



Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/15741
DOI URL: <http://dx.doi.org/10.21474/IJAR01/15741>



RESEARCH ARTICLE

“TRAUMATIC INJURIES OF GI TRACT - CLINICAL STUDY”

Dr. Shrutik Devdikar¹, Dr. Mohit Vardey¹, Dr. Nilind Jha², Dr. Subodh Reddy² and Dr. Ali Reza³

1. Department of General Surgery.
2. MGM Medical College, Navi Mumbai.
3. MGM Institute of Health Sciences.

Manuscript Info

Manuscript History

Received: 25 September 2022
Final Accepted: 27 October 2022
Published: November 2022

Abstract

Copy Right, IJAR, 2022,. All rights reserved.

Introduction:-

The Gastrointestinal perforation is one of the commonest surgical emergencies. It presents, as the acute abdomen, which refers to the clinical situation in which an acute change in the condition of the intra-abdominal organ, usually related to inflammation and infection, demands immediate and accurate diagnosis with acute abdominal pain present for less than 6-8 hours.

Gastrointestinal perforation can be divided into upper and lower gastrointestinal perforation. Upper GI perforation include those perforation of the bowel up to the ileocecal junction, lower perforation include those of the colon and rectum.

Duodenal perforation is the commonest of all in GI perforation. Small intestine perforation occurs commonly due to trauma. The large intestinal perforation are commonly caused by trauma.

The case history and the art of the physical examination are of the great importance in the diagnosis of the GI perforation. Assessment of the patient also culminates in deciding whether the patient should be subjected to the risk of GA required for laparotomy.

Success in the treatment of such cases depends largely upon early investigations, early diagnosis, early intervention and good postoperative care, Sir Henle's aphorism in acute abdominal emergencies, the difference between the best and worst surgery is definitely less, than between early and late surgery and greatest sacrifice is the sacrifice of time.

The aim of this study is to know age and sex related incidences, variety of modes of the presentation of GI perforation with evaluating effect of delay in the treatment on the postoperative progress.

Aims And Objectives Of Study:-

1. To evaluate all traumatic perforation of the Gastro-intestinal tract.
2. To identify the common sites of the perforation.
3. To study the various factors responsible for this perforation.

Corresponding Author:- Dr. Ali Reza
Address:- Department of General Surgery.

4. To study the clinical manifestation and postoperative management of these patients.

Materials And Methods;-

Type of study-
prospective study

Sample Size-

50 cases.

Duration of study-April 2016 to September 2017

Study place- M.G.M Medical College, Navi Mumbai.

Institutional Ethics Committee approval obtained on 07-04-2016. Study was started after obtaining the approval letter from Ethics Committee.

Source of Data-

data will be obtained from the patient getting admitted to the M.G.M Medical College, Navi Mumbai. All patients were explained about the study. Written Informed Valid consent was obtained from each patient before conducting the study. With history of trauma along with pain in abdomen, vomiting, fever, distention of abdomen, tenderness, in whom trauma to gastro-intestinal tract is sustained.

Inclusion criteria

All traumatic Gastro- Intestinal tract injuries.

Exclusion criteria

All the patient < 14 years.

Methodology Collection of Data:-

Study sample was taken from the patient getting admitted to the M.G.M

Medical college, Navi Mumbai with the history of trauma in whom injury to gastrointestinal tract is suspected. These patients with sudden onset of pain in abdominal pain, vomiting, fever, were examined. They found to have examined clinically for pulse, blood pressure, abdominal distension, tenderness, guarding, rigidity. The patients having trauma to abdomen and operated consecutively with findings of gastrointestinal perforations were also included for the evaluation.

Investigation required

- Blood investigation: Complete hemogram
- Random blood sugar (RBS)
- liver function test (LFT)
- Renal function test (RFT),
- HbsAg, HIV, HCV.

Radiological investigation:

- X-ray chest PA view
- X-ray abdomen standing
- Ultrasonography abdomen and pelvis.
- Image-Guided minimally invasive procedure machine used was Philips HD 1.5 & 11, probe curvilinear with 5 MHz frequency.

Patient positioned on the examining table in supine position.

