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A Comparative Analysis Of Intra-Operative Findings In Cases Of Intestinal Obstruction To Radiological Findings

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ABSTRACT

A common, serious, and regularly occurring small bowel surgical emergency is intestinal blockage. This is the most frequent in the emergency services, excluding unintentional trauma. Distinct nations experience obstructions with different aetiologies and patterns. In the early half of this century, blocked hernias were most frequently the cause of intestinal blockage in Western nations. Currently, intraperitoneal adhesions are the most common reason. But in developing nations like ours, blocked hernias continue to rank first on the list of factors contributing to this surgical condition. The surgeons' challenge in treating this illness is that he must first determine that the diagnosis is intestinal blockage. Second, the timing of the surgery, taking into account the potential for intestinal ischemia (strangulation), which requires prompt investigation, reemphasized the need for an early surgical intervention due to the difficulty. Clinical strangulation was identified, along with greater morbidity and fatality rates in patients who had had prolonged conservative therapy. During this time, research into the potential for strangulation continued to be done utilising various clinical tools. To further assess this issue, the current observational study was conducted.

INTRODUCTION

Most frequently, patients complain of constipation, distention, and abdominal pain. Additionally, some patients could develop hypovolemia or have septic shock. Depending on how severe the obstruction is, mortality ranges from 3 to 30%.

Intestinal blockage occurs in patients who have had prior procedures in about 63% of instances. To rule out intestinal obstruction, which reveals numerous air fluid levels, an X-ray of the erect abdomen is taken. Ultrasound has a high sensitivity for high grade obstruction, with a sensitivity of about 87%, and is the initial examination in patients with stomach pain and distension. If a definitive diagnosis cannot be made based on a clinical examination and radiography, a CT abdo + pelvis is performed for additional analysis. High grade intestinal blockage can be found with CT, which also helps determine the cause and severity of the obstruction.

Gas and fluid buildup in the intestinal lumen causes the loop closest to the obstruction to widen. Even when there is complete bowel obstruction, some people still feel colicky discomfort and diarrhoea as a result of increased intestinal activity to remove the obstruction. The majority of the gas that builds up comes from air that has been swallowed, however some is also made in the intestine. Swallowed drinks and gastrointestinal fluid make up the

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fluid. With fewer contractions, intestinal motility gradually decreases. The normally sterile luminal flora of the small bowel changes when there is obstruction, and several organisms have been cultured from the contents. Although the relevance of this process is unclear, it has been shown that these germs can move to nearby lymph nodes. If the intramural pressure rises enough, intestinal ischemia and, eventually, necrosis result from compromised intestinal microvascular perfusion. Strangulated intestinal obstruction is the name given to this ailment. Only a piece of the intestinal lumen is blocked with partial small bowel obstruction, enabling some gas and fluid to pass through. When there is only partial obstruction of the small bowel, the previously stated pathophysiologic events unfold more slowly, and strangulation is less likely to occur. Closed loop obstruction, in which a portion of the intestine is clogged both proximally and distally, is a particularly serious type of intestinal obstruction (e.g., with volvulus). In these situations, the accumulated gas and fluid from the obstructed segment cannot exit either proximally or distally, causing a rapid rise in luminal pressure and a quick progression to strangulation.

Constipation, nausea, vomiting, and colicky abdominal pain are all signs of a small bowel obstruction. In contrast to distal blockages, proximal obstructions are more likely to cause vomiting. Vomitus characteristics are crucial because when there is bacterial overgrowth, the vomitus is more feculent, indicating a more firmly established blockage. More than 6 to 12 hours after the onset of symptoms, flatus and/or stools still passing indicates partial obstruction as opposed to total obstruction.

OBJECTIVES:

- To compare the intra-operative findings in cases of intestinal obstruction to radiological findings and correlate the percentage of cases where the finding matched and where the findings did not match
- To help with management of occult cases, in which the intraoperative findings and radiological findings did not correlate
- To find occult causes for obstruction, such as hidden malignancies, ischemic pathology for intestinal obstruction
- To assess the cause of obstruction using USG, CT and correlate with intra operative findings

Review of Literatrure

Fixation of the gut

By means of a mesentery, the small and large bowels are suspended from the back abdominal wall. By joining their mesenteries with the posterior abdominal wall, the duodenum, ascending colon, descending colon, and rectum come to lay in the retroperitoneum following the complete rotation of the gut.

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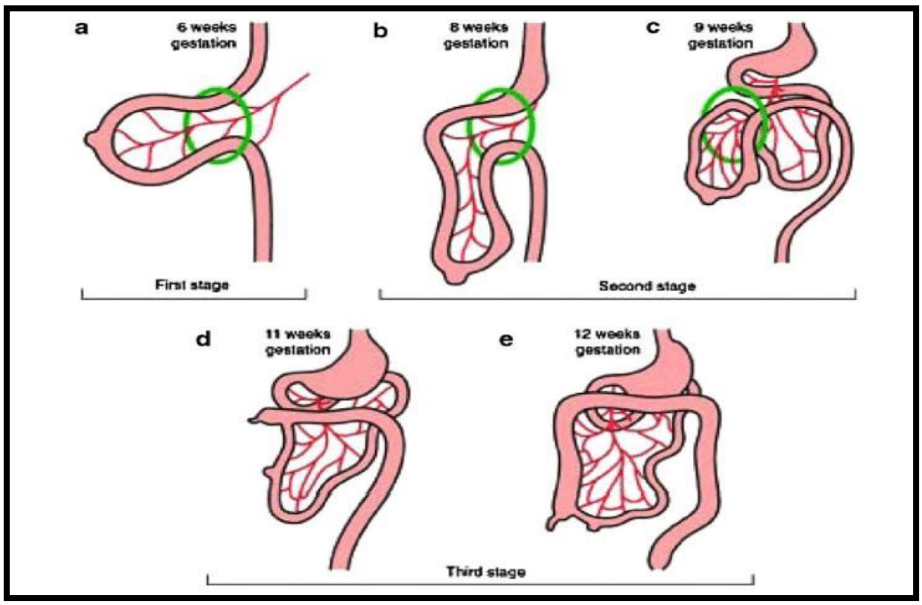

Fig.1 Embryology of the gut

STAGES OF INTESTINAL ROTATION

There are three errors in the stages of rotation.

