

STUDY OF COMPUTED TOMOGRAPHY SCAN IN THE ASSESSMENT OF SUBACUTE INTESTINAL OBSTRUCTION

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Abstract

Background: Although a correct diagnosis is required, subacute obstruction is frequently treated conservatively. Examining computed tomography scan findings to assess subacute intestinal obstruction was the goal of the current investigation. **Materials and Methods:** The current investigation was a hospital-based, prospective, observational study in which patients > 18 years of age who were referred for a CT scan by the department of surgery on the suspicion of having a subacute intestinal obstruction received surgery. **Result:** In present study, 64 patients were studied. Majority were of 51-60 years age group (23.44 %), 31-40 years age group (20.31 %), male (57.81 %) outnumbered female (42.19 %). Clinically, common positive findings were tenderness (78.13 %), distension (64.06 %), guarding (29.69 %), rigidity (21.88 %) & rebound tenderness (17.19 %). 27 patients (42.19 %) had history of previous surgery. After surgery, final diagnosis of study patients were adhesions and bands (48.44 %), Strictures (17.19 %), Infectious/inflammatory pathology (14.06 %) & paralytic ileus (12.5 %). Among study patients, common CT findings were dilated bowel loops (84.38 %), free fluid (60.94 %), partial obstruction (56.25 %), transition point (32.81 %), complete obstruction (21.88 %), bowel thickenings (21.88 %), stricture (14.06 %) & ileo-caecal tuberculosis (7.81 %). **Conclusion:** A computerised tomography scan is a trustworthy diagnostic imaging method for evaluating individuals who have subacute intestinal obstruction. It is highly effective at differentiating between the various causes of subacute intestinal obstruction.

INTRODUCTION

One of the often-occurring clinical entities is intestinal blockage. When little or big intestinal contents are partially or completely blocked from moving forward, intestinal obstruction occurs.^[1]

A better understanding of the pathophysiology of bowel obstruction and the use of isotonic fluid resuscitation, intestinal tube decompression, and antibiotics have greatly reduced the mortality rate for patients with mechanical bowel obstruction.

In order to decrease the mortality rate and morbidity rate, an efficient and correct diagnosis should be given for these patients.^[2] This may be difficult because the clinical examination is difficult and because investigations like plain abdominal radiographs and USG exams frequently yield conflicting results.^[3]

Recently, the use of computed tomography (CT) abdomen in the diagnosis of bowel obstruction in patients with a suspected blockage has increased. CT is recommended for the evaluation, particularly when clinical and initial conventional radiographic findings remain indeterminate or strangulation is suspected.^[4,5] Subacute obstruction managed conservatively many times, but appropriate diagnosis is mandatory. The purpose of the current investigation was to examine computed tomography scan results in the evaluation of subacute intestinal blockage.

MATERIALS AND METHODS

Present study was hospital based, prospective, observational study, conducted in Department of Radio-diagnosis, Government Medical college, Suryapet, India. Study

duration was of 2 years (January 2020 to December 2021). Study approval was obtained from institutional ethical committee.

Inclusion Criteria

- Patients, > 18 years age, referred from department of surgery for CT scan, with suspicion of subacute intestinal obstruction, underwent surgery, willing to participate in present study.

Exclusion Criteria

- Patients who required urgent laparotomy, patients with X-ray findings suggestive of perforation,
- Pregnant woman,
- Seriously ill patients,
- Patient having allergic reaction to contrast.

Study was explained to patients in local language & written consent was taken for participation & study. Data was collected from the patients by their clinical history, examination and appropriate investigations. Documentation of patients, which included, identification, history, clinical findings, diagnostic test, operative procedure, intra-operative findings and complications during subsequent follow-up period, were all recorded.

Patients were subjected to contrast enhanced CT using both oral and intravenous contrast. Patients were given 750 ml of oral contrast and 30 ml of IV contrast and subjected to the scan. Oral contrast was omitted in patients having episodes of vomiting. Patients were managed either conservatively or surgically based upon the clinical observation over time. Those operative findings in the group who were surgically treated were correlated with CT findings. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

RESULTS

In present study, 64 patients were studied. Majority were of 51-60 years age group (23.44 %), 31-40 years age group (20.31 %), male (57.81 %) outnumbered female (42.19 %). Clinically, common positive findings were tenderness (78.13 %), distension (64.06 %), guarding (29.69 %), rigidity (21.88 %) & rebound tenderness (17.19 %). 27 patients (42.19 %) had history of previous surgery.

Table 1: General characteristics

Characteristics	No of patients	Percentage (%)
Age (yrs)		
19-30	9	14.06%
31-40	13	20.31%
41-50	12	18.75%
51-60	15	23.44%
61-70	10	15.63%
>71	5	7.81%
Gender		
Male	37	57.81%
Female	27	42.19%
Positive signs		
Tenderness	50	78.13%
Distension	41	64.06%
Guarding	19	29.69%
Rigidity	14	21.88%
Rebound tenderness	11	17.19%
Types of surgery		
Laparotomy 25		
Gynaecological procedure	9	14.06%
Abdominal Trauma	6	9.38%
Intestinal obstruction	4	6.25%
Appendectomy	3	4.69%
Cholecystectomy	2	3.13%
Laparoscopic Procedure	3	4.69%

After surgery, final diagnosis of study patients were adhesions and bands (48.44 %), Strictures (17.19 %), Infectious/inflammatory pathology (14.06 %) & paralytic ileus (12.5 %),

Table 2: Distribution of patients according to etiology (n=50)

Diagnosis	No of patients	Percentage (%)
Adhesions and bands	31	48.44%
Strictures	11	17.19%
Infectious/inflammatory pathology	9	14.06%
paralytic ileus	8	12.50%
Hernia	2	3.13%
Volvulus	1	1.56%
Perforation	1	1.56%
Malrotation	1	1.56%

Among study patients, common CT findings were dilated bowel loops (84.38 %), free fluid (60.94 %), partial obstruction (56.25 %), transition point (32.81 %), complete obstruction (21.88 %), bowel thickenings (21.88 %), stricture (14.06 %) & ileo-caecal tuberculosis (7.81 %).