Adequate preoperative preparation and diagnosis was established in each case and subjected for the laparotomy. The nature and cause of the perforation were noted at laparotomy and was followed up for the postoperative complication.

These patients underwent laparotomy and result were compared with postoperative diagnosis. The etiology, age and sex, pulse rate and blood pressure, severe abdominal tenderness and distension of abdomen were analysed.

Observation And Results:-

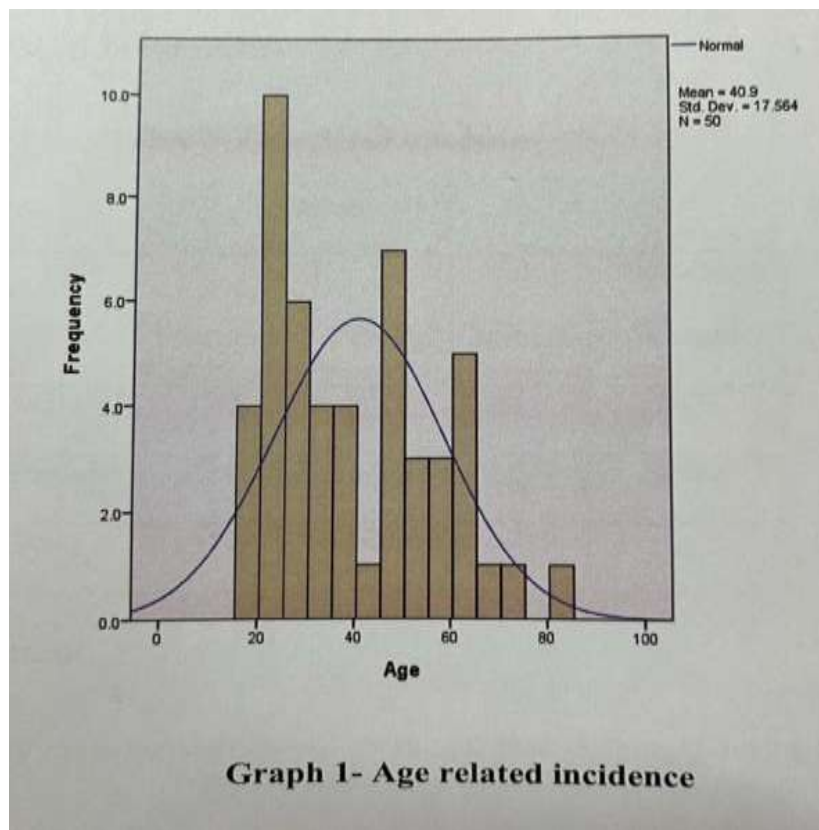
Age related incidence:

Table 1:- Age related incidence.

Age group (in years)	No. of cases/50	In percentage
14-20	4	8%
21-30	16	32%
31-40	8	16%
41-50	8	16%
51-60	6	12%
61-70	6	12%
>70	2	4%

Interpretation:

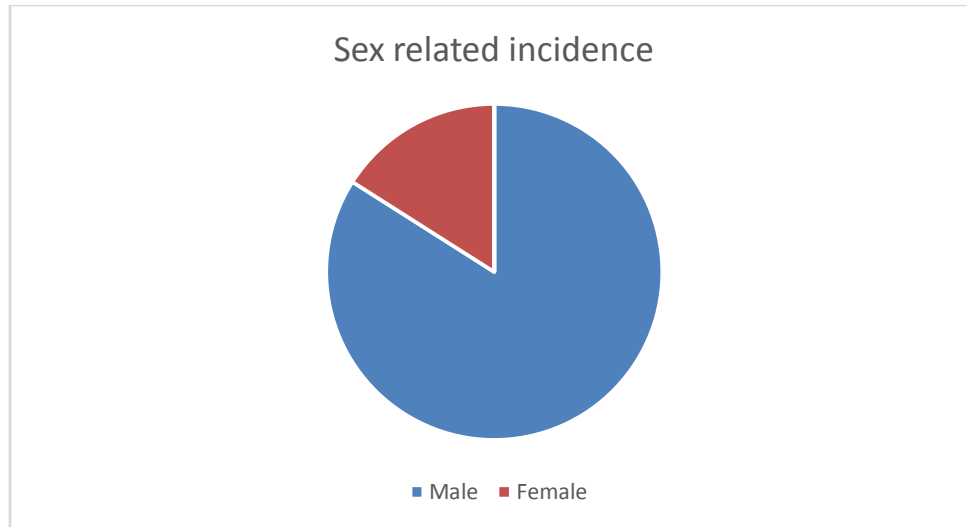
it is clearly seen from the above table that, in our study of 50 patients themaximum number of cases were from the age group 21-30 years and next in incidence is the 31-40 years and 41-50 years of age group respectively.