1. Non-rotation
2. Reversed rotation
3. Malrotation

Accessory bands of peritoneum

Can cause (i) Intestinal obstruction (ii) Kinking (iii) Angulation of bowel. Failure of part of the original membrane to disappear or minor alterations in the development of secondary mesentery may result in accessory peritoneal bands.
These are:

- **Lane's ileal band**: This is a thickened peritoneal band extending from the right iliac fossa to the 5 cm of ileum which on continuous contraction causes kinking of the small bowel and resulting in obstruction.
- **Mesosigmoid membrane** (Lane's first and last band): This is formed by the thickening of peritoneum which extends from the pelvic brim of the left iliac region to the junction of descending and sigmoid colon.
- **Genitomesenteric fold of Douglas**: causes kinking of the appendix causing obstructive appendicitis as it extends from the back of the terminal mesentery to the region of the suspensory ligament of ovary or testis. Properties of succus entericus

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Volume – 180 ml/day
Reaction – Alkaline
pH – 8.3

Functions of Succus Entericus

1. Digestive function – The enzymes of succus entericus act on the partially digested food and convert them into the final digestive products.
2. Protective function – The mucus present in the succus entericus helps in protecting the intestinal wall from the acid chime, which enters into the intestine from stomach paneth cells secrete defensins which are the antimicrobial peptides.
3. Activator function – The enzyme enterokinase present in intestinal juice activates trypsinogen into trypsin.
4. Haemopoietic function – Intrinsic factor of castle present in the intestine plays important role in erythropoiesis.
5. Hydrolytic process – Intestinal juice helps in all the enzymatic reactions of digestion.

Functions of small intestine

1. Mechanical function
2. Secretory function
3. Hormonal function
4. Digestive function
5. Activator function
6. Hemopoietic function
7. Hydrolytic function
8. Absorptive

function **Large Intestine**
Secretions:
Large intestine juice

- Water 99.5%
- Solids 0.5%

Organic substances

1. Albumin
2. Globulin

Functions of large intestine:

1. Absorptive function – absorption of various substances such as water, electrolytes, organic substances like glucose, alcohol, drugs like anaesthetic agents, sedatives and steroids.
2. Excretory function .
3. Secretory function .
4. Synthetic function – synthesis of folic acid, vitamin B12 and

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vitamin Movements of large intestine :

- Segmental contractions
- Mass peristaltic movements.

Small intestine

Movements of small intestine :

The movements of small intestine is essential for the mixing of chime with digestive juices, propulsion of food and for its absorption.

Four stages of movements take place in the small intestine.

1. Mixing movements
   a. Segmentation movements
   b. Pendular movements
2. 2. Propulsive movements

a. Peristaltic movements
   b. Peristaltic rush
3. Peristalsis in fasting – Migrating motor complex
4. Movements of the villi

Intestinal bacteria

The bacteria in the gastrointestinal tract can be divided into three types.

1. Some are pathogens that cause disease.
2. Others are symbionts that benefit the host and vice versa, and most of them are commensals.

PATHOPHYSIOLOGY OF BOWEL OBSTRUCTION

Early detection, skilled care, and an understanding of the value of treating the pathological consequences of the obstruction as well as its genesis are key components in the management of acute intestinal obstruction. If diagnosed early, the prognosis will be excellent following obstruction relief; nevertheless, in late cases, where there will be vascular compromise due to obstruction, obstruction relief is insufficient and several further surgical procedures, such as resection and anastamosis, are required.

Increased transmural pressure on capillary blood flow within the gut wall results from progressive lumen distension and a corresponding rise in intraluminal pressure. This happens seldom in simple (non-closed loop) obstructions because the inflated, obstructed gut can decompress proximally. The peristaltic and secretory anomalies are intensified in severe intestinal distention, which also increases the risk of dehydration and the progression to strangulating blockage. Nearly 25% of patients with small intestinal blockages get strangulation, which is an obstruction with a compromised blood supply. It frequently coexists with intussusception, volvulus, and blocked hernia. In as little as 6

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hours, a strangulating blockage can develop into a bowel infarction and gangrene. In most cases, venous obstruction comes first, then arterial occlusion, causing a fast ischemia of the gut wall. Gangrene and perforation result from the ischemic bowel becoming edematous and infarcted. It occurs more frequently in the ascending colon and caecum, where the luminal diameter is largest and, according to Laplace's law, the wall tension (and ischemia) is likewise greatest. Therefore, compared to mild bowel obstruction, massive bowel obstruction is a surgical emergency. Along with fluid loss, strangulation can also result in blood loss into the infarcted intestine, which can exacerbate the already weakened blood flow to the intestinal wall and cause further hemodynamic instability.

