



Study of Various Perforation Peritonitis: On Tobacco User and Non-Tobacco User

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Abstract

Background: Perforation peritonitis with effect of tobacco delays the healing of gastric duodenal ulcer and increases the risk of peptic ulcer is one of the commonest surgical emergencies encountered by surgeons all over the world. The aim of this study is to examine and compare the case of perforation peritonitis and found the relationship of tobacco with that of peptic perforation.

Material and Method: This clinicopathological study was examined 250 patient of perforation peritonitis. Who were admitted in ward of the department of surgery in Gandhi Medical College and, associated Hamidia Hospital Bhopal (M.P.) from August 2010 to November 2011.

Results: Out of total 250 patients 142 gastric perforation and 108 was intestinal perforation. Out of 142 gastric perforations patient 120 were tobacco user, while only 37 patients were tobacco user out of 108 patient of the intestinal perforation. Patients with perforation peritonitis were mostly in age group of 40-49 years. Postoperative complications were significantly higher in gastric perforation with tobacco use as compared to cases with intestinal perforation with tobacco use. Postoperative complication is significantly higher in the patient who used tobacco in both from smoking and chewing in compare to single from among perforation. Average day of hospital stay were significantly higher in patient of gastric perforation (13.94 days) with tobacco use as compared to intestinal perforation (18.4 days) with tobacco use. Average day of hospital stay were significantly more in cases with tobacco user (11.19 days) as compared to non-user (8.1 days).

Conclusion: Our study shows that gastric perforation is more common in tobacco user group in comparison to non-tobacco user and intestinal perforation group.

Keyword: Perforation; Peritonitis; Gastric; Intestinal; Tobacco.

Introduction

Perforation is defined as a hole & break in the containing wall or membrane of an organ or structure of body. Perforation occurs when erosion, infection or other factors create a weak

spot in the organ and internal pressure causes a rupture¹. Perforation in gastrointestinal tract results in peritonitis, which is defined as an inflammation of the membrane which lines the inside of the abdomen and the entire internal

organ, this membrane is called peritoneum^{1,2}. Perforation peritonitis is most common surgical emergency in India despite in surgical techniques, anti-microbial therapy and intensive care support, management of peritonitis continue to highly demanding, difficult and complex. Spectrum of etiology of perforation continues to be different from western countries there is paucity of data from India regarding its etiology, prognostic indicator, morbidity and pattern^{1,3}.

Moreover, duodenal ulcer perforation, appendicular perforation, typhoid perforation, tubercular perforation being the major causes of generalized peritonitis⁴. Smoking increases acid secretion, reduce prostaglandin and bicarbonate production and decrease mucosal blood flow. However, the result of studies on the actual effect of smoking delays the healing of gastric and duodenal ulcer. Tobacco use is associated with increased risk of peptic ulcer⁵. Perforation peritonitis can result in following condition like paralytic ileus, dehydration, shock and septicemia, which may result in multi organ failure⁶.

In the past few years it has been observed that in spite of better socioeconomic, diagnostic and therapeutic condition there has been an increase in case of perforation peritonitis in and around Bhopal i.e too in younger population⁷. The second fact i.e peculiar about the town is that increased numbers of undergoing in use of pan and tobacco especially the readymade pouches which are commercially available in abundance at a very low cost. In the children of school and preschool age at the slum area can be freely seen, consuming these pouches⁸. Both the fact is alarming. In this study, we examine and compare the case of perforation peritonitis (Peptic and Ileal Perforation) and establish the relationship of tobacco with that of peptic perforation.

Material and Methods

This clinicopathological study was examined 250 patient of perforation peritonitis. Who were admitted in ward of the department of surgery in Gandhi Medical College and, associated Hamidia

Hospital Bhopal (M.P.) from August 2010 to November 2011. Data of the patients, including age, sex, duration of presenting signs and symptoms were noted. Details such as previous history of perforated peritonitis, smoking, use of tobacco were included. The presenting signs and symptoms of the patients were noted in detail along with the causes as observed by the attending clinician. The observations of the physical examination, the medications in use at the time of admission were also noted. Investigations performed were complete blood picture, hemoglobin, blood sugar, urea, creatinine and serum electrolytes. Rectal examination was also done for all the patients for any tenderness or bulging. Any other complications systemic or pulmonary were also checked. Abdominal X-ray and abdominal and pelvic ultra sound was done for all the patients. Patients underwent operation the operation finding were noted and patient were followed up for post operative course, morbidity and mortality complication were also recorded.

Results

Incidence and distribution of the patients

A total 250 patients were included in this study out of which 142 (56.8%) were gastric perforation and 108(43.2%) were intestinal perforation. Out of 250 patients, 157(62.8%) patients were tobacco user from that 100% were male and 93(37.2%) were non tobacco user from that 70(75.27%) were male. Out of 142 gastric perforation patient 120(84.5%) were tobacco user, while only 37(34.3%) patients were tobacco user out of 108 patient of the intestinal perforation.

