Section: General Surgery

Research

A STUDY ON PERFORATIONS, OPERATIVE MODALITIES, COMPLICATIONS AND ITS OUTCOME POST OPERATIVELY

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Abstract

Background: To assess to common type of perforations and their presentation, operative modalities, complications arising postoperatively at our hospital. **Materials and Methods:** It was an observational study; this study is based on analysis of 65 cases of benign cause of gastrointestinal perforation. **Result:** The time laps between onset of pain and presentation at the hospital was greater in the > 24 hours group with 58.5% of the patients presenting after 24 hours. Peptic ulcer perforation (32.31%) is the major cause of gastrointestinal perforation followed by appendicular (26.4%) tubercular (15.4%) and typhoid (10.8%).80% of cases had guarding /rigidity with 47.7% Patients presented with distention of abdomen.71% of cases had gas under the diaphragm with majority of them in peptic ulcer perforation and least appendicular perforation. Simple closure with Omental patch was the operative procedure done for all cases of peptic ulcer perforation and appendectomy for appendicular perforation. Half of patients with typhoid perforation closure in two layers and remaining half were treated with resection and end to end anastomosis. Most common Complication recorded in this study was SSI (16.9%) which was similar to that of respiratory infection/distress. Mortality in our study was 3.1% and was due to septicemia with other age group, delayed presentation to hospital and other associated co-morbidities being the additives factors. **Conclusion:** Finally surgical treatment is the most definitive treatment for perforative paternities patients and postoperative care remain extremely important in the better outcome of the patients.

INTRODUCTION

Perforation of stomach, duodenum and small bowel from considerable proportions of emergency work load than colonic perforation. Perforation of the large intestine represents a major surgical challenge to the clinician, not simply because the technical aspects of the operation may be difficult but more importantly because the situation is rapidly lethal, in the type of compromising patients in whom the condition usually presents, in developed societies most common case are, the diverticular disease and colonic carcinoma, where as in the developing countries infective conditions such as amoebiasisis important perforation of the large intestine is a rapidly fatal condition, death being caused by sepsis from peritoneal contamination with various enteric pathogens both aerobic and anaerobic. Majority of patients presents with sudden onset of abdominal pain. A high index of suspicion is essential to diagnoses visceral perforation early as significant morbidity and mortality results from diagnostic dely.[1,2]

To assess to common type of perforations and their presentation, operative modalities, complications arising postoperatively at our hospital and to come to conclusion.

Aims & Objectives

The aim of the study is to evaluate:

- Various sites of perforations
- To study role of various clinical parameters and Investigations aiding early diagnosis.
- Possible complications which develop post operatively.

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MATERIALS AND METHODS

This study is based on analysis of 65 cases of benign cause of gastrointestinal perforation.

Chemical diagnosis of hollow viscous perforation is made based on history and physical examination which will be confirmed by investigation or by laparotomy formed the basis of selection of cases

The investigation done in the cases selected for study were the following.

1. Routine blood examination including completely hemogram, blood grouping and typing, HIV, HBsAg, blood urea, serum creatinine, serum electrilyets
2. Urine examination including albumin, sugar and deposits
3. Erect abdomen X-ray to detect free gas under diaphragm
4. Widal test was done in suspected entric perforation
5. Quadrant abdominal paracentesis was done only in selected cases.
6. Ultrasonograph

Preoperative resuscitation of patient was done by close monitoring of vital sign and fluid and electrolyte imbalance were corrected. Antibiotics like ceftriaxone or a pipercillin with sulbactum and metronidazole 500mg (100 ml) tid were used in all cases. Antibiotics were changed according to culture and sensitivity report. Laparotomy was done under general anesthesia. Incision was taken depending upon the suspected site of pathology and when not conformed midline incision either upper or lower or right paramadian incision was made depending on the suspected suite of perforations.

Viscera were inspected carefully, the site of perforation located and appropriate surgical procedure was performed. Peritoneal toilet with normal saline was done and peritoneal cavity was drained, postoperatively patient were put on continuous nasogastric aspiration, intravenous fluid and antibiotics. Vital signs were monitored assessment of intake and output and bio chemical parameters etc were done. Recovery of the patients was observed and any complications which occurred during the course were noted. Regular follow up of the patient were carried out.