CLINICAL FINDINGS IN SMALL BOWEL OBSTRUCTION

Features	Proximal/High obstruction	distal/low obstruction
Onset of symptoms	sudden	gradual
Pain	Epigastric,intense,colicky usually relieved by vomiting	Periumbilical, colicky
Vomiting	Early, bilious, voluminous, frequent	Later, infrequent feculent
Tenderness	Epigastric / periumbilical mild unless strangulated	Diffuse and progressive
Distension	Absent	Diffuse and progressive
Obstipation	Absent or mild	Mild to moderate
Radiological findings	iDstended proximal small bowel loops or gasless	Diffusely distended small bowel loops, air fluid levels

LABORATORY INVESTIGATIONS

i) Haematological tests A complete blood count, packed cell volume, serum electrolyte determination and blood urea level estimation should be done. Leucocytosis is suggestive of strangulation, extremely high counts are mainly suggestive of mesenteric thrombosis.

ii) Urine examination Specific gravity of the urine will give a rough idea of the degree of dehydration in case of intestinal obstruction.

iii) Diagnostic aspiration It is very important in the distinction between simple and strangulated obstruction. Aspiration of peritoneal cavity with a fine needle and withdrawal of blood stained fluid is diagnostic of strangulation.

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X-ray diagnosis

The finding in erect abdominal X-ray for small intestinal obstruction is the triad of dilated small bowel loops (>3 cm in diameter), air fluid levels on upright films and paucity of air in the colon.

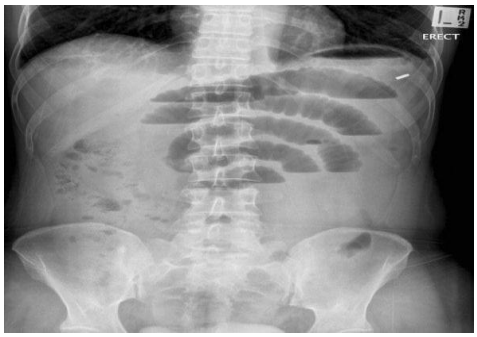

Fig.5 Multiple Air-Fluid Levels

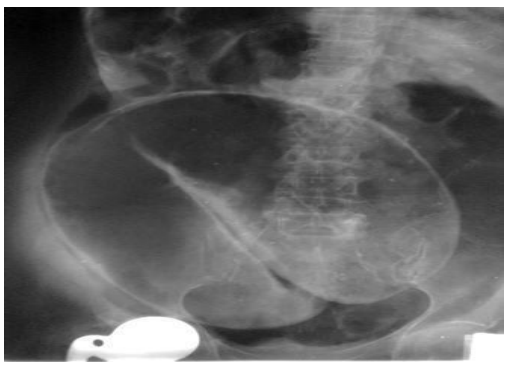

Fig.6 Coffee Bean Appearance

Gas: Each structure exhibits notable radiological pictures when the jejunum, ileum, or colon are swollen with gas. Valvulae conniventes, which regularly move from the anti-mesenteric to the mesenteric border, are what give jejunum its distinctive appearance. Wangensteen referred to ileum radiography as being "characterless." The large intestine exhibits haustral markings that, in contrast to the valvulae conniventes, are irregularly spaced, do not entirely traverse the circle of the bowel, and are positioned in the periphery.

Fluid levels: In adults, two fluctuating fluid levels—one at the duodenal cap and the other in the terminal ileum—are considered physiological. Fluid levels, which often develop after gas shadows in blockage, are inversely correlated with the severity and location of the obstruction in the small intestine.

Lower small bowel obstruction causes various fluid levels to be visible across the belly, while upper small intestinal obstruction causes few fluid levels in the left upper

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quadrant. Schorr demonstrated in 1963 that the presence of gas within the gut wall is a highly significant indicator of intestinal necrosis.

The "Bent inner tube sign" is a symptom of sigmoid colon volvulus, which is characterised by a severely enlarged sigmoid loop that fills the entire belly up to the diaphragm. The "coffee bean" sign is a pathognomonic marker of caecal volvulus, as noted by Millin and Righler.

Barium enema:

In contrast to sigmoid volvulus, where the barium column terminates at the level of the distal sigmoid in a distinctive Twisted Bird's Beak deformity, intussusception is characterised by the presence of a barium "claw" encircling a negative shadow of the intussusception.

Computerized tomography (CT)

CT demonstrates the cause of intestinal obstruction.

The location, severity, and source of a blockage can all be determined with computer tomography, and it can also show warning indicators of threatening intestinal viability. The value of a CT scan is greatest when there are systemic symptoms of myocardial infarction and an accompanied palpable abdominal mass. In these situations, a CT scan may support the presumed diagnosis or point to further obstruction-mimicking conditions, such appendicitis or diverticulitis. Target sign, pneumatosis intestinalis, and mesentery haemorrhage are signs of strangulated obstruction.

TREATMENT OF ACUTE INTESTINAL OBSTRUCTION

In most cases of intestinal obstruction, an immediate intervention is required. Even though it can be challenging to distinguish between a simple and strangulated blockage, the patient's condition is evaluated by collecting a thorough medical history and doing a clinical examination. Investigations are conducted to determine the level of obstruction and to determine whether the obstruction is mechanical or adynamic.

According to the assessment described above, which calls for both supportive management and surgical management, the course of treatment must be planned. In order to control impediment, there are four key steps.

Conservative management

Cases with a partial intestinal obstruction can be treated conservatively with resuscitation and tube decompression alone. Regression of the symptoms and discharge without the need of surgery have been reported in 60-85% of patients with a partial obstruction.16 Simple obstruction caused by post-operative early adhesions or kinking may resolve spontaneously with the institution of conservative management and it is indicated in following situations.

