

## A CROSS-SECTIONAL STUDY OF PERFORATION PERITONITIS AMONG NORTH INDIANS- CAUSATION AND TREND IN COIMBATORE MEDICAL COLLEGE

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### Abstract

**Background:** The aim of this study was to identify the causative factors and trends associated with perforation peritonitis among North Indian patients, focusing on dietary habits, self-medication, and other behavioral risk factors. **Materials and Methods:** A cross-sectional observational study was conducted at Coimbatore Medical College Hospital, involving 50 North Indian adult patients diagnosed with perforation peritonitis. Data were collected through detailed history taking and clinical examination. Risk factors such as meal patterns, consumption of spicy food, use of over-the-counter medications, history of peptic ulcer disease, and tobacco use were recorded. Investigations included blood tests, X-ray, ultrasound, and CT scans. **Result:** The study revealed several key findings: 62% of patients had irregular food intake, 62% skipped meals, 60% consumed spicy food regularly, and 90% engaged in self-medication. Additionally, 60% had a history of peptic ulcer disease, and 88% reported tobacco chewing. A significant number of patients (36%) had a habit of eating from hotels, indicating a potential link between these lifestyle factors and perforation peritonitis. **Conclusion:** The study identified modifiable risk factors such as irregular food intake, skipping meals, spicy food consumption, self-medication, and tobacco chewing as significant contributors to perforation peritonitis. Addressing these factors through public health initiatives and patient education could help reduce the incidence of this severe condition.

## INTRODUCTION

Perforation peritonitis is one of the most serious emergency that a surgeon encounters worldwide. Common causes of perforation are peptic ulcer disease, drug abuse, typhoid, tuberculosis, acute appendicitis, blunt trauma, penetrating trauma and malignancy.<sup>[1]</sup> Perforation is said to occur once the pathology spreads through all the layers of hollow viscous which then leads to contamination of peritoneal cavity with the contents of hollow viscus. Perforation can occur anywhere in gastrointestinal tract. Recognition of signs and symptoms and immediate resuscitation, accurate diagnostic techniques, stabilizing of patient using iv fluids, electrolyte correction, antibiotics, and analgesics brings down the mortality and improves the outcome of the patient after surgery. Radiological investigations play a major role in diagnosis. Any delay in resuscitation increases the mortality, hence after diagnosing a case of perforation peritonitis, fluid resuscitation and electrolyte correction should be done before planning for emergency surgical intervention.<sup>[2]</sup> Perforation peritonitis usually

presents as an acute abdomen. On local examination diffuse abdominal tenderness, guarding or rigidity, distension, On percussion liver dullness is obliterated and on auscultation bowel sounds are diminished. Symptoms and signs include fever, chills and rigor, sweating, tachycardia, tachypnea, dehydration, oliguria, disorientation, restlessness and shock.<sup>[1]</sup> Clinical examination reveals the diagnosis. Xray abdomen erect shows air under Right hemidiaphragm, ultrasound and CT scan can ascertain the diagnosis. In suspected cases of perforation peritonitis without any radiological evidence, diagnostic laparoscopy is of importance. Early fluid resuscitation, appropriate antibiotic therapy and primary closure are the management protocol routinely followed. This study is done to analyse the etiology and clinical presentation of Perforation peritonitis among north Indians admitted in Coimbatore medical college hospital. Over a period of one year 50 North Indian patients admitted and diagnosed as perforation peritonitis are taken as study sample and the study is carried out.

## MATERIALS AND METHODS

This is a cross-sectional observational study conducted at Coimbatore Medical College Hospital, focusing on North Indian patients diagnosed with perforation peritonitis. Data were collected through history taking and clinical examination of patients. The study population comprises adult North Indian patients of either sex presenting to the emergency department and diagnosed with perforation peritonitis at Coimbatore Medical College Hospital over a period of 1 year. The total sample size for the study was 50 patients.

### Inclusion Criteria

- All North Indian patients admitted and diagnosed with perforation peritonitis in Coimbatore Medical College Hospital.

### Exclusion Criteria

- Patients with traumatic perforation.

