

A PROSPECTIVE STUDY ON THE GASTROGRAFIN IN THE MANAGEMENT OF ADHESIVE SMALL BOWEL OBSTRUCTION

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ABSTRACT

OBJECTIVE

The purpose of this study was to determine the diagnostic and therapeutic role of hyperosmolar water-soluble contrast medium gastrografen in cases of small bowel obstruction.

BACKGROUND

Adhesive small bowel obstruction is a common emergency problem; post-operative abdominal adhesions represent the main aetiological factor for intestinal obstruction. It is commonly used for the diagnosis of small bowel obstruction, but it also has a therapeutic role in Small Bowel Obstruction (SBO).

METHODS

A prospective Gastrografen study was performed in patients with small-intestine obstruction from June 2013 to June 2015 in Krishna Hospital, Karad. Patients with clinical evidence of adhesive small bowel obstruction were given trial conservative treatment, unless there was suspicion of strangulation. Those who responded in the initial 48 hours had conservative treatment continued. Patients showing no clinical and radiologic improvement in the initial 48 hours were randomized to undergo either Gastrografen meal and follow-through study or surgery. Contrast that appeared in the large bowel within 24 hours was regarded as a partial obstruction and conservative treatment was continued. Patients in whom contrast failed to reach the large bowel within 24 hours were considered to have complete obstruction and laparotomy was performed. For patients who had conservative treatment for more than 48 hours with or without Gastrografen, surgery was performed when there was no continuing improvement.

RESULTS

The 100 patients were subjected to conservative management for 48 h under close observation. Within 48 hours 10 patients with SBO obstruction resolved, another 4 cases developed signs of peritoneal irritation and were explored. The other 86 cases that did not resolve conservatively within 48 h were subjected to gastrografen administration through a nasogastric tube. Among these, 69 (80.2%) patients' symptoms has been resolved by gastrografen, and 17 (19.7%) patients undergone surgery.

CONCLUSION

Gastrografen can be used in the case of SBO; it is safe and reduces the need for surgery and hospital stay and morbidity when conservative treatment fails.

KEYWORDS

Gastrografen, Small Bowel Obstruction, Surgery.

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INTRODUCTION

Intestinal obstruction is a partial or complete blockage to the passage of intestinal contents through the gastrointestinal

tract and is a major indication for urgent abdominal surgery. More than two-thirds of all small bowel obstructions were due to peritoneal adhesions.^[1] followed by neoplasms and hernias. The exact cause of adhesive SBO is not known. Gynaecological surgery and appendectomy are the most common cause of SBO.^[2] These patients are usually difficult to diagnose and manage. Patients with strangulation require emergency operation, but management of remaining patients is more difficult.^[3]

Adhesive obstruction may occur at any time after surgery, about 20% of the obstructions appeared more than 10 years after the initial abdominal operation.^[4]

Gastrografen, a water soluble contrast medium, has been found useful in the management of adhesive small bowel obstruction. A few studies reported that gastrografen could

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accurately predict the need for surgical treatment.^[5,6] makes the fluid move into the intestinal lumen and increases pressure gradient across obstructive sites that may result in resolving the obstruction.^[7,8,9]

The present prospective study was designed to investigate the value of the hyperosmolar water-soluble contrast medium Gastrografin® in choosing when conservative treatment might be appropriate for patients with small-intestine obstruction caused by post-operative adhesions.

MATERIALS AND METHODS

A prospective Gastrografin study was performed in patients with small-intestine obstruction from June 2014 to June 2015 in Krishna Hospital, Karad; 100 patients were included in this study as per category.

Inclusive Category

- All the Patients admitted through the emergency room to the Department of Surgery, Krishna Institute of Medical Science, Karad.
- Patients with clinical and radiologic evidence of adhesive small bowel obstruction were included.
- Exclusive category.
- Patients with signs of strangulation excluded.
- Patients with documented intra-abdominal malignancy, inflammatory bowel disease or history of abdominal irradiation were excluded.

A detailed history including information on previous abdominal surgery and adhesive obstruction was taken and a complete physical examination was performed for every patient. A nasogastric tube was inserted for decompression with strict measurement of output. Intravenous fluid replacement was given and electrolyte imbalances were corrected as required. Supine and erect abdominal radiographs were taken. Patients with clinical evidence of adhesive small bowel obstruction were given trial conservative treatment.

Patients with obstruction that improved clinically or radiologically in the initial 48 h continued to receive conservative treatment. Clinical improvement was defined as the presence of decreased abdominal pain, distension, tenderness or nasogastric tube output or bowel opening if the patient had constipation on admission. Radiological improvement was defined as a decrease in number of dilated bowel loops or in the diameter of dilated small bowel. Those who responded in the initial 48 hours had conservative treatment continued.

Patients showing no clinical and radiologic improvement in the initial 48 hours were randomized to undergo either Gastrografin meal and follow-through study or surgery. Gastrografin (40 mL) was mixed with 40 mL of distilled water and administered through a nasogastric tube, which was unclamped after 1 hour. Direct abdominal radiographs were obtained after 4 and 8 hours.

Contrast that appeared in the large bowel within 8 hours was regarded as a partial obstruction and conservative

treatment was continued. Patients in whom contrast failed to reach the large bowel within 8 hours and patient with fever, persistent abdominal pain or signs of peritonitis were considered to have complete obstruction and laparotomy was performed. For patients who had conservative treatment for more than 48 hours with or without Gastrografin, surgery was performed when there was no continuing improvement.