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- Post-operative early adhesions
- Paralytic ileus of non-paralytic origin
- Inflammatory condition which cause obstruction
- Obstruction because of worm impaction

The initial conservative management is used in the above said conditions. This facilitates spontaneous relief of obstruction and avoids more adhesion formation due to surgery. The decision to operate depends largely on the underlying cause, clinician involved and general status of the patient. The conservative management includes.

- GI decompression
- Fluid and electrolyte therapy.
- Antibiotics.

Surgical Management

With regard to the timing of the operation, all patients should be operated on promptly after volume resuscitation if there is any evidence or suspicion that bowel is ischaemic.17 Early surgery indicated in

(1) obstructed and strangulated hernia,
(2) internal intestinal strangulated obstruction
(3) acute obstruction,

The classical clinical saying that the sun should not set and rise in a case of unrelieved intestinal obstruction is sound and it should be followed.

Laparotomy

In patients with small intestinal obstruction, who have not had any previous abdominal surgery or in those with clinical evidence of ischaemia, a laparotomy is essential.

When the cause of intestinal obstruction lies within the abdomen and but its site is doubtful, right paramedian incision is advised, if left sided large bowel obstruction is defined left mid or lower paramedian incision may be preferred, abdominal cavity is inspected which reveals the underlying pathology. Haemorrhagic fluid suggests strangulation; clear straw-coloured fluid denotes simple obstruction. The operative assessment is directed at:

- Site of obstruction
- Viability of the bowel
- The nature of obstruction

The type of surgical procedure required will depend on the nature of the cause, following relief of obstruction the viability of the involved segment of bowel should be carefully assessed. In case of a viable bowel, peritoneum will be shiny, mesentery bleeds on prick whereas with a nonviable bowel, peritoneum is lusterless, mesentry does not bleed on prick.

Management

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Consists of either conservative or surgical measures. Surgery is mandatory, if gangrene is expected, resection and anastomosis has to be carried out.
Conservative treatment

Sigmoidoscopy should be done, if the obstruction has reached a soft rectal tube is attempted to be put into the twisted gut. This will immediately cause deflation of the gut and surgery can be delayed until the patient becomes fit for surgery.
a. Oral medication.

b. Enema
Surgical treatment
In patients with sigmoid volvulus, who do not have features of peritonitis on presentation, recurrence preventing surgery can be performed with minimal mortality rates. After laparotomy through a midline or left paramedian incision, the loop may be untwisted and deflation of the distended loop can be done through a single stab incision under cover of a purse string suture. The gangrenous bowel must be resected and following procedure can be done.

a. Primary anastamosis after resection of the gangrenous segment with proximal covering colostomy.
b. A Paul Mickulicz type of double barrel colostomy.
c. Hartmann's procedure: Proximal end colostomy with closure of the end of the distal colon or rectum is done in two layers and is dropped into the abdominal cavity. Late anastamosis can be done after one month.

Resective procedure

a. Resection combined with Paul Mickulicz procedure or Hartmann's procedure followed by delayed anastamosis.
b. Resection and primary anastamosis: The redundant loop of the sigmoid colon can be resected and primary anastamosis can be done.

The mortality of patients with sigmoid volvulus who are treated surgically is closely related to the disease stage, appropriate surgical timing, the patient functional status and his collaboration with the clinicians is essential in order to define a correct diagnosis and the treatment.

Non-resective procedures

a. Mesocolopexy: Plication of sigmoid colon can be done by various methods, which make the long mesocolon into a more broad based and shorter length, which avoids the torsion of the sigmoid colon on the mesentery Hall and Cragg's type, Prasad and Tiwari type have been advocated.

b. Sigmoidopexy: Involves fixation of the sigmoid loop to the posterior wall of the abdomen or to the parietal peritoneum or to transverse colon. The principle behind fixing the loop of sigmoid colon to various places is to curtail its free movements, which will avoid its twisting.

c. Extraperitonealization of the sigmoid colon: The sigmoid loop is placed in the space between the lower abdominal peritoneum and the abdominal musculature which may

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prevent or avoid rotation movements of the alimentary tract.

SIMPLE VERSUS STRANGULATING OBSTRUCTION

The second most typical reason for intestinal blockage is a blocked external hernia. The majority of patients with small intestinal obstruction fall into the simple obstruction category, which involves mechanical obstruction of luminal contents flow without compromising viability of the intestine wall. Contrarily, strangulating obstruction, which affects blood flow, affects about 25% of individuals with minor intestinal obstruction. Numerous serum assays have been evaluated without providing any actual benefit, including lactate dehydrogenase, amylase, alkaline phosphatase, and ammonia levels. Measuring serum, intestinal fatty acid-binding protein, or creatine phosphokinase isoenzyme (particularly the BB isoenzyme) has been reported in early reports to be somewhat successful in differentiating strangulation; however, these are only investigational and cannot be widely applied to patients with obstruction. The use of a super-conducting quantum interference device (SQUID) magnetometer to non-invasively detect mesenteric ischemia is detailed in the last section. Changes in the small bowel's fundamental electrical rhythm are related to intestinal ischemia. It is crucial to keep in mind that no clinical measure, combination of criteria, or current laboratory and radiographic exams can effectively identify or rule out intestinal ischemia and strangulation in all cases prior to surgery.

Treatment

Fluid Resuscitation and Antibiotics.

