



A CLINICOPATHOLOGICAL STUDY OF PERFORATION PERITONITIS IN A TERTIARY CARE CENTRE

General Surgery

Dr. Govind Sharma	PG Resident, Department of General Surgery, Dr. Sampurnanand Medical College, Jodhpur.
Dr. Dinesh Dutt Sharma*	Associate Professor, Department of General Surgery, Dr. Sampurnanand Medical College, Jodhpur. *Corresponding Author
Dr. Anshul Mathur	Assistant Professor, Department of General Surgery, Dr. Sampurnanand Medical College, Jodhpur.
Dr. Shivangi Khandal	PG Resident, Department of Otorhinolaryngology, Dr. Sampurnanand Medical College, Jodhpur.

ABSTRACT

Introduction: Peritonitis is defined as inflammation of the serosal membrane that lines the abdominal cavity and the organs contained therein. Peritonitis secondary to perforation of the gastrointestinal tract, a common occurrence in this country, requires emergency surgical intervention and is associated with significant morbidity and mortality rates. Diagnosis is made clinically and confirmed by the presence of pneumoperitoneum on radiograph. **Aims And Objectives:** This research paper is intended to study clinicopathological profile & outcome of surgical management in perforation peritonitis with respect to age and sex distribution, clinical presentations, investigations, various anatomical sites of perforation, complications. **Methodology:** A retrospective and prospective study was conducted on total of 100 patients who presented with hollow viscus perforation peritonitis over a period of January 2017 to September 2019 in Department of General Surgery of Mahatma Gandhi and Mathura Das Mathur hospitals attached to Dr. Sampurnanand Medical College, Jodhpur. Data was collected with respect to following variables:- 1)Particulars of the Case. 2) History of the patient3)Clinical examination of the patient4)LaboratoryInvestigations. 5)X- ray chest & Flat Plate abdomen 6) Ultrasonography abdomen 7) Contrast Enhanced Computed Tomography of abdomen(if required) 8) Intraoperative finding for site of perforation 9) Etiology of perforation 9) Operative procedure carried out 10) Post operative complications. **Conclusion:** Perforation peritonitis is mostly seen in males during 3 th 4 and decade of life & present with pain abdomen, vomiting and distension. History of fever is one of the most useful clinical criteria to differentiate typhoid from other perforations. Peptic perforation is the most common cause followed by appendicular perforation. These cases can be confirmed with X-ray flat plate abdomen. Ultrasonography and CECT abdomen are done in selected cases. These cases are managed surgically. Patients may develop complications in the post operative period in which wound and chest infection are the common complications encountered. Septicaemia can occur in some patients which increases the mortality.

KEYWORDS

Peritonitis, Perforation, Pneumoperitoneum

INTRODUCTION:

Peritonitis 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, such as ruptured appendix. The disease may also be caused by introduction of a chemically irritating material, such as gastric acid from a perforated ulcer. Peritonitis secondary to perforation of the gastro intestinal tract, a common occurrence in this country, requires emergency surgical intervention and is associated with significant morbidity and mortality rates.

The first clinical description of perforated peptic ulcer was made by Crisp in 1843. Smoking and use of non steroidal anti inflammatory drugs are important risk factors for perforation¹. Diagnosis is made clinically and confirmed by the presence of pneumoperitoneum on radiograph.

This research paper is intended to study clinicopathological profile & outcome of surgical management in perforation peritonitis with respect to age and sex distribution, clinical presentations, investigations, various anatomical sites of perforation, complications.

MATERIALS AND METHODS:

A retrospective and prospective study was conducted on total of 100 patients who presented with hollow viscus perforation peritonitis over a period of January 2017 to September 2019 in Department of General Surgery of Mahatma Gandhi and Mathura Das Mathur hospitals attached to Dr. Sampurnanand Medical College, Jodhpur.

Institute Ethics Committee approval was obtained before the start of study. Written and informed consent was obtained from all participants before enrolment into study. Patients below 12 years age and patients with peritonitis due to causes other than hollow viscus perforation were excluded from the study.

