

Prolonged post-operative ileus: experience in a tertiary hospital in Bayelsa State, Nigeria

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Abstract

Background: Ileus is defined as the functional inhibition of propulsive bowel activity, irrespective of the pathogenic mechanism. Prolonged post-operative ileus (PPOI) is an absence of bowel function lasting more than 3 days after a surgical procedure. It is a common postoperative complication with multifactorial aetiology and pathophysiology which can result in increased morbidity and mortality. Early recognition and proper treatment remain crucial in managing this condition.

Aim: To determine the aetiology, clinical presentation, treatment outcome and complications of patients presenting with prolonged postoperative ileus.

Methods: A retrospective observational study of all patients with a diagnosis of prolonged postoperative ileus at the Niger Delta University Teaching Hospital, between January 2020 and December 2023. Data was obtained using a standardized proforma and analysis done using Statistical Package for the Social Sciences (SPSS) version 21.0 for Windows.

Results: A total of 60 patients were studied, 39 males and 21 females with a male to female ratio of 1.86:1. Patients 40 years or older were more often affected. Perforated viscus and strangulated hernia were the leading diagnoses associated with prolonged postoperative ileus. The most common forms of presentation were abdominal pain, abdominal distension and anorexia. Most patients responded to conservative management. The most common complication was hypokalaemia. Mortality was 10%.

Conclusion: Prolonged post-operative ileus is common in clinical practice and is associated with increased morbidity and mortality. Early recognition along with appropriate and timely treatment is essential in management.

Keywords: Ileus, post-operative, prolonged, clinical features, mortality and morbidity

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INTRODUCTION

Postoperative ileus (POI) is intolerance of oral intake due to disruption of the normal coordinated propulsive motor activity of the gastrointestinal tract following abdominal or non-abdominal surgery without a mechanical cause.^{1,2} Prolonged postoperative ileus (PPOI) is ileus lasting more than 3 days after a surgical procedure, usually abdominal surgery with continued absence of obstructive signs. It slows patient recovery thus prolonging hospital stay and increasing the cost of patient care. It has been estimated that in the United States the additional costs associated with PPOI are as high as 1.47 billion dollars.^{3, 4} It is often associated with an increased rate of complications such as aspiration, infection, deep vein thrombosis and electrolyte imbalance.⁴ As a result of lack of an internationally accepted standardized clinical definition of PPOI, it has been difficult to estimate the actual incidence. However, in first world nations it has been estimated to occur in 10-27% of cases following abdominal surgery.²

The pathophysiology of prolonged postoperative ileus is multifactorial and complex with dysmotility of the intestine caused by issues such as electrolyte imbalance, immune dysfunction, inflammatory processes, use of narcotic analgesics and neurologic disorders being among implicated factors. Manipulation of the gut causes an inflammatory response which results in migration of leucocytes into the intestinal mucosa resulting in impaired motility of the gastrointestinal tract and disturbance of coordinated propulsive action with accumulation of luminal gas and fluid in the bowel.² This may manifest clinically as abdominal distension, nausea, vomiting, constipation and food intolerance without signs of mechanical obstruction. In addition, hypokalaemia and the presence of infection or intra-abdominal abscess may lead to a prolonged period of intestinal atony, thus aggravating the condition.

PPOI may follow procedures or events that do not involve breach of the peritoneum, most notably neurosurgical procedures, spinal operations, hip fracture as well as operations on the urinary tract and female pelvic organs. It may also arise due to administration of opioids, tricyclic antidepressants and other drugs.⁵ The diagnosis of PPOI is based on clinical assessment of the patient, laboratory evaluation, radiological investigation, ultrasonography and computed tomographic scan. Despite advances in perioperative care and surgical techniques, it remains one of the commonest challenges in surgical practice.^{6,7}

This study aims to determine the aetiology, pattern of clinical presentation, treatment and complications seen in patients with PPOI in a tertiary hospital setting in the Niger Delta region.

PATIENTS AND METHODS

Study design

This was a retrospective observational study of all patients with a diagnosis of prolonged postoperative ileus.

Setting

This study was done in the Niger Delta University Teaching Hospital, a 200 bed hospital located in Bayelsa State in the Niger Delta region of Nigeria.

Duration

The study covered the period January 2020 to December 2023.

Population

All cases of major abdominal surgery performed during this period.

Inclusion/Exclusion Criteria

All patients with ileus lasting more than 3 days postoperatively were included in the study. Patients with diagnoses of ileus following gastroenteritis, acute pancreatitis, pelvic inflammatory disease, blunt abdominal injury managed conservatively, and ileus for less than 3 days were excluded from the study.