Sex related incidence:

Table 2:-Sex related incidence.

		Frequency	Percent	Valid %	Cumulative %
Valid	Male	42	84	84	84
	Female	8	16	16	16
	Total	50	100	100	100



Graph 2:-

Interpretation: In our study male constituted 42 cases and that of female only 8 with sex ratio,8.4:1.6 (male: female).

Incidence of the symptoms

		Frequency	Percent	Valid %	Cumulative %
Valid	Present	50	100	100	100

Interpretation:

In all 50 cases, acute pain in abdomen was the main presenting complaint with incidence of 100%

Vomiting related incidence

Valid		Frequency	Percent	Valid %	Cumulative %
	Present	35	70	70	70
	Absent	15	30	30	30
	Total	50	100	100	100

Interpretation:

In all 50 cases vomiting as the second most common symptoms with incidence rate of 70%.

Fever related incidence

Valid		Frequency	Percent	Valid %	Cumulative %
	Absent	45	90	90	90
	Present	5	10	10	10
	Total	50	100	100	100

Interpretation:

In all 50 cases of fever as the third most common symptoms with incidence rate of 10%

Presenting Complaints distention of abdomen

Valid		Frequency	Percent	Valid %	Cumulative %
	Absent	50	100	100	100

Interpretation:

In all 50 cases distention of abdomen incidence rate of 0%.

Constipation related incidence

		Frequency	Percent	Valid %	Cumulative %
--	--	-----------	---------	---------	--------------

Valid	Absent	50	100	100	100
-------	--------	----	-----	-----	-----

Interpretation:

In all 50 cases Constipation incidence rate of 0%.

Malena related incidence

		Frequency	Percent	Valid %	Cumulative %
Valid	Absent	50	100	100	100

Interpretation:

In all 50 cases Malena incidence rate of 0%.

Presenting complaints relevant past history

		Frequency	Percent	Valid %	Cumulative %
Valid	No significant abnormality	43	86	86	86
	Known case of diabetes	4	8	8	94
	Known case of diabetes and hypertension	3	6	6	100
	Total	50	100	100	

Interpretation:

In all 50 cases of study, known case of diabetes 8% and known case of diabetes and hypertension 6%.

Incidence of radiological ultrasonography finding:

		Frequency	Percent	Valid %	Cumulative %
Valid	Haemoperitoneum	29	58	58	58
	Minimal free fluid	1	2	2	60
	Gross free fluid	10	20	20	80
	Moderate free fluid	7	14	14	94
	Mild free fluid	3	6	6	100
	Total	50	100	100	

Interpretation:

In all 50 case study the ultrasonography commonest finding is hemoperitoneum (58%). Followed by gross free fluid (20%).

Site of perforation related finding

		Frequency	Percent	Valid %	Cumulative %
Valid	Small intestine perforation	19	38	38	38
	Gastric perforation	8	16	16	54
	Abdominal perforation	14	28	28	82
	Intestinal perforation	8	16	16	98
	Duodenal perforation	1	2	2	100
	Total	50	100	100	

Interpretation:

In 50 patients case study, the commonest site of the perforation is small intestine perforation (38%), followed by (16%).

