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Study of perforation peritonitis in rural India.

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ABSTRACT

Introduction:

Hollow viscus perforation is one of the most common surgical emergencies. The descriptive study was conducted from May 2022 to June 2024 regarding the incidence, etiology, and postoperative surgical complication in operated cases of hollow viscus perforation. Before the discovery of PPI and H-pylori regimen peptic ulcer disease was the most common cause of hollow viscus perforation.

Aim: 1) To study the incidence of gastrointestinal perforation peritonitis in adults in rural India.

2) To study the etiology of perforation peritonitis in these patients.

3) To study post-operative complications and their management.

Materials and methods: The present study was carried out in the Department of General Surgery at a tertiary care teaching hospital. This is a prospective descriptive study. The present study was conducted from May 2022 to June 2024. 50 patients with gastrointestinal perforation peritonitis undergoing surgical intervention were studied During the study period. Patients who met inclusion criteria were requested to sign a written informed consent form before being enrolled in the study.

Inclusion criteria

1) All patients of age 18 years and above irrespective of sex, presenting with gastrointestinal perforation peritonitis and undergoing exploratory laparotomy included in this study.

Exclusion criteria

1) Patients below 18 years of age.
2) Patients with primary peritonitis/spontaneous bacterial peritonitis, postoperative peritonitis due to anastomotic leakage, peritonitis following ingestion of corrosive poison, and peritonitis following traumatic and iatrogenic peroration will be excluded from this study.

3) Patients not undergoing exploratory laparotomy.

Results:

1) The mean age of perforation peritonitis is 47.95.
2) Amongst all patients 60% of patients have perforation peritonitis due to peptic ulcer disease and 22% of patients due to appendicular perforations.
3) Overall, 36% of patients (18 patients) had post-operative complications. Amongst 18 patients 9 patients had surgical site infections and 1 patient had acute renal failure.

Conclusions:

1) The most common age group of incidences for perforation peritonitis is 51- 60 years and the least common is above 70 years
2) The most common cause of perforation peritonitis is peptic ulcer disease followed by appendicular perforation while the least common is due to tuberculosis of the intestine in this age group.
3) The most common postoperative complication is surgical site infection and the least common is acute renal failure.

INTRODUCTION

Perforation peritonitis is the most common surgical emergency encountered by surgeons all over the world. [1,2]. Perforation causes exposure of the peritoneum to the gastro-intestinal contents which results in peritonitis.[3] Peritonitis can be classified as primary, secondary or tertiary, depending upon the source of microbial contamination. Primary peritonitis is secondary to extra-peritoneal sources, the infection spreading mainly through hematogenous dissemination without visceral perforation. On the other hand, secondary peritonitis is caused by resident flora of the gastrointestinal or urogenital tracts, the organisms reaching the peritoneum secondary to a mechanical break. Non-responding secondary peritonitis either due to failure of the host inflammatory response or overwhelming super infection leads to tertiary peritonitis [4].

The etiological factors of intestinal perforation vary between developed and developing countries.[5] In developing countries the most common causes of gastrointestinal perforation includes, duodenal ulcer perforation, typhoid ileal perforation, perforation due to trauma, perforation due to

malignancy whereas malignancy and diverticulitis are more common in developed nations.[6] Patients with perforation peritonitis usually presents with abdominal pain, distension, vomiting, absolute constipation, dehydration and shock. But the clinical presentation varies according to the site of perforation and duration of perforation.

Surgical treatment of perforation peritonitis is highly demanding and complex [7]. If not treated promptly, can lead to multisystem organ failure and death [8, 9]. A prompt diagnosis and urgent surgery is life-saving for all patients with generalized secondary peritonitis [10] Surgical treatment includes emergency exploratory laparotomy and management of the underlying etiology. The mortality rate increases with the length of interval between the time of hollow organ perforation and time of surgery. [11]

The aim of present study is to determine the incidence of gastrointestinal perforation peritonitis, etiology of perforation, clinical presentation of patients, post-operative complications, final surgical outcome and mortality rate in our institute.