RESULTS

100 patients were admitted for attacks of SBO. Their age ranged from 20-70 years. Out of these 100 patients, 90 patients presented with complaints of pain abdomen and 81 patients with constipation and 38 with vomiting, thus making most common symptom as pain abdomen (Shown in Table No. 1). There were 68 male patients and 32 females (Shown in Fig. No. 1).

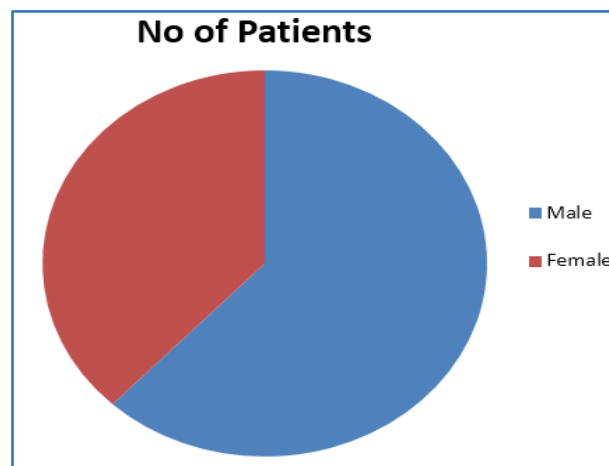


Fig. 1: Shows Number of Patients with Sex Ratio

Presenting Symptoms	Percentage of Patients
Abdominal Pain	90%
Constipation	81%
Vomiting	38%

Table 1: Showing Presenting Symptoms with Percentage

The 100 patients were subjected to conservative management for 48 h under close observation. Within 48 hours 10 patients with SBO obstruction resolved, another 4 cases developed signs of peritoneal irritation and were explored. The other 86 cases that did not resolve conservatively within 48 h were subjected to gastrografin administration through a nasogastric tube. Among 86 patients, 39 (45.34%) patient's gastrografin seen in the caecum within 4 hours and 21 (24.41%) patient's gastrografin seen in the caecum within 8 hours, 9 (10.46%) patient's gastrografin after 8 hours, 17 (19.76%) patients underwent surgery (Shown in Fig. 2). Among the 17 patients who has undergone surgery, 11 patients had the history of undergoing abdominal surgeries more than once in the past for various reasons.

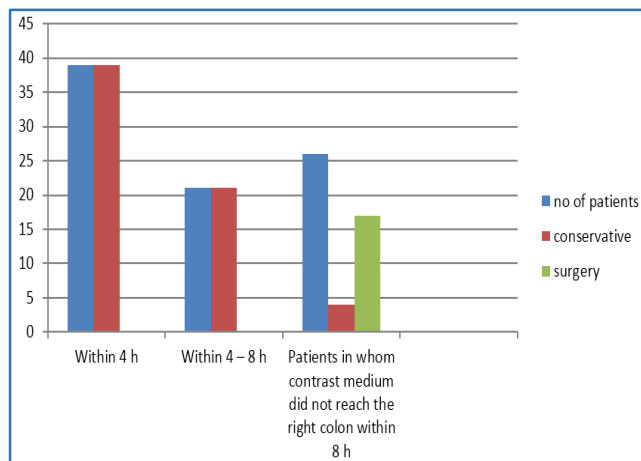


Fig. 2: Shows Number of Patients and their Management

DISCUSSION

Adhesive small bowel obstruction is a common surgical problem. Any abdominal surgery in past can lead to adhesive SBO and incidence of complication varies from 6% to 30%.^[10] Appendectomy and colorectal surgery are the common surgical procedures, which can lead to adhesive small bowel obstruction in different studies.^[11]

Yet, there has been no standard protocol for its management. In the absence of bowel strangulation, adhesive obstruction can be treated conservatively. However, the optimal duration of this trial conservative treatment is controversial.

Gastrografin is the contrast medium most commonly used. It is an ionic bitter-flavoured mixture of sodium diatrizoate, meglumine diatrizoate, and a wetting agent (Polysorbate 80). The osmolarity is 1900 mOsm/L, approximately six times that of extracellular fluid. It promotes shifting of fluid into the bowel lumen and increases the pressure gradient across an obstructive site.

The bowel content is diluted, and in the presence of the wetting agent passage of bowel contents through a narrowed lumen is facilitated. Gastrografin also decreases oedema of the bowel wall and enhances bowel motility. Barium has also been used to evaluate adhesive small bowel obstruction; it is not as easily diluted by enteric fluid as Gastrografin and provides a better mucosal image on radiography. However, a barium study can be risky, because it may become inspissated and completely obstruct the bowel. Barium may spread into the peritoneal cavity if perforation occurs, a condition that is potentially lethal. Gastrografin is water-soluble and relatively safe even if the obstruction is complicated by perforation. Complications from the use of Gastrografin in small bowel obstruction are rare.

The risk factors associated with failure of conservative treatment remain poorly understood. The importance of

nasogastric tube output and size of dilated small bowel have seldom been evaluated in the literature. We found that nasogastric tube output was significantly greater in patients who failed to respond to conservative treatment versus those successfully treated with conservative treatment. An alternative explanation is that the nasogastric tube drainage of patients who responded to conservative treatment decreased with time.

In this study concluded that gastrografin administration in SBO is safe; it can be used therapeutically because it has a role in resolution of SBO. Gastrografin can also help in early diagnosis of cases of SBO who requires surgery. Thus, it also shortens the hospital stay and morbidity.

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