Tube Decompression

Nasogastric suctioning, in addition to intravenous fluid therapy, is a crucial addition to the supportive care for patients with intestinal obstruction. Utilizing a Levin's tube to do nasogastric suctioning causes the stomach to empty, lowering the risk of pulmonary vomit aspiration and further limiting intestinal distention from air that was swallowed prior to surgery. Long intestinal tubes, such Baker or Cantor tubes, may be employed. Resuscitation and tube decompression alone can be used to treat patients with a partial intestinal obstruction conservatively. The degree of obstruction can be determined with the help of enteroclysis; higher-grade partial obstructions require earlier surgical intervention. Although most patients with partial small bowel obstruction must first try non-operative management, it should be emphasised that if the patient's condition worsens or if the abdominal x-rays show increasing small bowel distention while the tube is being decompressed, prompt surgical intervention is required.

Operative Management:

Surgery is necessary for the patient who has a full obstruction of the small intestine. Some surgeons think that prolonged intubation is safer in these patients given that no fever, tachycardia, discomfort, or leucocytosis is noticed, and have suggested a non-operative approach to the chosen individuals with complete small intestinal obstruction. But it's important to understand that nonoperative management of these individuals has a calculated risk of failing to detect an underlying strangling blockage

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and postponing the treatment of intestinal strangulation until the damage has become permanent. The Liquefaction of the adhesions can be used to treat patients who have intestinal blockage related to an adhesive band. To decrease serosal trauma, prevent superfluous dissection, and unintentional enterotomies, the gut must be handled with extreme caution. The surgical approach and early dissection are similar to those used in elective hernia repair. The hernia may be a spontaneous groyne, epigastric, or para-umbilical hernia or it may be an incisional or para-stomal hernia. 32 The herniated intestinal segment can be manually reduced and the defect can be closed to cure hernias in incarcerated individuals. The best option to a lengthy, difficult procedure that can need intestinal resection for patients who have an obstruction and a history of malignancies is to perform a straightforward bypass of the obstructing lesion. If the obstruction is acute, it will frequently go away with conservative treatment if it is linked to Crohn's disease. An intestinal resection or stricturoplasty may be required if the obstruction is due to a chronic fibrotic stricture. It can occasionally be challenging to determine intestinal vitality following the release of a ligature at the time of operational exploration. The bowel segment should be completely released, placed in a warm, saline-soaked sponge for 15 to 20 minutes, and then re-examined if the viability of the intestine is in doubt. It is safe to keep the intestine if the usual colour has returned and peristalsis is visible.

The clinical judgement may be supplemented by fluorescein in challenging borderline individuals. The so-called second look laparotomy is an alternative method for determining the viability of the intestines within 18 to 24 hours.

TUBERCULOSIS OF INTESTINE

Intestinal obstruction is one of the most common complication in the small bowel, Affecting around 60% of the patients with tuberculous enteritis. Common sites are ileum, proximal colon and peritoneum. Approximately, 75% of patients with tuberculous enteritis have involvement of the distal small intestine and ileocaecal region.33 Intestinal obstruction is the most common complication in the small intestine, affecting 60% of the patients with tuberculous enteritis.

There are two principal types:

1. Hyperplastic tuberculosis

2. Ulcerative tuberculosis

GALL STONE ILEUS

Approximately 1% to 2% of intestinal blockage instances are due to gall stones. A older age group is typically affected. Gallstones need to be larger than 2.5 cm and enter the intestinal tract through an ulceration process in order to clog the passageway. Duodenum, jejunum, and colon are all where the stone goes. At the distal ileum or in other places where there is narrowing, obstruction is the cause. In addition to the visible symptoms of acute intestinal obstruction in scout film, the presence of air in the biliary tract can help make the diagnosis. Depending on how much the stone is affecting the patient, management may involve resection or enterotomy for stone removal.

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NEOPLASMS

The more frequent reason for blockage is extrinsic tumour involvement from secondary spread. A loop of intestine becomes imprisoned within the cancerous tumours, resulting in intestinal blockage from metastatic illness. The most frequent causes of this kind of obstruction are cancers of the ovaries, colon, stomach, and pancreas. Small intestinal primary tumours can restrict the intestinal lumen or serve as a nidus for intussusception, which can both result in intestinal obstruction. Malignant tumours such adenocarcinoma, lymphomas, and carcinoids can seldom cause blockage; hence, extensive resection and end-to-end anastomosis is the preferred course of treatment, even though benign tumours can predispose circumstances for intussusception. Foreign objects and bugs It is common to observe luminal blockage caused by foreign body intake in youngsters and people with psychosis. Bezoars could migrate and clog the small intestine. Bezoar, which develops from an intestinal diverticulum, can cause small intestinal blockage. Bezoar or foreign bodies typically impinge when the bowel has been constricted by prior surgery. The foreign body, or bezoar, is treated by having an enterotomy to remove it.

LARGE BOWEL OBSTRUCTION

In the United States, colorectal cancer is the most frequent cause of large bowel blockage, whereas colonic volvulus is the most typical cause in Russia, Eastern Europe, and Africa. Foreign objects, inspissated barium, and faecal impaction are some of the intraluminal causes of colorectal blockage. Intramural causes include ischemia, radiation, intussusception, Hirschsprung's disease (aganglionosis), inflammation (diverticulitis, Crohn's disease, lymphogranuloma venereum, tuberculosis, and schistosomiasis), and any anastamotic stricture. Adhesions, which are frequently responsible for small bowel obstruction but infrequently result in colonic obstruction, hernias, malignancies in the nearby organs, abscesses, and volvulus are examples of extraluminal causes.