Patients with perforation peritonitis were mostly in age group of 40-49 years. Patients with gastric perforation were also mostly 40-49 years of age group. Incidence and distribution of various perforations in relation to usage of tobacco was presented in table 1.

Relation of tobacco with perforations

In this study 50% of total gastric perforation patients seen in patient who are using tobacco in both the from chewing and smoking, 12.6% of

gastric perforation seen in those patient who use only tobacco chewing. 21.1% of gastric perforation seen in those patient who only tobacco smoking. 18% of patient intestinal perforation seen in patient who use both tobacco chewing and tobacco smoking. 8% of patient intestinal perforation seen who use only tobacco smoking and 7% patient of intestinal perforation use only tobacco chewing. 36% of total patient of perforation peritonitis those was using form of tobacco chewing and tobacco smoking (Table 2).

Postoperative complication

A total gastric perforation 85(59.85%) patients developed postoperative wound infection and leak 4(2%) developed. Postoperative leak and 48 (33.80%) were without any complication. Of all the intestinal perforation 40(37.03%) patients developed postoperative wound infection and 1(0.9%) patients developed postoperative leak and 67 (62.03%) of patients were without any complication (table 4). Postoperative complication was significantly higher in gastric perforation with tobacco use as compared to cases with intestinal perforation with tobacco use. Postoperative complication is significantly higher in the patient who used tobacco in both from smoking and chewing in compare to single from among perforation. The detail of complications of gastric and intestinal perforation according to tobacco user and non-tobacco user were described in table 3.

Duration of stay and mortality

The average day of stay of patient with tobacco user 11.19 day and average day of stay of patient

with nontobacco user of is 8.1 day. Duration of stay in tobacco user was more than that of non-tobacco user. The average day stay of patient with gastric perforation who used tobacco was 13.94 day, while average day stay of patients with perforation at intestinal site who used tobacco was 8.45 day. The average day of stay in patient of gastric perforation with tobacco use is more that of patent with perforation at intestine. Total mortality in gastric preformation using tobacco was 120(13.33%) and those not using tobacco was 22(31.87%). And total mortality in intestinal perforation using tobacco was 6(16.21%) and those not using tobacco was 3(42%). The total number of death reported in our study was 22 out of which 16 patient were gastric perforation who has used tobacco. Eight (36.36%) patients were tobacco user patients who died were smokers only, two (9.09%) patients were chewer user and 12(54.4%) patients were both tobacco smoker and tobacco chewers.

Table 1: Incidence and distribution of the patients

	Tobacco user	Non- Tobacco user
Age		
10-19 year	1(0.6%)	27(29%)
22-29 year	15(9.4%)	31(33.33%)
30-39 year	33(22.9%)	17(18.28%)
40-49 year	44(27.8%)	09(9.6%)
50-59 year	27(17.19%)	0(0%)
60-69 year	25(15.92%)	5(5.3%)
70-79 year	11(7%)	4(4.3%)
Gender		
Male	157(100%)	70(75.27%)
Female	0(0%)	23(24.73%)

Table 2: distribution of various perforations in relation to usage of tobacco

	Gastric Perforation	Intestinal Perforation
No. of patients	142(56.8%)	108(43.2%)
Tobacco users		
Tobacco chewer	18(12.67%)	8 (7%)
Tobacco smoking	30(21.12%)	9(8%)
Both tobacco chewer & tobacco user	72(50.70%)	20(18%)
None	22(15.49%)	71(65%)

Table 3: Postoperative complication of gastric and intestinal perforation according to tobacco user and non-tobacco

Complications	Tobacco user	Non- Tobacco user
Gastric Perforation		
Wound Infection	82(68.33%)	3(13.63%)
Leak	3(2%)	1(4%)
Wound dehiscence	5(4.16%)	0(0%)
None	30(25%)	18(81.81%)
Intestinal Perforation		
Wound Infection	18(48.64%)	22(30.78%)
Leak	1(2.7%)	0(0%)
Wound dehiscence	0(0%)	0(0%)
None	18(48.64%)	49(64.78%)

Table 4: Post-Operative Mortality from Perforations and Tobacco

Mortality	Post-Operative Mortality
From Perforations	
Gastric perforation tobacco user	16(13.33%)
Gastric perforation non tobacco user	7(31.81%)
Intestinal perforation tobacco user	6(16.21)
Intestinal perforation non tobacco user	3(42%)
From Tobacco	
Tobacco chewing	2(9.09%)
Tobacco smoking	8(36.36%)
Both	12(54.54%)

Discussion

In spite of improved living condition pathological perforation peritonitis remains to be main causes of emergency laparotomy and forms the main burden of emergency surgical work of any surgical unit. Peptic and ileal perforation is the major contributor of pathological perforation. There are numerous etiological factors which causes this perforation. We know that the tobacco is the causes of various problems in human being; also there has been an increased tendency towards the use of tobacco product that's too younger generation. Does tobacco has any influence on the incidence, morbidity or final outcome of the perforation cases, is still under evaluation⁴⁻⁶. This study evaluated the probable relation of use of tobacco with various pathological gastrointestinal perforations.