Data was collected with respect to following variables:- 1)Particulars of the Case- Name, age, gender, religion, address, occupation, registration number, date of admission. 2) History of the patient-Presenting chief complaints was recorded in chronological

order along with history of presenting illness, past , personal and family history. 3) Clinical examination of the patient - General physical examination was done. Detailed Local examination was recorded followed by systemic examination in every case. 4) Laboratory Investigations-Routine blood investigations including haemogram, random blood sugar, liver function tests, blood urea, serum creatinine were measured in all patients. 5) X-ray chest & Flat Plate abdomen 6) Ultrasonography abdomen 7) Contrast Enhanced Computed Tomography of abdomen(if required) 8) Intraoperative finding for site of perforation 9) Etiology of perforation 9) Operative procedure carried out 10) Post operative complications

All patients were operated in a single surgical unit by same surgical team. Data was collected based on above mentioned variables, statistical analysis done, observations and results were concluded.

OBSERVATIONS AND RESULTS

A total of 100 cases were included in study based on above mentioned inclusion and exclusion criteria. Observations and results were followed.

Table 1: Age Wise Distribution Of Patients With Perforation Peritonitis

Age (yrs)	No. of patients	Percentage
12-20	16	16.00
21-30	20	20.00
31-40	27	27.00
41-50	23	23.00
51-60	6	6.00
61-70	8	8.00
Total	100	100.00

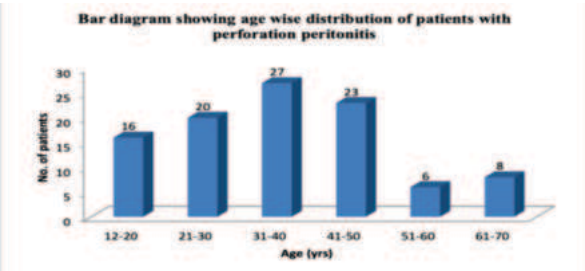


Table 2: Sex Wise Distribution Of Patients With Perforation Peritonitis

Sex	No. of patients	Percentage
Male	86	86.00
Female	14	14.00
Total	100	100.00

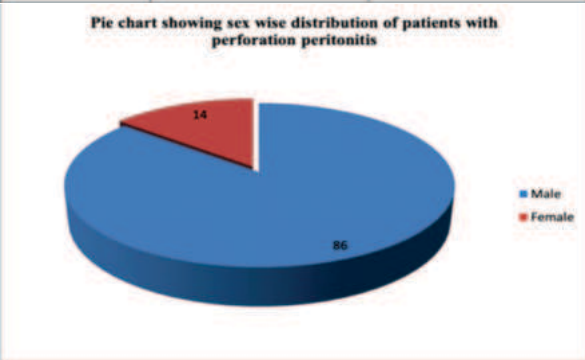


Table 3: Distribution Of Sample According To Etiology And Clinical Presentation In Perforation Peritonitis

Etiology	Pain		Vomiting		Abdominal distension		Fever	
	No.	%	No.	%	No.	%	No.	%
Peptic	44	100	36	81.81	33	75.00	7	15.90
Appendicular	22	100	17	77.27	3	13.63	9	40.90
Enteric	15	100	7	46.66	10	66.66	12	80.00
Traumatic	13	100	5	38.46	3	23.07	1	7.69
Ischemic	3	100	1	33.33	1	33.33	0	0.00
Gall bladder	3	100	1	33.33	1	33.33	1	33.33

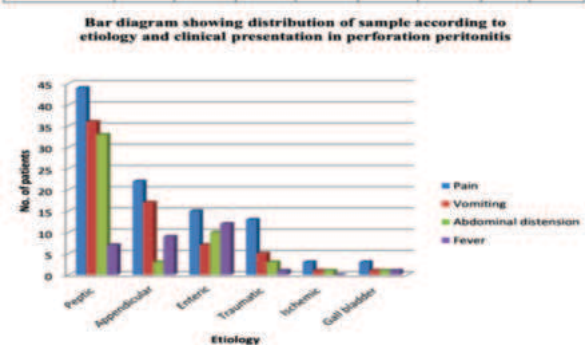


Table 4: Distrubution Of Patients With Perforation Peritonitis According To Gas Under Diaphragm On X-ray Flat Plate Abdomen

Gas under diaphragm on Xray FPA	Peptic		Traumatic		Enteric		Ischemic		Appendicular		Gall bladder	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Present	44	100.00	12	92.30	12	80.00	2	66.67	0	0.00	0	0.00
Absent	0	0.00	1	7.70	3	20.00	1	33.33	22	100.00	3	100.00
Total	44	100.00	13	100.00	15	100.00	3	100.00	22	100.00	3	100.00