MATERIALS AND METHODS

When patients of perforation peritonitis arrived in casualty as much information as possible was obtained from the patient himself. When the patient was not in a condition to give history, it was obtained from the patient's relatives or from the person who had brought the patient. On admission detailed history regarding, the time of appearance and duration of pain in the abdomen associated with distention, vomiting, and fever were recorded. Also, an inquiry was made about cough, constipation, NSAID use, and alcoholic status. Inquiry was also be made regarding the patient's medications, past medical history and chronic medical conditions (like Diabetes, Hypertension, Tuberculosis) in addition to drug allergy. On admission, if patients were in hypotension, then they were resuscitated initially and when became hemodynamically stable, shifted for radiological investigations and then in the surgical ward.

RESULTS

1) According to the study, amongst 50 patients 20 patients (40%) were from age group of 51-60 years of age which is the most common age group followed by the 41-50 years of the age group which contribute about 12 patients (24%).and the least commonly involved age group is 70-80 years which contributes about 1 patient (2%). The mean age of all ages having perforation peritonitis was calculated

by formula, which is 47.75 ≈ **47.8** year age.

Age distribution in patients with perforation peritonitis

Sr. No	Age distribution	Number of patients (F)	Percentage	Mid-value of age (M)	(Fxm)	Mean of age $\bar{X}=\sum(FXM)/\sum F$
1	18-30	5	10%	24	120	47.75 ≈ **47.8**
2	31-40	8	16%	35.5	284	
3	41-50	13	26%	45.5	591.5	
4	51-60	19	38%	55.5	1054.5	
5	61-70	4	8%	65.5	262	
6	70-80	1	2%	75.5	75.5	
Total		∑F=N=50	**100**%	301.5	∑(FXM)=2387.5	

2) According to the study peptic ulcer disease is the most common cause of hollow viscus perforation, out of 50 patients 30 patients (60%) having hollow viscus perforation due to peptic ulcer disease in rural part of India. And the least common cause is perforation due to abdominal tuberculosis which have 1 patient (2%).

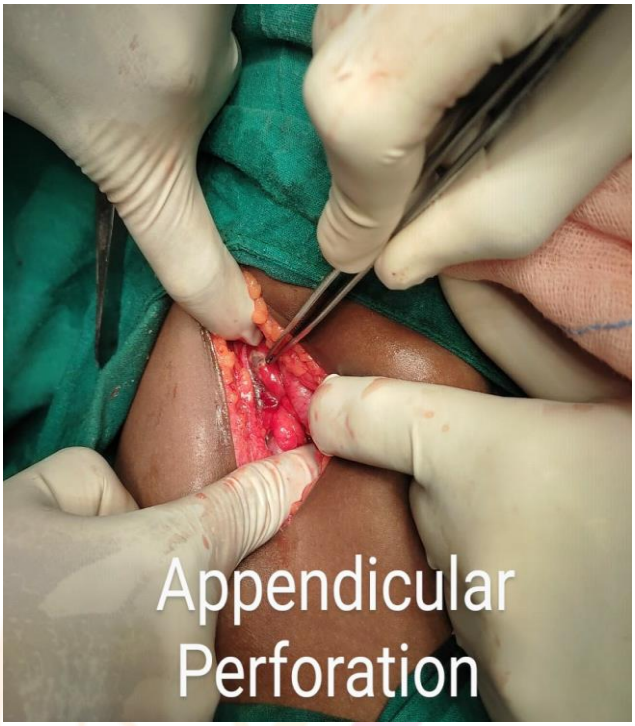
Sr. No	Etiology of perforation	Number of patients	Percentage
1	Acid peptic disease	30	60%
2	Typhoid	2	4%
3	Appendicular	11	22%
4	Tuberculosis	1	2%
5	Jejunal GIST	2	4%
6	Malignancy	2	4%
7	Idiopathic	2	4%
	Total	50	1