Etiology

In affluent nations, large-bowel blockage is most frequently caused by colon cancer. The extraperitoneal rectum is the location of obstruction that is least likely to occur, with the left colon being the most likely. When the constricted colonic lumen is blocked by a faecal bolus, the symptoms of partial bowel obstruction escalate to those of total obstruction. Since the right colon has semisolid contents and a broader lumen than the left, obstruction develops later in this segment and may manifest acutely, especially if the ileo-caecal valve is functioning properly. A perforation significantly increases the danger of the operation.

Signs and symptoms

The aetiology and location of the intestinal obstruction have a significant impact on the signs and symptoms of a major bowel obstruction. Compared to cancers that develop in the larger proximal large intestine, cancers that develop in the rectum or left colon are more likely to block. Regardless of the reason for the block, the clinical signs and symptoms of a major intestinal obstruction include flatus, inability to pass faeces, and

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rising abdominal distention and pain. Only 4% of colon tumours appear with intestinal perforation, and timing and choice of the right surgical techniques are equally crucial. Colonic obstruction is frequently linked to potentially dangerous consequences including perforation. The onset of symptoms might be gradual and progressive or fulminant. Adults who are elderly are typically impacted. The sigmoid colon is the typical location for this condition since it has solid walls, is not highly extensible, and is rather small.

Management

Complete acute big intestine obstruction in all cases requires rapid surgical surgery; non-operative therapy should not be tried first.

In order to lessen the amount of air and gastric contents pushed into the colon in individuals with large intestinal obstruction, naso-gastric decompression is crucial. Nasogastric decompression will assist in reducing perforation risk, preventing further proximal intestine dilatation, and relieving intraluminal pressure. It is necessary to deliver both skin- and colon-specific antibiotics. The optimum way to undertake exploration in individuals with significant intestinal blockages is through a lower midline incision. If access to the anus is anticipated, patients with substantial intestinal blockages should be placed in the lithotomy or modified lithotomy postures. Right hemicolectomy should be used to remove any obstructing lesions of the caecum and ascending colon, usually with a primary anastamosis. A primary anastamosis and an extended right hemicolectomy could both be used to treat transverse colon lesions. In most cases, proximal diversion with an end ileostomy is not required; however, proximal diversion can be taken into consideration if intestinal viability is a problem, the patient is unstable, or there is significant peritoneal contamination or peritonitis.

ADYNAMIC OBSTRUCTION

Adynamic obstruction, in which peristalsis may be absent as in paralytic ileus or it may be present in a non propulsive form as in mesenteric vascular obstruction or pseudo-obstruction.

Causes of Ileus

- Idiopathic
- After laparotomy
- Metabolic and electrolyte abnormalities (e.g., hypokalemia, hyponatremia, hypomagnesemia, uremia, diabetic coma)
- Drugs (e.g., opiates, psychotropic agents, anti-cholinergic agents)
- Intra-abdominal inflammation
- Retro-peritoneal hemorrhage or inflammation
- Bowel ischemia
- Burns
- Strokes

Patients frequently exhibit symptoms that resemble those of those who have a mechanical small intestinal obstruction. The most common and noticeable finding is abdominal distension, which is typically absent of colicky stomach pain. Vomiting and nausea can happen but they can also not. It may be possible to distinguish between cases

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of an ileus and those with a mechanical small intestine obstruction since patients with an ileus can still pass flatus and diarrhoea.

To differentiate between an ileus and a minor intestinal obstruction, radiologic investigations may be helpful. Large intestinal loops and swollen small bowel can both be seen on plain abdominal radiographs. Parenteral fluids and nasogastric decompression are the only therapies used to treat ileus. the best treatment to address the underlying problem.

Mesenteric Vascular Occlusion

Superior mesenteric arteries have been linked to arterial embolism more frequently than spontaneous thrombosis. Atrial fibrillation, a mural myocardial infarct, an atheromatous plaque or aneurysm, vegetation of the mitral valve, and pulmonary vein thrombosis are all potential origins of emboli. The intestines, its mesentery, or venous sources may be to blame for the ischaemia of the bowel. The mesentery and intestines may swell and oedematous, with a progressive separation between the healthy and infarcted colon. The peritoneal cavity and the infarcted intestine's lumen both discharge blood-stained fluid that becomes filled with blood. Acute mesenteric ischaemia is a very morbid condition with a death rate that is believed to be over 60%. The entire small bowel, caecum, and a portion of the ascending colon may become infarcted when the major branch of the superior mesenteric artery is blocked.

When a patient past middle age with a history of heart illness suddenly experiences acute abdominal discomfort that is not colicky in nature, mesenteric vascular occlusion must be suspected. He might faint out, and the patient might have bloody faeces.

Clinical features

i) Pain which may be central abdominal in nature.
ii) Delayed Gastrointestinal emptying with persistent vomiting.

Investigations

The only reliable diagnostic test is mesenteric angiography. It might be helpful to do a duplex ultra-sonogram to see how the blood flows through the SMA. A kinetic dilated bowel loop seen on real-time ultrasonography offers a high sensitivity of 90% and a specificity of 93% for the identification of strangulation, according to Ogata et al. 73% of predictions are accurate. 1 CT of the abdomen and pelvis shows localised or segmental thickening of the intestinal wall.

Treatment

The patient's prognosis for mesenteric ischaemia depends on prompt diagnosis and treatment, regardless of the underlying cause. In some cases, conservative treatment may be sufficient, but more frequently, laparotomies may be necessary and even life-saving. 40 It is recommended to try superior mesenteric artery embolectomy, thrombo-endarterectomy, or a bypass from the aorta, iliac, or splenic arteries to the more distal artery in the mesenteric vascular tree. The afflicted gangrenous intestine should be removed in advanced cases

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Material and Methods.

