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Original research article

EVALUATION OF EMERGENCY LAPAROTOMY FOR ILEOCAECAL EMERGENCIES: A CLINICOPATHOLOGY, PROGNOSIS, AND OUTCOME BASED STUDY

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Abstract

Introduction: In tropical nations like India, ileocaecal emergencies are common in emergency rooms. Disorders such as typhoid, tuberculosis, and blunt force injury to the abdomen are acknowledged. This illness continues to be linked to high mortality and inevitable morbidity, even though there are contemporary diagnostic facilities and advancements in treatment regimens. The objective of the operating procedure is to fix the pathology while preventing major problems.

Material and Methods: It was the combination of a retrospective and prospective study. In this study 40 individuals as subjects was used. This study was conducted at the Department of General Surgery, Deccan College of Medical Sciences, Hyderabad, Telangana, India. Study period for this was the October 2022 to September 2023.

Result: The purpose of this research was to catalogue the variables that influence the initiation, progression, and resolution of emergency laparotomies for ileocaecal emergencies. Assessing the linked rates of illness and mortality was another objective of the study. Forty individuals were evaluated, ranging in age from eighteen to seventy-eight. Ten percent of individuals with systemic hypertension also had diabetes mellitus, making it the most common comorbidity. Half of all patients died if they went to the ER more than three days after their symptoms first emerged. Resection and anastomosis were the most common procedures.

Conclusion: In order to treat a large number of patients effectively, it is necessary to integrate hydration, electrolyte correction, dietary management, and psychological support teams.

Keywords: Laparotomy, ileocaecal emergencies, clinicopathology, prognosis

Introduction

Ileocaecal emergency is a frequently encountered issue in tropical regions, with the most prevalent cause being typhoid fever. Over the years, there has been a noticeable shift in the characteristics of ileocaecal pathology, including its aetiology, presentation, treatment, and prognosis. Although current diagnostic facilities and breakthroughs in

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treatment regimens are readily accessible, this illness continues to be linked to a significant mortality rate and inescapable morbidity [1-3].

The Small Intestine, located in the Gastrointestinal system, serves as the primary location for the digestion and absorption of nutrients. Additionally, due to its extensive surface area, it acts as a significant reservoir for cells that are involved in immune responses and hormone production [4]. Despite the availability of advanced diagnostic procedures such as capsule endoscopy, there is a dearth of clear clinical recommendations for effectively managing emergency small intestinal disorders in individual individuals [5, 6] There is a thicker, nipple-shaped ileocecal valve that protects the caecocolic junction, where the ileum ends. The contraction of the ileo caecal valve, which has a lower concave lip and an upper horizontal lip, is controlled by the sympathetic nerve supply. The caecum is the broadest segment of the colon, characterised by its thin wall and sac-like shape. It has an average diameter of 7.5 cm and a length of approximately 10 cm [7-9].

Although it can be stretched, when the diameter exceeds 12 cm, it causes insufficient blood supply to the intestinal wall. Its location is behind the right psoas and iliacus muscles, in front of the anterior abdominal wall and the intestinal coils. Blood is given to the caecum and the terminal ileum by the ileocolic artery, a branch of the superior mesenteric artery. In disorders of the superior mesenteric artery, the caecum is more likely to suffer from ischemia harm due to its anatomical layout. Along with the arterial supply, the veins and lymphatic system also flow in a parallel fashion [10, 11]. The caecum is supplied with sympathetic and parasympathetic innervation, respectively, by the thoracic spinal nerves T11–L1 and the vagus nerve. Twenty percent of the population has a moveable caecum. Conical, intermediate, and ampullary are some of the possible shapes of the caecum. The appendix, which measures around 8 to 10 centimetres in length, juts out from the cecum three centimetres below the ileocecal valve. In a precise order from most inner to most outer, the wall is composed of five layers: mucosa, submucosa, circular, longitudinal, and serosal. Thin bands known as taeniae coli separate the outer longitudinal muscle. Taenia libera (In the front), taenia mesocolica, and taenia omentalis (on the side) are the three taeniae coli that can be found in the colon. At the caecum's base, all three structures converge on the appendix [12, 13].

The objective of the operating protocol is to rectify the underlying pathology while mitigating the risk of any significant mishaps and employing a surgical approach that is linked to low consequences. This study has been conducted with the aim of enhancing our understanding of this condition [14]. The objective of this study was to investigate the different causes and methods of presentation in patients who underwent emergency laparotomies for ileocaecal involvement.