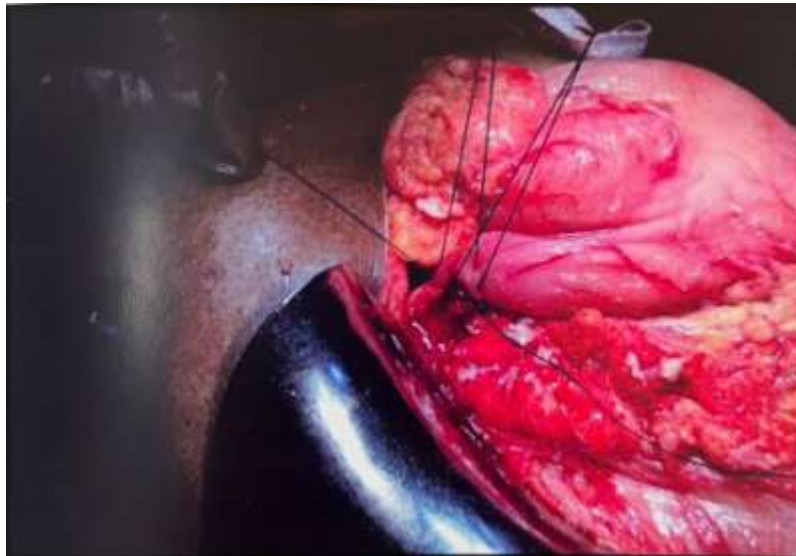
Incidence of outcome of the patient

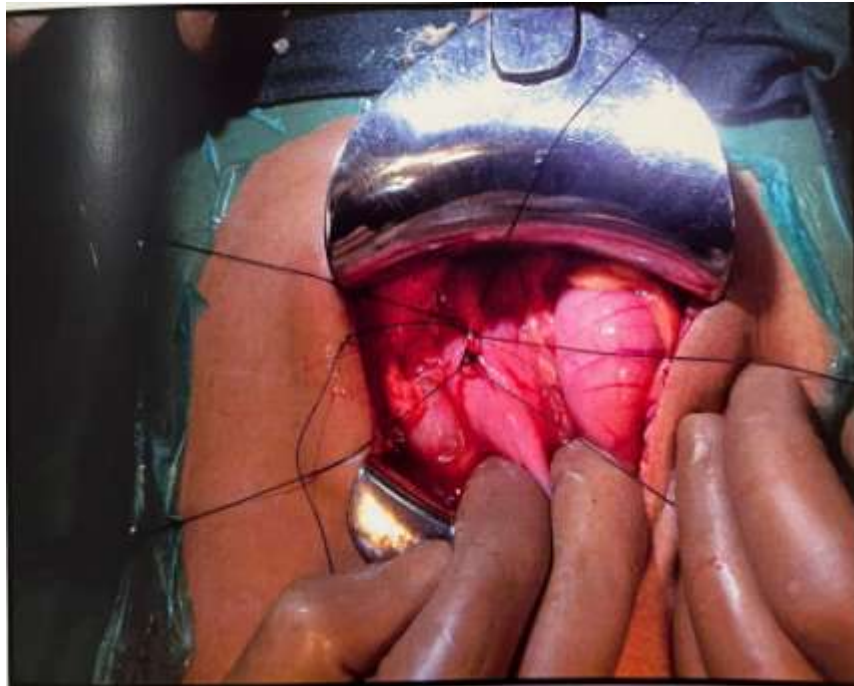
		Frequency	Percent	Valid %	Cumulative %
Valid	Shifted to ICU	46	92	92	92
	Shifted to ICU/Expired	3	6	6	98
	Expired	1	2	2	100
	Total	50	100	100	

Interpretation:

In 50 patients case study, patients shifted to ICU then ward then discharge from hospital (92%), followed by expired in ICU (6%).

Clinical Photographs





Discussion:-

The result obtained in the present study compared with previously conducted similar studies.

Etiology related incidence.

Amuthan J, Vijay A., Pradeep C., Anandan H., et al common cause of blunt trauma to abdomen was (road traffic accidents) RIA (68%) and the second common cause was fall from height(22%). Other causes were hit by blunt objects (6%) and assaults(4%). In our study of 50 patients common cause of blunt trauma to abdomen was road traffic accidents

Etiology	Amuthan J19 et all	Present study 50 cases
Road traffic accidents	68%	100%
Fall from height	22%	0%
Hit by blunt objects	6%	0%
Assault	4%	0%

Age and sex related incidence.