Details of research plan

- **Design of study:** This is a hospital based case study in patients attending OPD or admitted in the surgery ward of Krishna Institute of Medical Science, Karad
- Study Duration: 18 months December 2019 - June 2021

- Sampling size and technique: Study comprises of 50 patients selected with randomised sampling.

SOURCE OF DATA:

Patients admitted in Krishna hospital with the suspicion of intestinal obstruction

INCLUSION CRITERIA:

- Patients admitted in Krishna hospital with suspected intestinal obstruction
- Patients with radiological documentation

EXCLUSION CRITERIA :

- Patients not fit for surgery

- Patients not willing for surgery

SAMPLE SIZE :

N = 4pq/l2

Where, p = the proportion of patients whose radiological findings matched the intra-operative findings (91.84%) q = the proportion of patients whose CT findings did not match the intra-operative findings (08.16%)
l = allowable error (10)

According to data collected from above mentioned study, minimum sample size was found to be 30 with 95% Confidence Interval.
N=50

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Observations

STATISTICAL ANALYSIS:

Table no 1. Age and sex distribution

Age		
	Frequency	Percent
30 and below	6	12.0
31 - 50	10	20.0
51 - 70	27	54.0
Above 70	7	14.0
Total	50	100.0

	N	Minimum	Maximum	Mean	Std. Deviation
age	50	6	90	52.96	17.964

Sex		
	Frequency	Percent
F	23	46.0
M	27	54.0
Total	50	100.0

Table no 2. Co-moribidities

Co-morbidities		
	Frequency	Percent
Present	36	72.0
Absent	14	28.0
Total	50	100.0

	Absent		Present		Total	
	Count	%	Count	%	Count	%
DM	36	72.0%	14	28.0%	50	100.0%

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HTN	38	76.0%	12	24.0%	50	100.0%
Stroke	43	86.0%	7	14.0%	50	100.0%
bronchial asthma	49	98.0%	1	2.0%	50	100.0%
IHD	43	86.0%	7	14.0%	50	100.0%
tuberculosis	47	94.0%	3	6.0%	50	100.0%
renal failure	45	90.0%	5	10.0%	50	100.0%
alcoholic liver disease	48	96.0%	2	4.0%	50	100.0%

Table no 3. Intra-operative findings

	Frequency	Percent
Abdominal tb	1	2.0
Adhesion	16	32.0
Bowel ischemia	4	8.0
Colonic perforation	1	2.0
Hernia	10	20.0
Intussuception	3	6.0
Meckels diverticulum	2	4.0
Neoplasm	3	6.0
Patent urachal tract	1	2.0
Perforated appendix	2	4.0
Perforation	4	8.0
Stricture	1	2.0
Volvulus	2	4.0
Total	50	100.0

Table no 4. Correlation between operative and radiological findings

	Frequency	Percent
Correlated	42	84.0
Did not correlate	8	16.0
Total	50	100.0

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Table no 5. Distribution of cases

Diagnosis	Age				sex		Co-morbidities	
	30 and below	31 - 50	51 - 70	Above 70	F	M	Present	Absent
	Count	Count	Count	Count	Count	Count	Count	Count
Abdominal tb	0	1	0	0	1	0	0	1
Adhesion	2	4	8	2	5	11	12	4
Bowel ischemia	0	1	3	0	2	2	3	1
Colonic perforation	0	0	1	0	0	1	1	0
Hernia	0	0	6	4	7	3	7	3
Intussuception	0	0	3	0	2	1	3	0
Meckels diverticulum	1	0	1	0	1	1	2	0
Neoplasm	1	1	1	0	2	1	1	2
Patent urachal tract	1	0	0	0	0	1	0	1
Perforated appendix	0	1	1	0	0	2	2	0
Perforation	1	0	2	1	1	3	4	0
Stricture	0	1	0	0	0	1	1	0
Volvulus	0	1	1	0	2	0	0	2

Table no 6. Cases which correlated and did not correlate

Diagnosis	Intraoperative findings		
	Correlated	Did not correlate	Total
	Count	Count	Count
Abdominal tb	1	0	1
Adhesion	15	1	16
Bowel ischemia	2	2	4
Colonic perforation	0	1	1

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Hernia	10	0	10
Intussuception	2	1	3
Meckels diverticulum	1	1	2
Neoplasm	3	0	3
Patent urachal tract	0	1	1
Perforated appendix	1	1	2
Perforation	4	0	4
Stricture	1	0	1
Volvulus	2	0	2

Cases in which intra-operative and radiological findings did not corelate	
Bowel ischemia	**2**
Diverticulitis	**1**
Caecal Ca	**1**
Adhesions	**1**
Perforation	**1**
Urachal tract with umbilical cyst	**1**
Perforated appendix	**1**

Data Collection Procedure:

After receiving informed consent, patients are admitted. The trial will cover patients with suspected intestinal blockage. Patients who are not surgical candidates will not participate in the trial.

A specially created proforma will be used to capture a thorough history. Every patient will undergo a complete physical examination, which will include an abdominal and rectal examination.
For signs of any concurrent diseases, the cardiovascular, pulmonary, and central nervous systems are evaluated. For preoperative evaluation and anaesthesia readiness, pertinent tests such complete blood count, blood urea, blood sugar, urine RE, and X-ray chest will be carried out.

