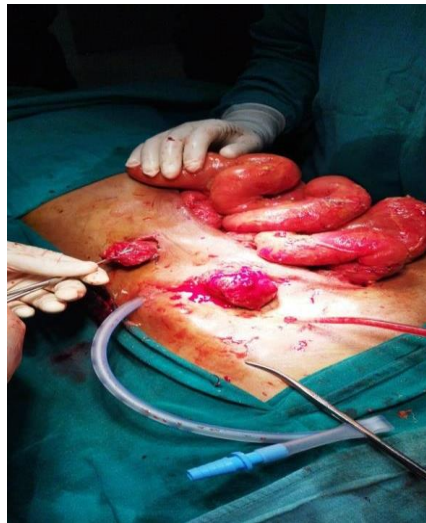


Fig: 16 Showing End Ileostomy with End Colostomy

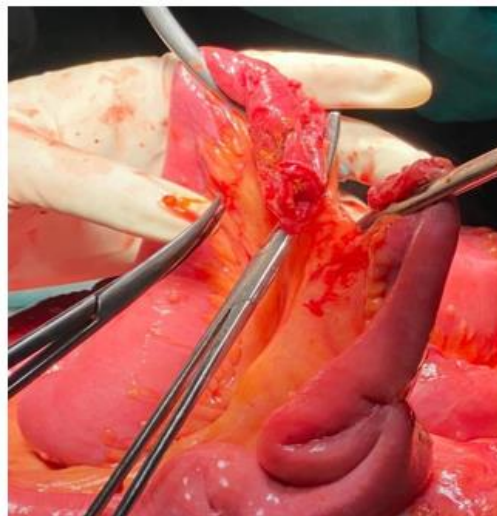


Fig: 17 Showing Resection and Anastomosis of Typhoid Perforation

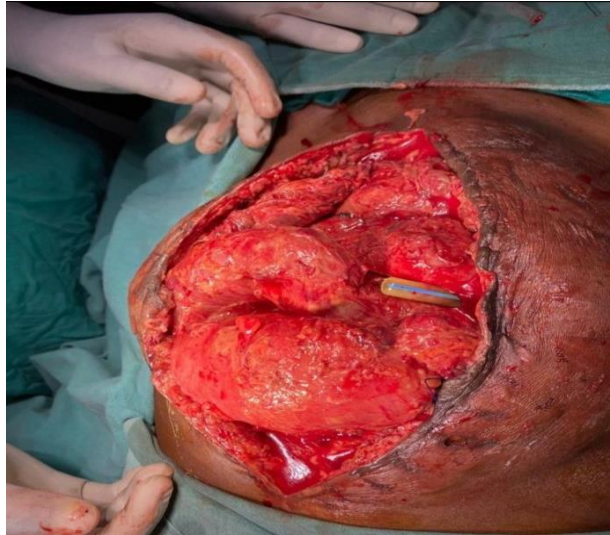


Fig: 18 Showing Burst abdomen



Fig: 20 Showing End ileostom

CONCLUSION

Peritonitis is one of the most important emergency surgical conditions. Pain abdomen is the most common presenting symptom in non-traumatic perforation peritonitis followed by constipation, distension of abdomen and vomiting. Erect abdominal x ray, USG abdomen, are very useful investigation for diagnosis in non-traumatic perforation peritonitis. Primary closure of perforation was the most common procedure employed. Resection and anastomosis is also done for bowel perforation. With the available effective acid reducing drugs, definitive surgery is not mandatory for peptic ulcer perforation. The most common cause of perforation peritonitis is due to peptic ulcer perforation followed by appendicular and duodenal perforation.

FUNDING

Nil

CONFLICT OF INTEREST

No

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