In this study we have examined 250 patient of perforation peritonitis. The incidence of perforation peritonitis was 5.33% of surgical admission and 0.63% of the total admission to Hamidia Hospital Bhopal. In the present study,

youngest age of patient 13 year and oldest age of 80 years, means age of total patients of perforation peritonitis 38.45 years, age 45.75 years in gastric perforation with tobacco user and mean age of patient who was non- tobacco user is 29 years. We found highest incidence in the 40-49 years age group followed by 30-39 years. C Svanes, et al⁹ in his series of 109 cases has reported the youngest patient of 15 year and oldest was a 74 years in this study highest incidence were found in 150-59 years age in this study while there are relatively no difference in youngest and age incidence. Similar results were observed in other studies such as those of Nanini et al, Lee et al Tonnessen et al and Jain et al¹⁰⁻¹⁴. The most common age group to be affected was 40-60 years. This was in accordance to the studies by Croft TJ et al¹⁴ and Tonnessen T et al.¹² In a study by Bali et al⁴, the mean age was 37.9 years.¹⁵ However Mock CN et al¹⁵, found 20-30 years to be the most common age group. Eduardo, et al¹⁶ in his Males: Females' sex ratio among the 30 gastric perforation patient was 2: 1. In comparison to this study we found

more incidences in female. This may be due to higher incidence of smoking in western countries. F smedley, et al¹⁷ in his series observed male: female ratio of 2:1. In our study male: female sex ratio is higher of the patient with gastric perforation. This can be justified by the fact that most of tobacco users are male. This result is consistent with our study results male have more incidence of gastric perforation.

In our series of 250 patients 142 (56.81%) cases were of gastric perforation and remaining 108 (43.2%) were of intestinal perforation. And 157 (62%) were using tobacco in some or many from (smoking or chewing or both of them) in this from 142 gastric perforation, 120 (84.5%) patient were tobacco user, while out of 108 intestinal perforation only 37(34.26%) patient were in habit of using tobacco. Eduardo et al¹⁶ in his series 289 cases has reported peptic ulcer disease 30 patients had perforation peritonitis, 21 patients were having gastric perforation and 9 patients were having duodenal perforation. In comparison to this study, the incidence of gastric perforation is less 56.8% verse 70% and the incidence of intestinal perforation is more 43.2% versus 30%.

In our study of 250 patients, 157 tobacco users, 120 (84.51%) were gastric perforation and 37 (34.25%) were intestinal perforation out of 93 non-tobacco users, 22 (15.49%) were of gastric perforation and 71 of intestinal perforation. we found that 50% of gastric perforation patients were bot tobacco chewer & tobacco smokers. F Msedley et al¹⁷ in this series 275 cases were studied , 151 patients had perforation peritonitis, 122 cases were tobacco user, 12 cases were gastric perforation and 110 cases were duodenal perforation out of 29 non-tobacco user ,18 cases were gastric perforation and 11 cases were of duodenal perforation.

Our study gastric perforation patient treated surgically with primary closure and graham patch repair 97.88%. Eduardo et al¹⁶ observed 86.6% patient were treated with primary closure & graham patch repair. Our result is relatively similar to this study.

Wound infections were the most common complication to be observed among the patients in present study. Out of 250 patient 134 (80.40%) had postoperative complication in which 108 were user and 26 (19.40%) were non user we have found the correlation of postoperative complication with that of tobacco user is significant. Eduardo et al¹⁶ in his series observed that common postoperative complication among gastric group were wound infection (10%), respiratory complication (13.3%), cardiac complication (3.3%) residual pyeoperitoneum (3.5%), renal complication (6%).With comparison to study found postoperative complication is more in gastric perforation with tobacco use in our study (75% verse 35%).

The average day of stay of patient with tobacco user 11.19 day and average day of stay of patient with nontobacco user of is 8.1 day. Duration of stay in tobacco user was more than that of non-tobacco user. The average day of stay in patient of gastric perforation with tobacco use is more that of patent with perforation at intestine in in present study. Eduardo et al¹⁶ in his series observed that mean duration of stay was 12.8 days among the gastric perforation group. In comparison of this study mean duration of hospital stay slightly more in our group. It may be due to poor nutritional status of the patient, in our study. The mortality due to perforated peritonitis has been reported to be between 6 - 27%¹⁸. Mortality, in present study, was seen in 8.8% of the cases. A lower rate of 7% was found in a study by Bali et al.⁴In comparison to this study we found mortality didn't show any show any significant difference.

Conclusion

With study we can conclude that use of tobacco is associated with higher incidence, of gastric perforation. The use of tobacco is also associated with significantly high morbidity and postoperative complication in these cases. However no similar association could be observed in cases of other intestinal perforation. The average duration of hospital stay was significantly

more in patient who were using tobacco then the patients who were not using tobacco in the cases of gastric perforation.

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