Material and Methods

It was the combination of a retrospective and prospective study. In this study 40 individuals as subjects was used. This study was conducted at the Department of General Surgery, Deccan College of Medical Sciences, Hyderabad, Telangana, India. Study period for this was the October 2022 to September 2023. Prior to commencement of this study the Ethical Committee had approved the protocol.

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Inclusion criteria

- Individuals who have ileocaecal involvement and require emergency laparotomies.

Exclusion criteria

- Individuals with pathologies of the appendix.
- Intraoperative ileocaecal procedures

Method

A deliberate and non-random sampling procedure was used. All patients admitted to the surgical unit with perianal fistula symptoms had a thorough physical examination and a short medical history taken. The diagnostic imaging techniques were followed by the initial examinations, which are routinely required. Patients were thereafter provided with an explanation on their disease process and the potential course of treatment. The patients or their authorized guardian were provided with comprehensive information pertaining to the study. Prior to their participation in the trial, patients or their legal guardians were obtained informed written consent. A comprehensive medical history was obtained from the study group in order to establish an accurate diagnosis.

Statistical analysis

Data analysis was conducted through both manual and computerized methods. The calculated data were organized systematically and displayed in tables and figures. Statistical analysis was conducted using the Statistical Package for Social Science (SPSS) to assess the aims of this study.

Result

This study aimed to identify the etiopathological variables and prognostic markers in patients who underwent emergency laparotomies for ileocaecal emergencies. The study was descriptive and observational in nature. Every instance was assessed through clinical evaluation. Prior to surgeries, only indispensable investigations required for diagnosis and preoperative evaluation were conducted. Surgery was performed on all patients as deemed necessary for their individual circumstances. The study comprised patients of various genders and age groups.

Table 1: Demographic breakdown of patients by age and gender

Age / Sex	Male	Female	Total
18 to 29	6	1	7
30 to 39	5	1	6
40 to 49	6	3	9
50 to 59	5	1	6
> 60	3	5	8
Total	29	11	40

Table 1 presents the age and sex distribution of the patients. Out of the 40 patients, there were 29 males and 11 females. Among all the age groups, the proportion of individuals aged over 60 was the smallest.

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Table 2: Incidence of Coexisting Factors in patient cohort

Sr. No.	Co Morbid Factor	Number
1.	DM	6
2.	Hypertension	4
3.	DM & HTN	2
4.	TB / BA/ COPD	4
5.	CAD	3
6.	No Comorbidity	21
	Total	40

Table 2 presents the prevalence of comorbid factors in the patient group. Out of the 40 patients, 6 had diabetes mellitus, 4 had hypertension, 2 had both diabetes mellitus and hypertension, 4 had TB/BA/COPD, 3 had CAD, and 21 had no comorbidity.

Table 3: Evaluation of individuals who have undergone urgent laparotomies

Sr. No.	Parameters	Numbers
1.	AIO	7
2.	Blunt Injury Abdomen	4
3.	Carcinoma Colon	7
4.	Small Bowel Perforation	15
5.	Large Bowel Perforation	1
6.	Obstructed Hernia	5
7.	SMA Thrombosis	1
	Total	40

Table 3 presents the diagnoses of patients who underwent emergency laparotomies. The most common diagnostic was small bowel perforation, while the least common was large intestine perforation and SMA thrombosis. These diagnoses were observed in a total of 40 patients.

Table 4: Analysis of Lag Period and Surgery Duration Distribution

	Time	Numbers
Lag Period	< 24 hours	10
	24 to 48 hours	7
	48 to 72 hours	8
	> 72 hours	15
Duration	1 to 2 hours	21
	> 2 hours	19

Table 4 presents the distribution of lag period and duration of surgery. The largest lag period was 10, while the maximum overall duration was 21.

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Table 5: Distribution of Surgery Lag and Duration with Mortality and Morbidity

		Morbidity	Mortality
Lag Period	< 24 hours	3	0
	24 to 48 hours	3	1
	48 to 72 hours	4	1
	> 72 hours	9	1
Duration	1 to 2 hours	8	2
	> 2 hours	7	1

Table 5 displays the distribution of lag period and duration of operation alongside morbidity and mortality. It indicates the lag period and total duration of the procedure as depicted in the table above.