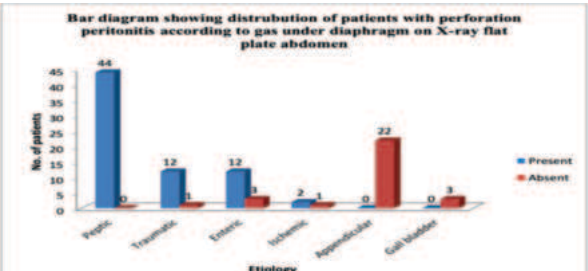


TABLE 5: Distrubution of patients of perforation peritonitis according to presence of free fluid on Ultrasonography (USG) abdomen

Free fluid on USG Abdomen	Perforation peritonitis	
	No. of patients	%
Present	98	98.00
Absent	2	2.00
Total	100.00	100.00

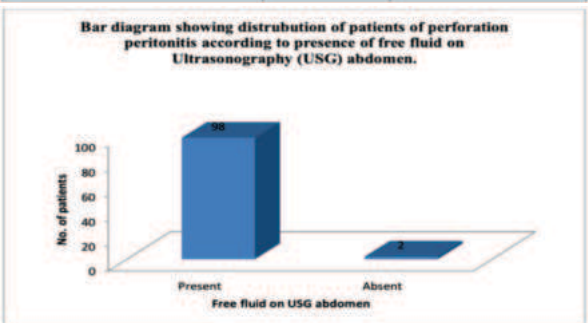


Table 6: Findings In Contrast Enhanced Computed Tomography OfAbdomen In Perforation Peritonitis

CECT abdomen	No. of patients	Percentage
Free fluid, Free air	14	46.66
Free fluid, Fat stranding	10	33.33
Fat stranding	4	13.33
Fat stranding, air pockets	2	6.67
Total	30	100

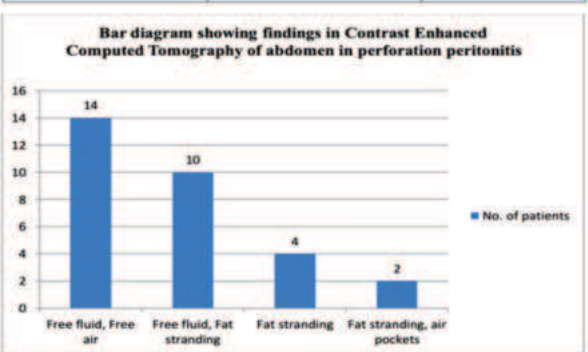


Table 7: Distribution Of Sample According To Site Of Perforation

Site of perforation	No. of patients	Percentage
Duodenum	32	32.00
Appendix	22	22.00
Ileum	17	17.00
Stomach	15	15.00
Jejunum	7	7.00
Colon	4	4.00
Gall bladder	3	3.00
Total	100	100.00

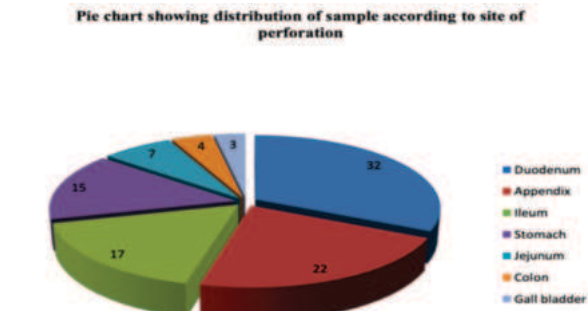


Table 8: Distribution Of Sample According To The Operative Procedure Carried Out In Perforation Peritonitis

Procedure	No. of patients	Percentage
Perforation repair with omental patch	47	47.00
Open appendectomy	22	22.00
Perforated ileal loop exteriorisation	12	12.00
Resection and anastomosis	6	6.00
Ileal perforation repair	3	3.00
Jejunal perforation repair	3	3.00
Open cholecystectomy	3	3.00
Sigmoid resection with end colostomy	2	2.00
Perforated sigmoid loop exteriorisation	1	1.00
Transverse colostomy	1	1.00
Total	100	100.00

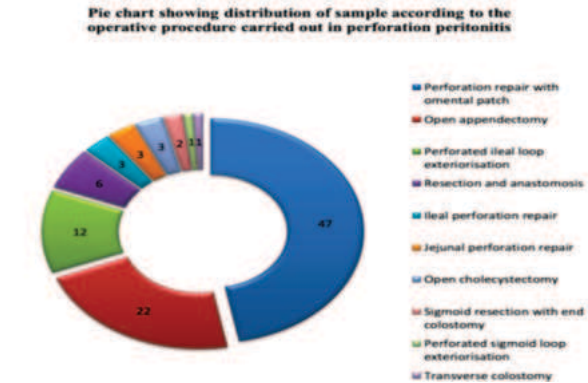


Table 9: Distribution Of Sample According To Etiology And Complications In Perforation Peritonitis