**Data Collection:** The data collection for this study involved gathering a detailed history from all participants to explore possible risk factors associated with perforation peritonitis. The history obtained included information regarding the patient's regular food intake habits, whether they tended to skip meals, and their consumption of spicy food. Additionally, the use of over-the-counter medications, a history of peptic ulcer disease, and the practice of eating from hotels or consuming food from outside sources were recorded. Tobacco chewing habits were also noted as part of the risk factor assessment. The collected data was then used to analyze potential correlations between these factors and the incidence of perforation peritonitis.

**Clinical Examination:** All patients who met the inclusion criteria underwent a thorough clinical examination as part of the study. The examination began with a primary survey, which included a general physical examination to assess the overall condition of the patient. Emphasis was placed on life-supportive measures, such as airway management, breathing, ventilation, and control of shock and hemorrhage. Vital signs, including pulse rate and blood pressure, were recorded at 15-minute intervals during the first hour after admission, then hourly for the next six hours, and every two hours thereafter. The respiratory rate and mode of respiration were continuously observed to monitor for any signs of distress. In addition, signs of pallor, cyanosis, and capillary refill at the lip mucosa were carefully noted to assess circulatory and respiratory function.

The abdominal examination was equally detailed. After ensuring that there were no superficial thoracoabdominal injuries, a comprehensive examination was conducted to check for signs such as abdominal guarding, rigidity, rebound tenderness, and significant abdominal tenderness. The presence of an obvious lump within the abdominal cavity was also carefully examined. Special attention was given to specific clinical signs, including abdominal distension, Kehr's sign, Ballance's sign, Gray

Turner's sign, Cullen's sign, and shifting dullness, which are indicative of certain underlying pathologies. A per rectal examination was performed to rule out bleeding per rectum or any injuries to the distal colon.

**Investigations:** Following the clinical examination, various investigations were carried out to further assess the condition of the patients. Blood tests were performed to evaluate hemoglobin levels, total and differential white blood cell counts, and packed cell volume (PCV), which are essential in identifying potential infections or systemic complications. A plain X-ray of the chest and abdomen in an erect position was performed to look for signs of perforation, such as air under the diaphragm. In cases where the X-ray did not clearly reveal air under the diaphragm, an ultrasound (USG) and/or computed tomography (CT) scan of the abdomen were conducted for further evaluation and confirmation.

**Potential Risk:** No significant risks were anticipated in the course of this study. The data collection process involved non-invasive procedures such as history taking, clinical examination, and routine diagnostic investigations (blood tests, X-ray, and USG/CT), all of which are commonly performed in clinical practice and carry minimal risk.

**Potential Benefits:** The primary benefit of this study lies in its potential to identify modifiable causative factors for perforation peritonitis, such as dietary habits and drug use. By understanding these factors, the study aims to educate patients on the importance of modifying harmful behaviors, which could help prevent future occurrences of perforation peritonitis. Additionally, the findings could inform broader public health strategies and medical interventions to reduce the incidence of this serious condition.

**Statistical Analysis:** The data collected from the participants were subjected to statistical analysis to identify significant correlations between various risk factors and the incidence of perforation peritonitis. This analysis aimed to highlight patterns and relationships that could provide insights into the causes of the condition and guide future preventive measures. Statistical tools and methods were employed to ensure the accuracy and reliability of the results obtained from the collected data.

## RESULTS

### [Table 1] Regular Food Intake

Out of the 50 patients, 19 patients reported having a history of regular food intake, while 31 patients indicated that they did not have regular food intake.

### [Table 2] Skipping a Meal

Among the 50 patients, 31 patients reported skipping a meal at least once a day.

### [Table 3] Spicy Food

A total of 30 out of 50 patients reported consuming spicy food as part of their regular eating habits.

**[Table 4] Over the Counter Medication**

Out of the 50 patients, 45 patients admitted to taking medicines from a pharmacy without consulting a doctor.

**[Table 5] Eating from Hotel**

Among the 50 patients, 18 patients had a history of eating from hotels at least once per day.