Inclusion Criteria

All patients with sign and symptoms of gastrointestinal perforation and are willing for management in our hospital are included after talking informed written consent

Exclusion Criteria

1. Perforation due to malignancy
2. Perforation of esophagus
3. Idiopathic causes of perforation

RESULTS

Sites of Perforations

The most common site of perforation was the gastroduodenal region, which accounted for 24 Cases. This was followed by appendicular perforations and the least common region was the reactum, where we had only one case which was due to insertion of object into rectum.

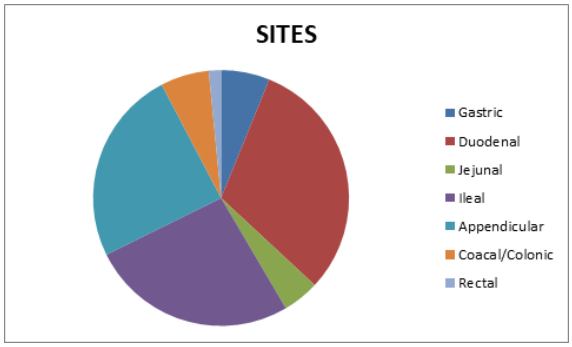

Figure 1: Sites of perforation

Etiology of Perforation

The most common etiological factor in the presentation of disease was peptic disease, which accounted for 32.31% of the cases. This was followed by appendicular which accounted 24.6%. The least was an iatrogenic cause of gastric perforation due to unskillfully done endoscopy. Which accounted for only 1.54% of the cases?

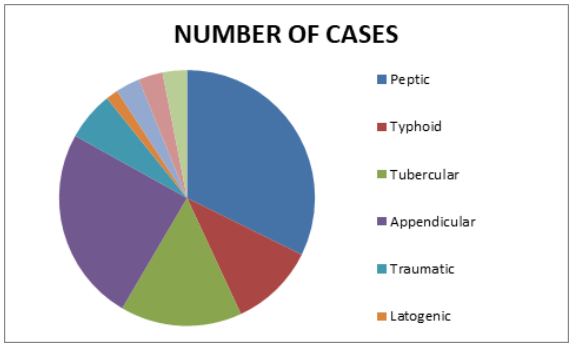

Figure 2: Etiology of perforation

Latent Period

Most of the patients presented to us more that 24hrs of onset of symptoms predominantly being pain abdomen

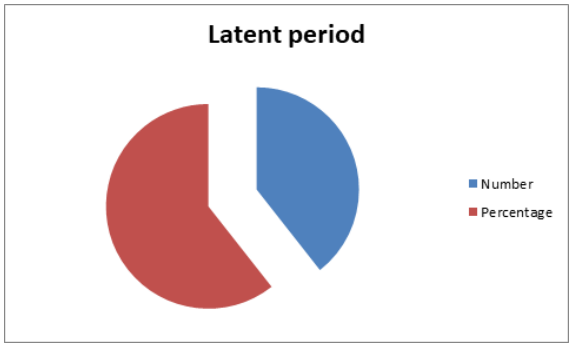

Figure 3: Latent period

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Treatment Given

All the patient with particular perforations were treated with simple appendectomy majority of the patients had a simple closure with of without an omental patch.

Table 1: Sites of perforation

Site Of Perforation	Number Of Cases	Percentage
Gastric	4	6.1
Duodenal	20	30.8
Jejunal	3	4.6
Ileal	17	26.1
Appendicular	16	24.6
Coacal/Colonic	4	6.1
Rectal	1	1.54

Table 2: Etiology of perforation

ETIOLOGY	NUMBER OF CASES	PERCENTAGE
Peptic	21	32.31
Typhoid	7	10.8
Tubercular	10	15.4
Appendicular	16	24.6
Traumatic	4	4.6
Latogenic	1	1.54
Obstructed/ Strangulated Hemia	2	3.1
Caustic ingestion	2	3.1
Volvilus	2	3.1