Complications	Peptic		Appendicular		Enteric		Traumatic		Ischemic		Gall bladder	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Wound infection	11	25.00	3	13.63	6	40.00	5	38.46	0	0.00	0	0.00
Chest infection	7	15.90	1	4.54	1	6.66	3	23.07	0	0.00	0	0.00
Septicemia	3	6.81	0	0.00	2	13.33	2	15.38	1	33.33	2	66.66
Burst abdomen	3	6.81	0	0.00	1	6.66	1	7.69	0	0.00	0	0.00
Nil	20	45.45	18	81.81	5	33.33	2	15.38	2	66.66	1	33.33
Total	44	100	22	100	15	100	13	100	3	100	3	100

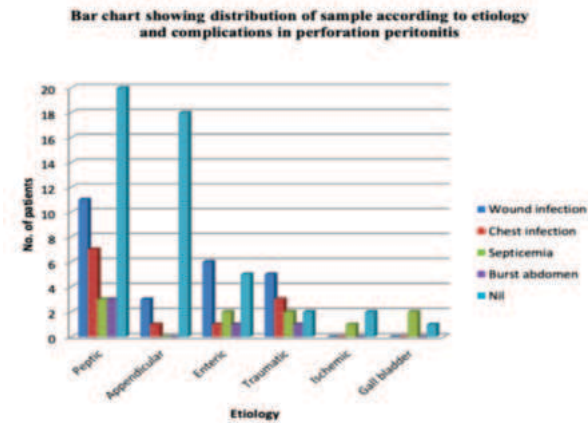
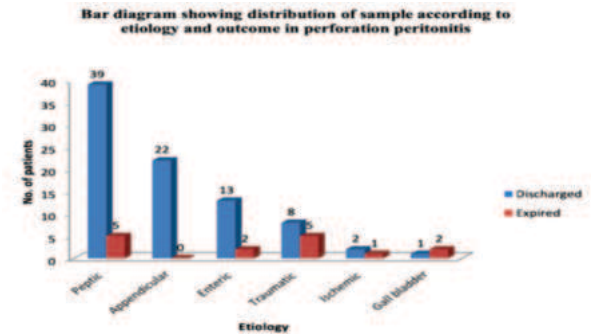


Table 10: Distribution Of Sample According To Etiology And Outcome In Perforation Peritonitis

Etiology	Discharged		Expired		Total	
	No.	%	No.	%	No.	%
Peptic	39	88.63	5	11.36	44	44.00
Appendicular	22	100.00	0	0.00	22	22.00
Enteric	13	86.66	2	13.33	15	15.00
Traumatic	8	61.53	5	38.46	13	13.00
Ischemic	2	66.66	1	33.33	3	3.00
Gall bladder	1	33.33	2	66.66	3	3.00
Total	85	85.00	15	15.00	100	100.00



DISCUSSION

In this study, maximum incidence of perforation peritonitis was observed among the age group 31-40 years. Mean age at the time of presentation was 36.68 years. The youngest patient was 14 years old while oldest was 70 years of age. Our study confirms well with the study of Mukherjee S et al² who also noted the mean age at the time of presentation 39.8 years, while in their study maximum number of patients belonged to the age group 31-40 years.

In our study, out of 100 patients 86 (86%) were males and 14 (14%) females. Our study is comparable to that of Sarkar R et al³ who found 82.2% males and 17.8% females among patients with perforation peritonitis.

In our study most common cause of perforation peritonitis was peptic perforation (44%) followed by appendicular (22%), enteric (15%), traumatic (13%), gall bladder (3%) and ischemic (3%). Our study is comparable to that of Bali et al⁴ where the commonest cause of perforation peritonitis was gastroduodenal perforation due to acid peptic disease (45%) followed by appendicitis (18.5%), typhoid fever (12%) and trauma (9%).

In this study, gas under diaphragm on X-ray flat plate abdomen was present in 70 % cases of perforation peritonitis. Gas under diaphragm was noted in 100% cases of peptic perforation, 92.30% traumatic perforation & 80% enteric perforation cases. It was absent in cases of appendicular and gall bladder perforations. Rohit DK et al⁵ noted gas under diaphragm on chest X-ray in 80% cases of peptic perforation

In our study, out of 100 cases of perforation peritonitis nearly all patients (98%) had free fluid in peritoneal cavity on USG abdomen scan.