**[Table 6] Peptic Ulcer Disease**

30 out of the 50 patients reported a past history of peptic ulcer disease.

**[Table 7] Tobacco Chewing**

A significant 44 patients out of 50 reported a history of tobacco chewing, either through smoking or pan chewing.

**Table 1: Regular Food Intake**

Response	Number of Patients	Percentage (%)
Yes	19	38%
No	31	62%

**Table 2: Skipping a Meal**

Response	Number of Patients	Percentage (%)
Yes	31	62%
No	19	38%

**Table 3: Spicy Food**

Response	Number of Patients	Percentage (%)
Yes	30	60%
No	20	40%

**Table 4: Over the Counter Medication**

Response	Number of Patients	Percentage (%)
Yes	45	90%
No	5	10%

**Table 5: Eating from Hotel**

Response	Number of Patients	Percentage (%)
Yes	18	36%
No	32	64%

**Table 6: Peptic Ulcer Disease**

Response	Number of Patients	Percentage (%)
Yes	30	60%
No	20	40%

**Table 7: Tobacco Chewing**

Response	Number of Patients	Percentage (%)
Yes	44	88%
No	6	12%

**Table 8: the variables and their corresponding odds ratios**

VARIABLES	ODDS RATIO
Irregular Food Intake	1.6
Skipping a Meal	1.6
Spicy Food	1.5
Over the Counter Medication	9
Eating from Hotel	0.5
Peptic Ulcer Disease	1.5
Tobacco Chewing	7.3

## DISCUSSION

Perforation peritonitis is a major concern in emergency department, where patients mostly comes in shock. Mostly perforation can be prevented by avoiding tobacco chewing, over the counter medications and proper treatment for Peptic ulcer disease. This study has been taken to identify the most common factors responsible for perforation peritonitis among North Indians admitted at Coimbatore medical College hospital. Because here we see lot of North Indians getting admitted with

perforation peritonitis, they are staying away from family as labourers. So by knowing the cause of perforation, those people can be educated to prevent the occurrence in their population and also prevents the chance of recurrence. Previously this kind of study is not done in Coimbatore to know about causes of perforation among North Indian population, so from the data most common factor involved in perforation can be identified and that can be emphasized to that population.<sup>[2-5]</sup>

The present study found that 19 out of 50 patients reported having regular food intake, while 31 patients

indicated irregular eating patterns. These findings suggest that irregular food intake might be a contributing factor in the development of gastrointestinal issues, which could eventually lead to perforation. In line with this, previous studies have similarly observed that irregular eating habits, such as skipping meals, contribute to gastrointestinal disturbances, including peptic ulcers, which are a major risk factor for perforation.<sup>[6,7]</sup> Yadav et al. (2013) found that 35% of patients with perforation peritonitis had a history of irregular meal patterns.<sup>[8]</sup> This is consistent with our findings, where 62% of patients either skipped meals or had irregular food intake, further emphasizing the association between dietary habits and perforation risk. Jhobta et al. (2006) also reported that irregular eating habits were common among patients with perforation peritonitis, with 40% of their cohort exhibiting such patterns. This further supports the notion that inconsistent meal patterns may predispose individuals to gastrointestinal complications such as peptic ulcers.<sup>[9]</sup>

The current study revealed that 31 patients skipped meals at least once a day. This behavior could lead to the overproduction of gastric acid, which may contribute to ulcer formation and subsequent perforation. This finding is consistent with several other studies, which have highlighted the detrimental effect of skipping meals on gastrointestinal health. Bali et al. (2014) observed that 40% of their study participants had a history of skipping meals, which they associated with an increased risk of perforation peritonitis due to the exacerbation of peptic ulcers.<sup>[10]</sup> Similar findings were reported by Ramakrishnaiah et al. (2012), who noted that 28% of their cohort had irregular meal patterns, contributing to ulcer formation and perforation. The current study, with 62% of patients reporting meal irregularities, reinforces this association.<sup>[11]</sup>