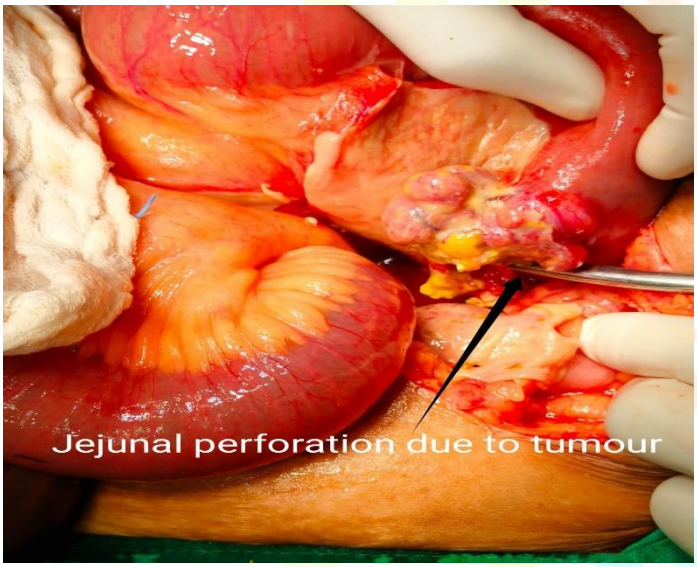
Etiology of perforation peritonitis.

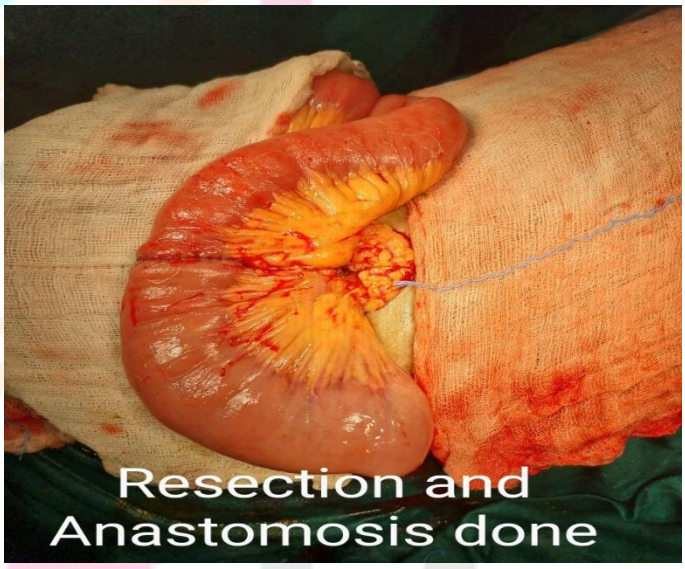
3) Amongst all patients who underwent exploratory laparotomy, 18 patients (36%) had post-operative complications amongst which 9 patients (18%) had surgical site infection which is the most common, and the least common complication was acute renal failure after surgery 1 patient (2%) had this.

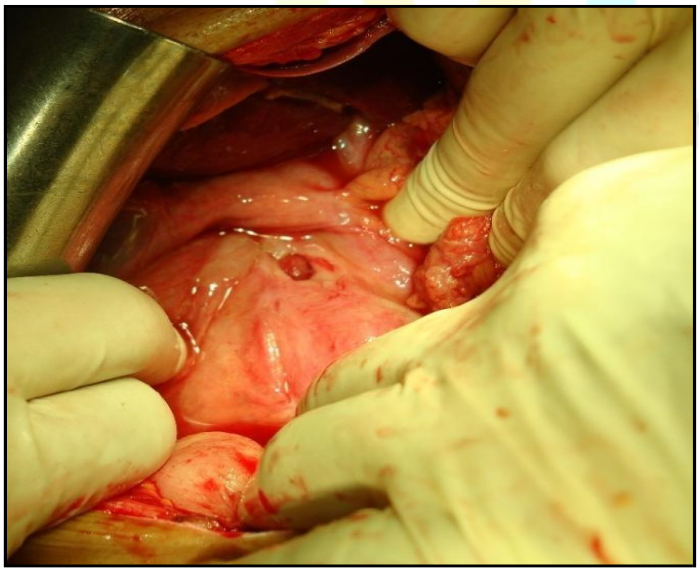
Postoperative complications in operated cases.