Data Analysis

Data was obtained from ward and theatre records as well as patient case notes using standardized proforma that included age, sex, occupation, ethnicity, aetiology, clinical features, investigations performed, treatment administered and post-operative complications. Information was exported to Microsoft Excel before analysis using Statistical Package for the Social Sciences (SPSS) version 21.0 for Windows (SPSS, Chicago IL, USA).

Ethical Approval

The approval of the Research Ethics Committee of the Niger Delta University Teaching Hospital Okolobiri was obtained.

RESULTS

A total of 60 patients were included in the study. There were 39 males and 21 females with a male to female ratio of 1.86:1. The youngest was a six-year-old male who had ruptured appendix, while the oldest was a seventy-six-year-old female with a perforated peptic ulcer. Patients 40 years or older were more often affected by prolonged postoperative ileus (54 patients-90%) (Table 1). The mean age of the study population was 54.6 +/- 17 years, while the median age was 58.5 years and the mode age 65 years.

Patients with perforated viscus (perforated appendix, perforated peptic ulcer and typhoid perforation) accounted for 55% of cases (33) while strangulated hernia accounted for 11.67% of patients (Table 2). Other causes of bowel obstruction (bands, adhesions, and volvulus) made up 8.33% of cases.

The most common clinical presentations were abdominal pain, abdominal distension, food intolerance and delay in passage of flatus/gas which occurred in all patients (Table 3). Abdominal discomfort was present in 42(70%) patients. Thirty-nine (65%) patients had fever, while 36 (60%) of the patients manifested with vomiting. Patients who had perforated appendix,

typhoid perforation, and peptic ulcer perforation (33) all had fever.

The abdomen was tympanitic to percussion in all the patients while 39 (65%) patients had no audible bowel sounds. There was delay in passage of stool and flatus in all the cases, while 23 (38.33%) patients were in hypovolaemic or septic shock. Diarrhoea was the least common presentation, occurring in just 6 patients (10%).

All the patients were placed on a nil per oral regime, parenteral antibiotics, intravenous fluids and analgesics. Nasogastric tube decompression was also commenced. Electrolyte deficits were corrected in 21(35%) patients.

The most common complication was hypokalaemia which occurred in 35.0% of patients (Table 4). Hyponatraemia was present in 15 patients (25%) while 15 patients (25%) had both hypokalaemia and hyponatraemia. Chest infection occurred in 21.7% of the cases while 4 (6.70%) patients developed wound break down. Four debilitated patients (6.7%) aspirated while vomiting and six (10%) died following prolonged postoperative ileus. Some patients had more than one complication.

Table 1: Age and sex distribution

Age range (years)	Number	Males	Females	Percentage (%)
0-10	1	1	0	1.67
11-20	2	1	1	3.33
21-30	3	2	1	5
31-40	6	4	2	10
41-50	9	6	3	15
51-60	12	8	4	20
61-70	17	11	6	28.33
>70	10	6	4	16.67
Total	60	39	21	100%

Table 2: Associated diagnoses in patients developing PPOI

Diagnosis	Number	Percentage (%)
Perforated appendix	17	28.33
Perforated peptic ulcer	10	16.67
Strangulated hernia	7	11.67
Perforated typhoid	6	10.00
Intestinal obstruction-volvulus, bands, adhesions.	5	8.33
Stab injury to abdomen	5	8.33
Intra-abdominal abscess (Pelvic Inflammatory disease)	4	6.67
Gunshot injury to the abdomen	3	5.00
Blunt injury to abdomen (Road traffic accident, Fall from height.)	2	3.33
Advanced colon cancer.	1	1.67
Total	60	100%

Table 3: History/Clinical features of prolonged post-operative ileus

History/Clinical features	Number	Percentage (%)
Abdominal pain	60	100
Abdominal distension	60	100
Anorexia	60	100
Delayed passage of flatus	60	100
Food intolerance	60	100
Tympanitic percussion notes	60	100
Abdominal discomfort	42	70
Constipation	41	68.33
Nausea	40	66.67
Absent bowel sounds	39	65
Fever	39	65

Vomiting	36	60
Shock	23	38.33
Diarrhoea	6	10

Table 4: Complications associated with prolonged post-operative ileus

Complications	Number	Percentage
Hypokalaemia	21	35.0
Hyponatraemia	15	25.0
Hypokalaemia and Hyponatraemia	15	25.0
Wound sepsis	14	23.3
Chest infection	13	21.7
Anastomotic leak.	6	10.0
Malnutrition	6	10.0
Aspiration	4	6.70
Abdominal wound dehiscence	4	6.70
Deep vein thrombosis	1	1.70
Death	6	10.0