Dauterve A., Flancbaum L., Cox E., et al study of the 60 patients sustaining major intestinal injuries, the average age was 33.2 years. The male-to-female ratio was 7.5:1. In our study of the 50 patients sustaining major intestinal injuries, the average age was 40.9. the male-to-female ratio was 8.4:1.6.

Age in years	No. cases	Percentage
14-30	20	40%
31-50	16	34%
>50	14	28%

Table 15:- Sex related incidence.

		Frequency	Percent	Valid %	Cumulative %
Valid	Male	42	84	84	84
	Female	8	16	16	16
	Total	50	100	100	100

Incidence pulse rate and blood pressure relation.

Hughes T., Elton C., Hitos K., Perez J., McDougall P., et al study Thirty six patients (48.0%) had a heart rate <100bpm, five (13.9%) of whom had a systolic BP equal to or <90mmHg. 38 (51.4%) patients had a heart rate of 100bpm or more, five (13.2%) of whom had a systolic BP equal to or <90mmHg. In our study of the 50 patients (14%) had a heart rate <100bpm, (16%) of whom had a systolic BP equal to or <90mmHg. (86%) patients had a heart rate equal to or <90mmHg (84%) had a heartrate equal to or >90mmg

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
On Examination Vitals Pulse Rate beats/min	50	74	56	130	82.68	15.442	.723	.337	.619	.662
On Examination Vitals Blood Pressure	50	16	1	17	8.38	4.379	.000	.337	-1.031	.662
On Examination Vitals Respiratory Rate cycles/min	50	14	14	28	19.40	2.259	.717	.337	3.374	.662
On Examination Vitals Temperature F	50	2	98	100	98.44	.416	3.064	.337	8.129	.662
On Examination Vitals Saturation	50	3	1	4	1.72	.991	1.126	.337	.035	.662
On Examination Vitals RBS mg/dl	50	172	96	268	124.44	28.597	2.956	.337	12.396	.662
Valid N (listwise)	50									

Incidence severe abdominal tenderness and distension of abdomen relation.

54 (73%) patients had moderate to severe abdominal tenderness, diffuse peritoneum being noted in 29 cases. Five (6.7%) patients had mild or absent tenderness. I (14.9%) patients had marked abdominal distension, nine of whom had associated injuries to the pelvis or chest that could have contributed to the distension. Mild or moderate

distension was present in 19 (25.7%). Abdominal distension was absent in 44 (59.4%) cases. In our study of 50 patients (100%) severe abdominal tenderness. Abdominal distension absent in (100%)

Table 17:- Distension of abdomen related incidence
Presenting Complaints Distension of abdomen

		Frequency	Percent	Valid %	Cumulative %
Valid	Absent	50	100	100	100

Conclusion:-

From our study of 50 cases of gastrointestinal perforation following can be concluded.

1. The commonest cause of GI perforation is small intestine perforation. The second commonest cause is stomach perforation.
2. The peak age incidence of perforation is early adulthood years of age group.
3. Males are more vulnerable for the perforation with male: female ratio of 8.2:1.6.
4. Small intestine is the commonest site of perforation while stomach and duodenum are second and third in the rank respectively.
5. Small intestine perforation is more common than in stomach with small intestine: gastric ratio of 6:4.
6. All patients (100%) present with symptom of acute abdominal pain and vomiting (70%) as the second common complaint and fever (10%) as the third common complaint.
7. Patients presents with per abdominal tenderness in (100%).
8. Use of X-rays erect abdomen helps in clinching the diagnosis.
9. Many of the patients presented within 24 hours after the trauma.

Summary

Traumatic injuries of gastrointestinal tract due to blunt and penetrating injury is on rise due to excessive use of motor vehicles more common in early adulthood and male. It poses a therapeutic and diagnostic dilemma for the attending surgeon due to wide range of clinical manifestations like vitals sudden onset of abdomen pain, vomiting, fever ranging from no early physical findings to progression to shock.