Sr. No	Post operative complications	Number of patients	Percentage	Overall complication rate
1	Wound infection	9	18%	36%
2	Paralytic ileus	2	4%	
3	Burst abdomen	2	4%	
4	Pneumonitis	2	4%	
5	Septicemia	2	4%	
6	Acute renal failure	1	2%	
	Total	18	36%	

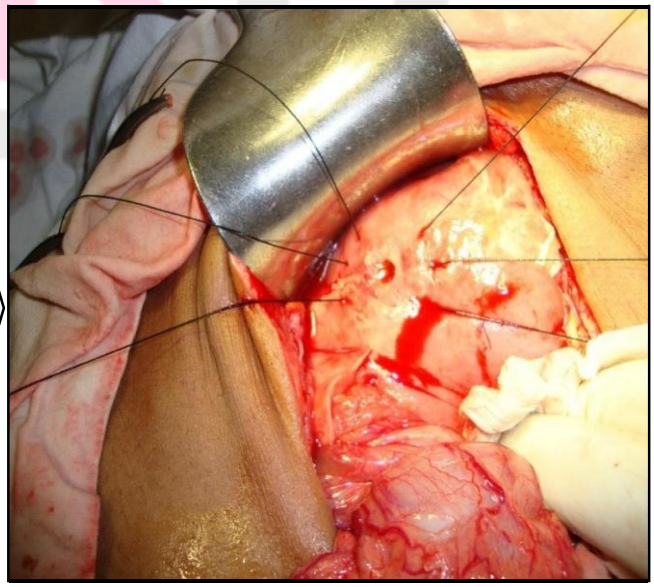






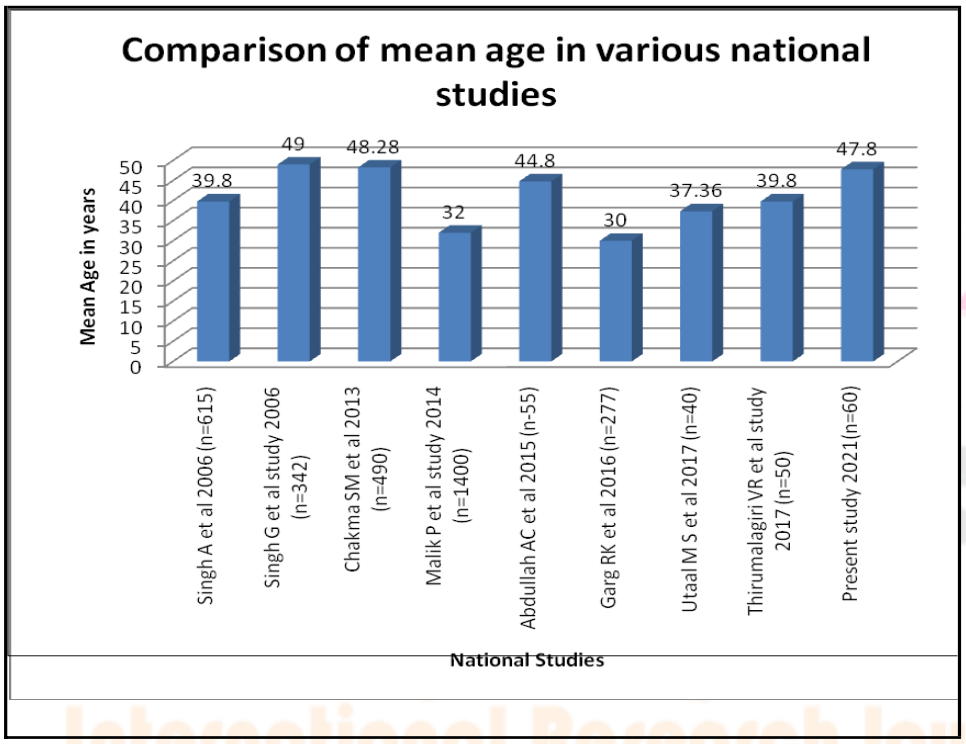


Gastric antral perforation repair.