Table 3: Latent period

Time Lapse	Number	Percentage
<24hrs	38	58.45
>24hrs	27	41.54

Table 4: Treatment given

Treatment	Number	Percentage
Appendectomy	16	24.6
Simple closure	30	46.1
Resection Anaastomosis	12	18.5
Hemi colectomy	5	7.7
Conservative Treatment	3	4.6

Post operation complications:

Most common complications recorded in this study were SSI (16.9%) which was similar to that of respiratory infection. Mortality in our study was 3.1% and was due to septicemia with order age group delayed presentation to hospital and other associated co-mortalities being the additive factor.

Table 5. Post-operative complications

Complications	Number	Percentage
Surgical site infection	11	16.9
Septicemia/Shock	8	12.31
Respiratory Distress	11	16.9
Brust abdomen	5	7.7
Fecal Fistual	2	3.1
Death	2	3.1

Table 6. Latent period

Period	Jhobta et al,[3]	Present study
>24 Hours	296 (53%)	38 (58.5)
< 24 Hours	235 (47%)	27 (41.54)

Table-7: Site of perforation

Site	Doraijan et al,[6] 1995 T=250	Khan et al,[5] 2004 T=54	Jhobta et al,[3] 2006 T=504	Afridi et al,[4] 2008 T=300	Yadav et al,[2] 2013 T=77	Present study 2014 T=65
Gastro-duodental	80 (32%)	21 (38.8%)	331 (65.7%)	138 (46%)	32 (41.56%)	24 (36.92%)
Small Bowel	103 (41.2%)	14 (25.9%)	92 (18.25%)	123 (41%)	38 (49.35%)	20 (30.77%)
Appendix	38 (15.2%)	6 (11.1%)	59 (12%)	15 (5%)	3 (3.5%)	16 (26.4%)
Large Bowel	5 (2%)	4(7.5%)	19(4%)	26(8.6%)	5(6.5%)	4(6.15%)
Rectum	NS	NS	NS	1(0.3%)	0	1(1.54%)

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Table 8. Etiology of perforation

Etilogy	Doraijan et al,[6] 1995 T=250	Khan et al,[5] 2004 T=54	Jhobta et al,[3] 2006 T=504	Afridi et al,[4] 2008 T=300	Yadav et al,[2] 2013 T=77	Present study 2014 T=65
Peptic	NS	NS	297 (58.9%)	138 (46%)	31 (40.26%)	21 (32.31%)
Tuberculosis	69 (66.9%)	2 (11.1%)	20 (4%)	78 (26%)	9 (10.3%)	10(15.4%)
Typhoid	13(12.6%)	7(38.9%)	41(8.1%)	51(17%)	23(26.4%)	7(10.8%)
Obstructive/ Stangulation	NS	NS	5 (0.99%)	NS	NS	2 (3.1%)
Volvulus	NS	NS	4 (0.8%)	1 (0.3%)	NS	2 (3.1%)
Traumatic	NS	NS	45 (8.9%)	NS	NS	4 (4.6%)

Table 9: Treatment

Treatment	Yadav et al,[2]	Afridi et al,[4]	Jhobta et al,[3]	Present study
Simple Clouser	25 (32.5)%	135 (45%)	304 (60%)	30 (46.1%)
Resection Anastomosis	15(19.5%)	18(6%)	46 (9%)	12 (18.5%)
Hemi Colectomy	3(3.9%)	34 (11.3%)	NS	5 (7.7%)
Appendectomy	3(3.9%)	15 (5%)	57 (11%)	16 (24.6%)

Table 10. Complications

Complications	Jhobta et al,[3]	Afridi et al,[4]	Yadav et al,[2]	Present study
Surgical Site Infections	126 (25%)	126 (42%)	15 (19.5%)	11 (16.9%)
Buret Abdomen	44 (0%)	70 (20%)	3 (3.9%)	5 (7.7%)
Sepsis/Shock	88 (17%)	66 (20%)	4 (5.2%)	8 (12.31%)
Respiratory Distress	143 (20%)	60 (20%)	6 (7.8%)	11 (16.9%)
Death	51 (10%)	32 (10.6%)	10 (13%)	2 (3.1%)

DISCUSSION

Latent Period

Most of patients in this study presented to us after 24 hours of start pain abdomen. 58.5% of them present after 24 hours and 41.54% presented before 24 hours of onset of pain abdomen. This comparable with that of Jhobta et al,[3] who reported 53% patients presenting after 24 hours.