Our study is comparable to that of Heinz Neugebauer⁶ who in his study on 70 cases of perforation peritonitis found peritoneal free fluid on USG abdomen in all the cases.

In our study, 30 patients with perforation peritonitis underwent CECT abdomen. Free fluid and free air was noted in 46.66%, free fluid and fat stranding in 33.33%, fat stranding in 13.33% & only 6.67% had fat stranding and air pockets.

In this study most common site of perforation was found in duodenum (32%) followed by appendix (22%). Ileum was perforated in 17% cases, stomach in 15%, jejunum in 7%, colon in 4% and gall bladder in 3% cases.

Sarkar R et al³ also found in their study that duodenum was the commonest site of hollow viscus perforation (63.8%), followed by

appendicular (20.7%) and ileal (10.3%) perforation. In this study, most of the patients underwent perforation repair with omental patch (47%). Open appendectomy was performed in 22% cases. Perforated ileal loop exteriorisation was done in 12% cases. Resection and anastomosis was carried out in 6% patients. 3% of patients with perforation peritonitis underwent ileal perforation repair, jejunal perforation repair and open cholecystectomy each respectively. Sigmoid resection with end colostomy was conducted in 2% cases. Perforated sigmoid loop exteriorisation and transverse colostomy was carried out in 1% cases.

In the study carried out by Thirumalagiri VR et al⁷, most common procedure done was omental patch closure (60%). Appendicectomy was done in 14% of cases, closure was done in 12% of cases, Resection and anastomosis was done in 6% of cases and loop ileostomy was done in 8% of cases.

Our study shows that 25 (25%) patients developed wound infection while 12 (12%) had chest infection. Septicaemia occurred in 10 (10%) cases and 5 (5%) patients eventually had burst abdomen in the post operative period. 48 (48%) patients had uneventful recovery in post operative period.

Mukherjee S et al² in their study reported wound infection as the most common post operative complication in perforation peritonitis (22.1%). Chest infection was present in 13.5% cases. 18% patients developed septicaemia and 6.7% had burst abdomen post operatively.

In this study, out of 100 patients with perforation peritonitis, 85 (85%) were discharged while 15 (15%) expired. Thus, the mortality in this study was found to be 15%.

Bali et al⁴ in their study observed overall mortality rate 7% in perforation peritonitis.

CONCLUSION

It can be concluded that perforation peritonitis is mostly seen in males during 3rd and 4th decade of life & present with pain abdomen, vomiting and distension. History of fever is one of the most useful clinical criteria to differentiate typhoid from other perforations. Peptic perforation is the most common cause followed by appendicular perforation. These cases can be confirmed with X-ray flat plate abdomen. Ultrasonography and CECT abdomen are done in selected cases. These cases are managed surgically. Patients may develop complications in the post operative period in which wound and chest infection are the common complications encountered. Septicaemia can occur in some patients which increases the mortality.

REFERENCES

1. C Swanes, JA Soreide, O Soreide, P Bakke, SE Vollset, A Skarstein Smoking and ulcer perforation *Gut* 1997;41:177-80
2. Mukherjee S, Raza MA, Jindal R, Ratnakar. A retrospective study of perforation peritonitis in a tertiary care hospital in Uttar Pradesh, India. *Int Surg J* 2016;3:2074-8.
3. Sarkar R, Mandal N, Kumar P, Dasgupta A. A Prospective Study on Clinicopathological Correlation of Perforative Peritonitis in a Rural Based Tertiary Care Hospital. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*. 2017 May;16(5):44-8
4. Bali RS, Verma S, Agarwal PN et al. Perforation peritonitis and the developing world. *ISRN Surg* 2014;2014:105492
5. Rohit DK, Verma RS, Pandey G. Clinical study and management of peritonitis secondary to perforated peptic ulcer. *Int Surg J* 2017;4:2721-6.
6. Heinz Neugebauer, M D Engelbert Wallenboeck; "Injuries of the Gastrointestinal tract" ; *The Jr of Trauma, Injury*; 46; No.1; 1999; 116-121.
7. Thirumalagiri VR, Reddy SRJ, Chandra TH. Acute peritonitis secondary to hollow viscus perforation: a clinical study. *Int Surg J* 2017;4:2262-9