In this study, 30 out of 50 patients reported consuming spicy food regularly, which is known to irritate the gastrointestinal lining and may exacerbate conditions such as peptic ulcers. This dietary habit has long been implicated in the pathogenesis of perforation peritonitis, particularly in regions where spicy food is a staple part of the diet. Sharma and Bhatia (2004) found that 35% of patients with perforation peritonitis regularly consumed spicy food, which they identified as a significant risk factor for ulceration and perforation.<sup>[12]</sup> Similarly, Singh et al. (1991) highlighted that frequent consumption of spicy foods contributed to the development of ulcers in their cohort, which aligns with the findings of the current study.<sup>[13]</sup>

The current study found that 45 patients used over-the-counter (OTC) medications without medical consultation. The misuse of medications, particularly nonsteroidal anti-inflammatory drugs (NSAIDs), is well-established as a risk factor for gastrointestinal ulceration and perforation. Yadav and Garg (2013) observed that 50% of their study population had used OTC medications, particularly NSAIDs, which

contributed to the development of perforation peritonitis. This finding is consistent with the current study, where 45 patients engaged in self-medication, which could predispose them to gastrointestinal complications.<sup>8</sup> Additionally, Mavila et al. (2016) noted that improper use of medications was a major risk factor for peptic ulcer disease in their cohort, further supporting the need for regulated use of OTC drugs.<sup>[14]</sup>

In the present study, 18 patients had a history of eating from hotels at least once per day. Eating food from external sources, particularly from establishments where hygiene standards may not be optimal, has long been associated with an increased risk of foodborne infections, which can lead to complications such as perforation. Bali et al. (2014) highlighted that 25% of their patients had a history of eating from hotels, which led to foodborne infections and subsequently, perforation peritonitis.<sup>10</sup> Similarly, Jhobta et al. (2006) identified a significant proportion of their cohort who consumed food from external sources, with 20% having a history of eating in hotels. The current study's finding of 18 patients consuming food from hotels underscores the potential risks associated with such dietary habits.<sup>[9]</sup> A substantial number of patients in this study (30 out of 50) had a history of peptic ulcer disease, a well-established risk factor for perforation peritonitis. The relationship between peptic ulcers and perforation has been widely documented, with ulceration often leading to the perforation of the gastrointestinal tract. Ramakrishnaiah et al. (2012) reported that 25% of their patients had a history of peptic ulcer disease, highlighting its critical role in the development of perforation.<sup>[11]</sup> Yadav and Garg (2013) also found that 40% of patients with perforation peritonitis had a history of ulcers, which is consistent with the current study. This further supports the need for timely management of peptic ulcer disease to prevent the risk of perforation.<sup>[8]</sup>

The present study identified a significant number of patients (44 out of 50) who reported a history of tobacco chewing. Tobacco use, including chewing, is a well-documented risk factor for the development of gastrointestinal conditions such as peptic ulcers, which can lead to perforation. Jhobta et al. (2006) found that 30% of their cohort used tobacco, which was strongly associated with gastrointestinal complications and perforation.<sup>[9]</sup> Similarly, Bali et al. (2014) reported that 35% of their patients had a history of tobacco use, linking it to an increased risk of perforation peritonitis. These findings are consistent with the current study's result, where 44 patients had a history of tobacco chewing, underscoring the significant role of tobacco use in the pathogenesis of gastrointestinal disorders.<sup>[10]</sup>

Also, strict enforcement of laws to prevent over the counter medications and sale of tobacco products can be done to reduce the incidence of perforation peritonitis, which also reduces the burden over health care.

## CONCLUSION

This cross-sectional study conducted at Coimbatore Medical College Hospital on North Indian patients with perforation peritonitis has identified key risk factors associated with the condition. The results indicate that irregular food intake, skipping meals, consumption of spicy food, self-medication, and tobacco chewing are significant contributors to the development of perforation peritonitis. Additionally, a history of peptic ulcer disease and frequent consumption of food from external sources, such as hotels, were also found to be prevalent among the patients. These findings underscore the importance of addressing modifiable lifestyle factors, including dietary habits and the overuse of medications, in reducing the incidence of perforation peritonitis.

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