Table 3: Computed Tomography findings

CT signs	No of patients	Percentage (%)
Dilated bowel loops	54	84.38%
Free fluid	39	60.94%
Partial obstruction	36	56.25%
Transition point	21	32.81%
Complete obstruction	14	21.88%
Bowel thickenings	14	21.88%
Stricture (IBD)	9	14.06%
Ileo-caecal Tuberculosis	5	7.81%
Closed loop	2	3.13%
Herniation of contents	2	3.13%
Free air	1	1.56%

DISCUSSION

An ordinary surgical emergency is subacute intestinal blockage. Stricture, polyps, and tumours are frequent causes; gallstones and foreign bodies are rarer.^[6]

Although the majority of patients can be handled without surgery, early detection and treatment of small intestine blockage are essential because the mortality risk increases to 25% in the event of a delayed diagnosis.^[7]

Clinical sense still remains the mainstay of deciding the line of management in cases of intestinal obstruction. Intestinal obstruction management decisions are notoriously challenging, and they depend on a variety of clinical, laboratory, and imaging criteria to assist stratify patients for either conservative or surgical treatment. CT in these patients can help surgeon to go for surgery early and prevent complications.

An acute obstruction may develop from a subacute obstruction if it doesn't resolve on its own within a few hours or following conservative treatment. Because of the intermittent nature of symptoms and indicators, a diagnosis and final course of therapy are frequently delayed, causing patients to endure weeks or months of suffering.^[8] Intestinal decompression, bowel rest, and fluid resuscitation are all used in the treatment of simple blockages. In the study by Patnaik S. K. et al,^[9] men were more negatively impacted than women.

The most frequent symptom reported by 51 patients (89.4%) was abdominal discomfort, which was followed by non-fecal or flatus passage in 45 patients (78.9%) and vomiting in 39 patients (68.4%). About 28 patients (49.1%) had previously undergone abdominal surgery, 25 of whom had laparotomies. 18 (31.6%) of the 57 patients required surgery to alleviate blockage; the other 39 patients (68.4%) were treated conservatively. Adhesiolysis was the most often used procedure in 12 patients.

According to Pansuriya A,^[10] all 22 patients with blockage were discovered on CT scans, with 19 patients having mechanical obstruction and 3 patients having pseudo-obstruction brought on by appendicitis and jejunal perforation. Intussusceptions (23%), followed by ileal stricture (38%), were the most frequent causes of SAIO. The use of a CT scan can help to identify problems like strangling and perforation as well as to differentiate mechanical obstruction from paralytic ileus.

According to Mohi JK et al,^[11] CT scans are entirely accurate in diagnosing sub acute intestinal blockage in 62.5% of patients while ultrasonography and plain films are never fully accurate. Plain films and ultrasound were found to be inferior to CT for detecting the existence, level, and aetiology of obstructions. Intestinal obstruction in adults was most frequently caused in 38% of instances by adhesions or bands, according to a study by Vaishnani BV.^[12] Of the 47 patients who underwent surgery for intestinal obstruction, the intraoperative and CT results matched in 43 cases (91%) and the reasons of the blockage in 37 cases (74%) in those patients. Early detection of imaging findings that point to bowel vascular compromise is crucial for managing the condition effectively and averting consequences like intestinal ischemia, necrosis, perforation, and peritonitis.^[13]

Bowel wall thickening, ascites, pneumatosis intestinalis and portal/mesenteric venous gas are the important signs and prognostic indicators that have been associated with intestinal ischemia. Ischemic thickened bowel wall has a trilaminar appearance, known as the "target" sign. "Target sign" appearance is because of hyperenhancement of the mucosal layer, hypodense submucosal oedema and reduced enhancement of outer wall.^[14]

With the advent of Multi Detector CT (MDCT), CT can provide nearly isotropic imaging with reconstruction of images in any planes. Due to high spatial resolution and real time reconstruction in any plane, it is particularly helpful in locating the zone of transition and many times can directly depict the

cause of obstruction. The cause of obstruction can have important implications in management, particularly closed loop obstructions and associated features of bowel ischemia or gangrene may need early surgical management.^[15,16] The presence of obstruction, the position of the transition point, and the presence of closed-loop obstruction and problems can all be safely determined using computed tomography (CT). The sensitivity of CT is quite good, ranging from 82 to 100% for the diagnosis of blockage.^[17]

CONCLUSION

Computerized tomography scan is a reliable diagnostic imaging tool for assessment of patients with sub-acute intestinal obstruction, with high-efficiency in differentiation between different etiologies of subacute intestinal obstruction.

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