DISCUSSION

1) The mean age of the patients in the study conducted by Singh A. et al was 39.8 years. In the study conducted by Chakma SM et al and Abdullah AC et al the mean age of the patients was 48.28 and 44.8 respectively. The mean age of the patients in the Garg RK et al study is 30 years, in Uttal MS et al study the mean age was 37.36 years. while that in Singh et al was 49 years. In Thirumalagiri VR et al study, the mean age of the patient was 39.8 years. In present study the mean age of the patient is 47.75 years ≈ 47.8 years.



2) In the study of Memon AA et al of 311 patients in 2010 Duodenal perforation in 11.9%. The study conducted by Karbhari SS et al in 2011 of 50 patients' site of perforation stomach in 8% and duodenum in 60%, Jejunum in 4%, Ileum in 28%. In the study of Vellapan DP et al in 2012 duodenal ulcer in 52% patients and gastric ulcer in 10% patients, Appendicular perforation 16%,Ileal perforation 3%.In study of Mewara BC et al of 100 patients in 2016 site of perforation is gastroduodenal in 81%, small bowel in 13% Appendicular in 4%, colonic in1%rectal in 1%. In the study of Kapoor S et al in 2017 of 100 patients' site of perforation is stomach in 20%duodenum in 7%, Jejunum in 2%terminal ileum in 55%, Appendix in 8%not identified in 2%. In our present study duodenal in 56% Gastric in 4% (60% due to PUD), Jejunal in 4%, ileal in 12%, Appendicular in 22% and colonic in 2%.

3) Comparison with various study done regarding complications

Sr. No	Studies	Post-operative complications	Number of patients	Percentage
1	Jhobta et al study 2006 (n=504) [1]	Wound infection	126	25%
		Septicemia	90	18%
		Pneumonia	143	28%
		Acute renal failure	51	10%
		Burst abdomen	44	9%
		Anastomotic leak	34	7%
2	Yadav D et al study 2011 (n=77) [58]	Wound infection	15	19.5%
		Wound dehiscence	3	3.9%
		Respiratory complications	6	7.8%
		Septicemia	4	5.2%
		Abdominal collection	3	3.9%
		Anastomotic leak	3	3.9%
3	Afridi SP et al study 2011 (n=300) [57]	Wound infection	126	42%
		Wound dehiscence	78	26%
		Respiratory complications	60	20%
		Septicemia	60	20%
		Abdominal collection	34	11.3%
		Anastomotic leak	05	1.6%
4	Rajeshwara KV et al study 2013 (n=105) [71]	Wound infection	32	30.34%
		Paralytic ileus	22	20.95%
		Wound dehiscence	2	1.9%
		Intra-abdominal abscess	0	0%
		Fecal fistula	0	0%
		Anastomotic leak	-	-
5	Vyas Ak et al study 2016 (n=227) [72]	Wound infection	64	28%
		Burst abdomen	25	10%
		Anastomotic leak	7	3%
		Pneumonia	55	24%
		Septicemia	16	7%
		Acute renal failure	16	7%

6	Malhotra MK et al study 2016 (n=93) [73]	Wound infection	33	16%
		Wound dehiscence	15	16%
		Respiratory complications	32	35%
		Renal complications	13	14%
		Septicemia	23	25%
7	Present study 2021 (n=50)	Wound infection	09	18%
		Burst abdomen	2	4%
		Paralytic ileus	2	4%
		Pneumonia	2	4%
		Septicemia	2	4%
		Acute renal failure	1	2%

CONCLUSIONS

a. Most common age group affected by perforation peritonitis was 51-60 years.

b. Acid peptic disease was the most common etiological factor for perforation peritonitis

c. Duodenum was the commonest site of perforation followed by appendicular perforation. Unregulated and indiscriminate use of NSAIDs still accounts for the high rate of duodenal perforation.

d. Wound infection is the commonest postoperative complication.

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