Discussion

The purpose of this research was to examine the causes, outcomes, and risk factors of complications in patients who had emergency laparotomies due to ileocaecal emergencies. An observational and descriptive study was conducted. All age categories had about equal number of patients, with those over the age of 40 making up a somewhat larger proportion. It follows that men make up the bulk of the population. Based on the analysis of the comorbid variables, it was discovered that 5 patients had Diabetes Mellitus and 3 patients had systemic hypertension. Eleven more people showed signs of other conditions, including CKD and CAD. Eight patients presented with signs of severe intestinal blockage, and four others had forceful abdominal trauma when they arrived for evaluation. Ileocaecal crises were caused by small bowel perforation, which occurred in 17% of patients. In our study, ileocaecal emergencies are most commonly caused by blocked hernias, cancer of the colon, and SMA thrombosis associated with intestinal gangrene [15-17].

It was not surprising to see that more than 70% of patients had tachycardia and more than 46% had systemic hypotension when reviewing the vital signs when they arrived at the emergency room. An elevated total count in seventeen patients (34% of the total) indicates peritonitis, while elevated urea levels in more than half of the patients indicate pre-renal failure. Electrolyte abnormalities were observed in around a quarter of the individuals [18, 19].

Nearly one-quarter of patients had their surgeries performed within one day of the onset of symptoms, another quarter within two days, and sixteen percent on the third day. There was a notable delay of more than 72 hours between the start of symptoms and the surgical treatment for more than 30% of patients. Although 34% of the treatments took more than two hours, 66% were finished in that amount of time [20, 21].

In seventeen of the cases studied, the researchers found that infections including typhoid and tuberculosis were the main causes of perforations. Typhoid symptoms were seen in seven patients, while tuberculosis symptoms were present in four patients. A minor intestinal hole caused by typhoid is still common, but a perforation caused by tuberculosis is on the rise. Traumatic abdominal injuries have been identified as the underlying cause of illness in five cases. In eight cases, the root cause was cancer of the caecum. Other causes, such as SMV thrombosis and blocked hernias, were cited for the

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remaining twenty patients [22, 23].

Seven individuals had their ileal perforations sealed by primary closure, whereas nineteen had the ileum resected to remove the blocked or perforated area and then the ends were anastomosed. Around eleven people had surgical procedures such as resection, anastomosis, and the construction of a protective stoma. Six more patients had end ileostomy resections, and three more had proximal ileostomy and distal mucous fistula resections. Issues at the wound site, such as wound dehiscence or infection, were the most common postoperative complications, affecting 40 patients in total. There were six cases of wound dehiscence and four cases of wound infection. Five cases were found to involve the lungs, with symptoms such as basal atelectasis and pulmonary embolism. Anastomotic leaks were observed in only four cases. Two people had deep vein thrombosis. Another three people had symptoms of dyselectrolytemia, a disorder frequently seen in stoma patients [25-27].

In the time following surgery, eight people lost their lives. Among the fatalities, five were attributed to MODS, two to ARDS, and one to sepsis. The miscellaneous category accounted for most of the death and morbidity cases. In terms of the lag period, it was found that over 50% of all cases were associated with increased morbidity and mortality rates among patients who sought medical treatment more than 72 hours after the symptoms began. Given that the two patient groups did not differ significantly in terms of operation length, it is more likely that the initial delay represents a significant prognostic factor [28-32].

Conclusion

The most common reason for emergency surgery in the ileocaecal region in developing nations like India is ileal perforations caused by infections or trauma. Both the regulations for handling it and the situation itself are unclear, creating a major decision-making dilemma. In the elderly age groups, malignant obstruction plays a significant role, while in the middle age groups, rheological abnormalities are more common. In the elderly population in particular, diabetes mellitus is a frequent co-occurring component with other medical disorders. Others include hypertension, tuberculosis, chronic obstructive pulmonary disease, and so on. When compared to other groups of patients who underwent emergency laparotomy, the morbidity rate in this group was similar. The time it takes for patients to go from the first sign of illness to the start of surgical treatment seems to be the main factor in morbidity. Postoperative complications and mortality are more likely to occur in patients with systemic conditions, those with poor general health, and those with inadequate optimization. Patients with timely intervention, thorough postoperative care, and sufficient psychological support typically have a good prognosis.

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Conflict of Interest

None

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