It was seen that the patients who presented within 24 hours of onset of pain abdomen the course of preparation of patients being less that 6-12 hours post admission, the intraoperative difficulty was less and clear cut.

Also the patients who presented within 24 hours, the postoperative period was quite uneventful and the recovery was fast and morbidity was comparatively quite low as well.

State of perforation

The site of perforation was one of the most important parameters of al the studies Doraijan et al 6 did a study in 1995 where he took 250 subjected for the study and he studied them according to sites was similar was the case with Khan et al 5, who studied these parameters in 54 patients in 2004.

The most common site of perforation was seen to be at the gastro duodenal region due to te fact that most patient had predisposing acid peptic diseases. The highest incidence of acid peptic diseases is thought to be unnecessary use of NSAIDS and improper timing of meals in most patients. Also incidence of H pylori infection is a major cause. In the recent time in the discovery of ppis and other diasease. In this study we had 36.92% of patients having perforation at the gastro-duodenal region, which was comparable to the studies by Doraijan et al,[6] (32%) and khan et al (38.8%).[5]

The next common site was the small bowel. The highest number of small bowels perforation compared between the studies quoted by yadav et al who stated that 49.35% of this patient had a perforation in the small bowel. Dorajian et al,[6] also had a large number of patient having small bowel perforation (41.2%) which was even more than gastro-duodenal perforation in this study.

Large bowel perforation which also included the caecum were not common due to being causes. This study had only 4 patients (6.5%) who had a large bowel perforation which was comparable to the other studies quoted.

Rectal perforation was not studies by most of them. Only Afridi et al,[4] gave rectal perforations in his study, where he showed only one of his subject having rectal perforation. This study also one had patient having rectal perforation which was due to foreign body in the rectum. The incidence of rectal perforation was0.3% as reported by Afridi et al,[4] and 1.54 as given in this study noTuberculous rectal perforation were seen in any of the studies quoated.

Appendicular perforation was also predominant in this study, where 16 of 65 (26.4%) patients presented with an appendicular perforation. The least amount of appendicular perforation was an reported by Yadav et al,[2] who had only 3 patients of 77 (3.5%) who had appendicular perforation Jhobata et al had 12%, Afridi et al,[4] had 5% Khan et al,[5] had 11.1% Dorajian et al,[6] had 15.2% of appendicular perforations.

Over all summary in relation in the above comparisons is that, tubercular perforation have been going down the last decade due to early and effective diagnosis. Peptic perforation still remains a major cause of concern, even after the advent and judicious use of antacids and PPis. The reason in this study being, chronic alcoholism, improper

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timing of meals, excessive use of NSAIDS and also intake of black, strong coffee and tea on an empty stomach.

Performation due to peptic ulcer disease were seen to the most common cause of perforations consistently in all the studies except that of Dorajian et al,[6] who showed that the majority of the perforation were due to tuberculosis 66.9%. This study showed 32.31% patients had perforations due to peptic disease which was most cause of perforation. This was similar with the studies by jhobta, Afridi and Yadav.[2-4]

Tuberculosis of the abdomen was mostly seen in the small bowel, which accounted for quite a large number of patients who were on empirical therapy for typhoid. Widal was positive in all the patients. In this study perforations due to typhoid were next to those of tuberculosis, which accounted for about 10.8% of the patients. This was in the comparison to the studies by Jhobta et al (8.1%) and Afridi et al (17%).[3,4]

The study has two causes of perforation due to strangulation of bowel in along standing hemia one of them being an incisional and the other para umbilical obstruction as a cause of perforation was studied only by Jhobta et al,[3] at who had 5 patients due to obstruction and strangulation of bowel account for nearing 1% of his patient.