Hence, the trauma surgeon should rely on his physical findings like distension of abdomen, abdomen tenderness, guarding, rigidity, in association with the use of modalities such as X-ray abdomen and USG abdomen and pelvis. Hollow viscus perforations are relatively easy to pick on X-ray. However, solid organ injuries are sometimes difficult to diagnose due to restricted use of USG Abdomen and pelvis but it is easy, quick and cheap to help to give diagnosis in emergency condition.

In our study of 50 cases of traumatic injuries of G-I tract during operative procedure we find common site involve of G-I perforation and during postoperative management of patient with proper care, proper instruction and proper intravenous fluid with antacid, analgesic, sensitivity to patient antibiotic should give good outcome.

In our study we find we compared the incidence related age, sex, abdominal finding, investigation finding, common site of perforation and postoperative management of this patients. we conclude that in hemodynamically stable patients with solid organ injury, conservative management can be tried and non-operative management is associated with less complication and morbidity.

References:-

1. Alderson I, Williams NS, Bulstrode CJ, O'Connell PR, Bailey & Love's Short Practice of Surgery 26 ed. CRCP press (New York); 2016:987-988.
2. Teitelbaum EN, Hungness E.S, townsend M.C, Beauchamp R.D., Evers B.M, Mattox K.L. Sabiston Textbook of Surgery 20th ed. Elsevier (Philadelphia); 2017: 1188-1190.
3. Harris and B. Evers M, townsend M.C, Beauchamp R.D., Evers B.M., Mattox K.L Sabiston Textbook of Surgery 20th ed. Elsevier (Philadelphia); 2017:1237-1240.
4. M Kelli, Rothenberger. Brunicaardi F, Schwartz's Principals of Surgery 10th ed. MC Graw Hill (New York); 2013: 1175-1178.

- S. Aboobakar M.R., Singh J.P., Maharaj. K, Kinoo S.M., Singh.B., Gastric perforation following blunt abdominal trauma. Trauma case reports 10 (2017):12-15.
6. Tan.K.K., Liu.Y., Vijayan A. Chiu M., Gastrointestinal tract perforation following blunt abdominal trauma: an institution's experience. Eur J. Trauma Emerg Surg 2011(27may).
7. Mouton W.G., Mouton K.T., Blunt abdominal trauma: the importance of clinical sign for early detection of jejuna rupture. OMICS International journal of trauma & treatment 2016:5(4):1-2.
8. Aguirre F.J., Perez M.L., Retamal C.A., Gastrointestinal injuries from blunt abdominal trauma in children. *Imagenespediatricas* 2014:20(3): 105-111.
9. Polychronidis A., Bounovas A., Perente S., Laftsidis P., Simopoulos C., Perforation of the colon from the primary blast effect of an extraperitoneal shotgun injury: case report. *Military medicine*, 2007:172(3): 327-328.
10. Nathwani D, Williams NS, Blustrode Cj, o'Connell PR, Bailey & Love's short Practice of Surgery 25th ed. CRCP press (New York); 2008:287-288.
11. Mohan H., Harsh Mohan textbook of Pathology 6th ed. Jitender (New Delhi);2013: 538-591.
12. Zollinger R., Ellison E., Zollinger's Atlas of Surgical Operations 9th MCGraw hill (New York); 2011:12-13.ed.
13. Miyajima M., Linuma Y., Hirose Y., Kumagai K., Sekiguchi H., Yamazaki T., Yamamoto M., Massive gastric bleeding from a blunt abdominal trauma: report of a case. *Surgery Today* 2010:40(10):963-966.
14. Ishikawa K., Ueda Y., Sonoda K., Yamamoto A., Hisadome T., Multiple gastric ruptures caused by blunt abdominal trauma: report of a case. *Surgery Today* 2002:32(11): 1000-1003.
15. Jhobta R., Attri A., Kaushik R., Sharma R., Jhobta A., Spectrum of perforation peritonitis in india- review of 504 consecutive cases. *World journal of emergency surgery*, 2006:1(26): 1-9.
16. Gupta S., Kaushik R., Sharma R., Attri A., The management of large perforation of duodenal ulcers. *BMC surgery* 2004:5(15):1-5.