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Discussion of Findings

The intraoperative findings were reported and compared with the radiological findings in patients who presented to Krishna Hospital with intestinal obstruction and were operated on for it. The radiological findings and intraoperative findings correlated in 84% of the instances, however in 16% of the cases, they did not.

Out of the cases that did not correlate, 2 had ischemic bowel in the intraoperative finding, which radiology was unable to detect. In these cases, the ileum was resected and anastomosed at a distance of 20 cm from the IC junction in the first case, and the jejunum and ileum were resected and anastomosed at a distance of 40 cm in the second case, where the entire small bowel was gangre

In one instance, a transverse colon perforation resulted in pancreatitis with peri-pancreatic collecting, and a transverse loop colostomy was performed nearby the transverse colon perforation site.

One instance had an adhesive band that was reported to have a normal ultrasonography and was located between the ileum and the prior right paramedian incision.

One instance was a diverticulitis case that resulted in the terminal ileum twisting and ischemia; this case was described as dialated ileum with a transition point, with Koch abdomen, and an ileostomy was performed close to the diverticulum.

One instance was a caecal adenocarcinoma that was treated with a right hemicolectomy and described as intussusception. One of these cases involved an adhesive band between the jejunum and the anterior abdominal wall at the location of a previous appendicectomy scar and paramedian incision. This case was described as a normal study, and adhesiolysis was performed. One involved a ruptured appendix instance that required an appendectomy due to ileal blockage findings.

Adhesions and bands, neoplasms, ischemic bowel, intusucception, hernias, and volvulus were shown to be the most frequent causes of intestinal obstruction in the 84% of cases that did correlate. As a result, even while radiography is a crucial tool in the diagnosis of intestinal obstruction, clinical examination and findings should not be disregarded.

Hernias are the most frequent cause of blockage, followed by adhesion

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and bands, neoplasms, intusucception, and ischemic bowel, according to a 2011 study by Kadhim Jawad Obaid in which the pre- and post-operative notes in instances of intestinal obstruction were recorded.

In a different study published in the European Journal of Radiology, researchers compared the CT findings and intraoperative findings in cases of bowel ischemia and discovered that the mesenteric and bowel wall changes seen on the CT scan, as well as radiologists' assessments of the likelihood of ischemia and necrosis, are significantly correlated with the perioperative outcome of bowel wall ischemia and necrosis in patients with CL-SBO.

Predicting the conservative or surgical care in BO is challenging, according to a 2016 study by Ashwini Kumar Pujhari.

Summary and Conclusions

To sum up, it was discovered that 84% of the time in the 50 instances that were examined, the surgical findings and radiological findings agreed. Clinical evaluation is still crucial, despite the fact that radiographic tests have proven to be a useful tool in the diagnosis of intestinal obstruction. It was discovered that it was preferable to explore cases where the clinical assessment did not agree with the radiological report or when the radiological report was uncertain since early exploration was frequently required in these situations. It should be remembered that early investigation may be required in rare circumstances, such as bowel ischemia or a diverticulum producing gangrene, making it important not to just depend on the radiological assessment.

The intraoperative results and the radiological findings were associated in 84% of the instances, while in 20% of the cases, they were not. Ischemic bowel, intestinal perforation, occult mass in the ascending colon, and ischemic bowel were the most common occurrences out of the 16% of cases (8 cases) that did not correlate.

REFERENCES

1. Scott G Houghton, Antonio Ramos De la Medina, Michael G Sarr. Bowelobstruction. 11th ed. Chapter 17. In: Maingot's Abdominal operations, Michael JZinner, Stanley W Ashley, eds. New York: McGraw-Hill Medical; 2007. pp. 479-505.
2. Haridimos Markogiannakis, Evangelos Messaris, Dimitrios Dardamanis, NikolaosPararas, Dimitries Tzerzemelis, Panagiotis Giannopoulos, et al. Acute mechanical obstruction: Clinical presentation, aetiology, management and outcome. World J Gastroenterol 2007 Jan;13(3):432- 7.
3. Owen H. Wangensteen. Historical aspect .of the management of the acute intestinal obstruction. Surgery 1969;63:363-83.
4. Kloiber H. Die. Roentgen diagnose Des Ileus Ohne Koutrastmittel. Arch F Klin Chir 1919;112:513.
5. Akgun y. Mesosigmoidop1asty as a definitive operation in treatment of acute sigmoid volvulus. Dis Colon Rectum 1990;39:579-81.
6. Decker GAG, du Plessis DJ. The duodenum, jejunum and ileum. 12th ed.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,Issue 1, 2022

Chapter 4. In: Lee McGregor's Synopsis of Surgical Anatomy. Bombay: Wright Verghese; 1986. p. 30.

7. Richard L Drake, Wayne Vogl A, Adam WM Mitchell. Abdomen. 2nd ed. Chapter 4. In: Gray's Anatomy for students. Philadelphia: Churchill Livingstone Elsevier; 2010. p. 300.
8. William F Ganong. Regulation of gastrointestinal function. 19th ed. Chapter 26. In: Review of medical physiology. Philadelphia, USA: Appleton and Lance; 1999. p. 483.
9. Robert M Berne. Gastrointestinal regulation and motility. 5th ed. Chapter 31. In: Physiology, Robert M Berne, Mathew N Levy, Bruce M Koeppen, Bruce A Stanton, eds. Mosby Publication; 2008. p. 539.
10. Edwin A Deitch, William M Bridges, Jing Wen Ma, Li Ma, Rodney D Berg, Robert D Specian. Obstructed intestine as a reservoir for systemic infection. The American Journal of Surgery 1990 Apr;159(4):394-401.