DISCUSSION

Post-operative ileus is a temporary impairment of gastrointestinal motility occurring in the absence of any mechanical bowel obstruction and is believed by some workers to be a normal obligatory gastrointestinal reaction occurring after major abdominal surgery that usually resolves without serious consequences. Prolonged post-operative ileus on the other hand, is a major cause of morbidity and mortality in clinical practice and is the most common cause of delayed discharge following abdominal operations, with great economic impact and severe health consequences for the patient. Despite its prevalence, there is no universally accepted clinical definition for prolonged postoperative ileus. This has made it difficult to estimate the actual incidence of

the disease. The incidence of PPOI in our study was 22% of all operated cases within the period under review. This was well within the range documented by Somer and other workers.²

Metabolic and electrolyte disturbances as well as infective and inflammatory diseases have been implicated in PPOI. Lee et al have posited that clinical conditions such as peritonitis, retroperitoneal inflammation, hormonal and electrolyte imbalance, drugs as well as intestinal ischaemia play a major role.^{3,5,6} They demonstrated clinically that correction of hypokalaemia, hyponatraemia and hypomagnesaemia resulted in resumption of normal gut function.^{3,5,6} In our study, we noted that conditions like perforated appendix, perforated peptic ulcer, perforated typhoid and other diseases leading to peritonitis were the commonest cause of PPOI in our environment. Hypokalaemia and hyponatraemia were also identified as major causes. This tallies with the work of the above named workers.

Multimodal rehabilitation protocols are part of the enhanced recovery after surgery (ERAS) regime. They are divided into pre-operative, intra-operative and postoperative phases and include nasogastric intubation, continuous epidural analgesia, early parenteral nutrition, ambulation, correction of electrolyte imbalance, cisapride and laxative treatment with magnesium.^{1,7}

Several workers have discussed the use of new pharmacological agents like prucalopride and dexmedetomidine in successful management of PPOI.^{8,9} Other treatment modalities which have been suggested in prevention and management of PPOI include opioid sparing analgesia with placement of epidural catheters, transverse abdominis plane block, μ -opioid-receptor antagonists (alvimopan) and goal directed fluid therapy.^{8,9} Srinivasan et al have reported the development of an ingestible self-propelling device for intestinal reanimation (INSPIRE) which can restore peristalsis through luminal electrical stimulation.¹⁰

Several workers have advocated and reported a role for chewing gum and coffee in the prevention and management of PPOI.¹¹⁻¹⁸ Gum chewing is a type of sham feeding which triggers the cephalic-vagal reflex thus stimulating motility in the gastrointestinal tract.^{1, 14 - 18}

Kane et al showed that coffee consumption enhanced gastrointestinal recovery by almost 93%.¹⁶ While the precise mechanism is unknown it is thought that coffee stimulates intestinal motility while inhibiting abdominal distension, discomfort and pain. It also stimulates production of gastrin.¹⁷ The use of probiotic strains of *Lactobacillus rhamnosus*, *Bifidobacterium bifidum*, *Streptococcus thermophilus*, and *Bifidobacterium breve* have been found to reduce the incidence of PPOI by 87.5%.¹⁹ Daikenchuto, a traditional Japanese preparation containing dried ginger, ginseng and xanthoxylum fruit has been found to have a profoundly beneficial effect on intestinal motility by stimulating receptors in the enterochromaffin cells. It caused a 45% reduction in severe postoperative ileus.²⁰

For many years, nasogastric drainage and intubation has been the main stay of treatment of patients with PPOI. Recent studies by Luckey et al. and Bragg et al. have questioned the routine use of nasogastric tube aspiration in patients with PPOI. They stated that nasogastric tube decompression does not shorten time to bowel movement or decrease the time to adequate oral intake. They also postulated that inappropriate use of nasogastric tubes may contribute to postoperative complications such as fever, pneumonia and atelectasis.^{11, 12} Although these assertions are plausible and complications may occur following the use of nasogastric tube aspiration, their observations were not supported by our study. Most of the patients in our study had nasogastric intubation and decompression with good clinical outcome. Gastric intubation and drainage in our opinion is essential in managing patients with postoperative ileus as has been

documented by other authors.¹⁸ In our study, we observed that patients who had PPOI stayed in hospital 9 days longer on average than those who did not. The mortality rate of patients with PPOI in our study was 10%. The affected patients usually had multiple comorbidities.

The major limitations noted were the retrospective nature of the study, inadequate documentation, the lack of standardized definition of prolonged postoperative ileus and relatively small patient population. Larger prospective studies are planned.

CONCLUSION

Prolonged postoperative ileus is a significant cause of morbidity, mortality and increased hospital costs. Early recognition and appropriate management is crucial in treatment of this condition. More research is needed in this environment to improve patient outcomes.

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Conflict of Interest

None declared.

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