Trauma was another causes of perforation in the study which counted for 4.6% of the patients, Which was also studied by Jhobta et al.[3]

Investigations

Presense of Gas under the Diaphargm has been a trademark of Hallow Viscus perforation, but absence of this does the not exclude the possibility of the perforation. This Sign is visualized in about 64% of the cases in our study.

N.William and N.V Everson 74 (1997) 1 have quoted in "60 to 70 Percent of the cases the free gas under the diaphragm can be detected. Our study co-related well with the above mentioned study. Only one in ten cases appendicular perforation had gas under the diaphragm. This may be due to confinement of the perforation.

Ultra Sound abdomen is readily available, noninvasive investigations but it gives only indirect evidence of perforation through presence of free fluid with echogenicity suggestive of perforation. In our study we found three fluid of the cases of perforation.

Widal was positive in all the patients who had typhoid perforations, which was in 7 Patients and accounted 10.8% of the Patients.

CECT abdomen was done in those patients in whom the diagnosis was inconsistent with that of their investigations and was confirmative for diagnosis.

Treatment Given

Most patients were by simple closure of the perforation, with or without a grahams omental patch. 30 patients (46.1%) had just simple closure. Duodenal perforation was also managed by Grahams omental patch after a simple closure and all the 4 cases of gastric preformation were also treated by a feeding jejunostomy. Simple closure was also the major mode of treatment as compared with the other aforementioned studies as well.

Simple appendectomy was the next most common mode of treatment in this study, due to the fact that this study had large number of patient presenting with appendicitis complicated with preformation 24.6% of the patient in the study had a simple appendectomy for a perforation with or without the placement of an abdominal drain. Simple appendectomy was also the most common surgical mode of treatment done by jhobta et al (11%).[3]

Resection anastomosis was done in 18.5% of the patient in this study. Which was comparable to that of Yadav et al (19.5%).[2] Resection anastomosis was carried out in the patient who had multiple perforations of the bowel or where strangulated bowel was gangrenous and non-revisable?

Hemi colectomies were done in 5 patients of perforations where the perforations were in any one part of the colon. One patent had a stab injury to the abdomen where his descending colon was injured and was not viable for closure.

The most common mode of presentation of a complication in all the studies was a simple site infection to a major wound dehiscence. The study had 16.9% of the patient who has SSIs, which was the most common post-operative complications. This was comparable to the other three studies, Wherein jhobata et al,[3] record 25% of his patient presenting with an SSI, Afridi et al,[4] 42% and Yadav et al 19.5%.[2]

Burst Abdomen was seen in 7.7% of the patients in this study. Which was near as common to that with Jhobta at al,[3] and Yadav et al,[2] & Afridi et al,[4] had a large number of patients presenting with abdomen post operatively (26%). Burst abdomen was subsequently treated re-closure after the site of surgical site infection subsided, followed which the recovery was uneventful in most except one patient who died in on the 9th postoperative day.

Respiratory infection and distress was also commonly seen in the postoperative period which was the second most common form of postoperative morbidity in this study. Also this complication was consistently common which rest of the studies as well, account to 16.9%of the patients in this study, 28% in the study of Jhobta and 20% in Afridi et Al.[3,4]

Sepsis of Septic shock was seen in 12.31% of the patients in this study. Jhobta et al reported 17% Afridi et al 20% of Yadav at al 5.2% of their Patients having a Septic shock in the post – Operative period.[2,4]

The study had a mortality rate of 3.1% which was quite less as compared to their studies. Jhobta at al reported a Mortality of 10% which was quite close with that Afridi et al at (10.6%).[4] Yadav at el had mortality rate of 13%.[2]

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CONCLUSION

- Most common postoperative complication was wound sepsis.
- Mortality was more in patients with delayed presentation and older age group with associated co-Morbidities and can be prevented by adequate preoperative resuscitation, better surgical skills and good operative care.
- Finally surgical treatment is the most definitive treatment for perforative paternities patients and postoperative care remain extremely important in the better outcome of the patients.

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