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Liquid Paraffin in Adhesive Small Bowel Obstruction: Newer Trends

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Abstract | **Original Research Article**

Aims: Adhesive small bowel obstruction is a common surgical problem, yet there has been no standard protocol for its management. In the absence of bowel strangulation, majority of adhesive obstruction cases can be treated conservatively. The purpose of this study was to evaluate the possible use of liquid paraffin in the management of adhesive small bowel obstruction conservatively in the pediatric age group, and its safety and effectiveness in reducing the hospital stay and operative intervention rate. ***Methods:*** This prospective randomized study was conducted in 30 patients who had diagnosed post operative adhesive small bowel obstruction, attending the department of Pediatric Surgery, SMS Medical College and Attached hospitals Jaipur, during the period between October, 2014 to March, 2016. After stabilization, patients were received liquid paraffin through nasogastric tubing in addition to the conservative treatment. Serial clinical and radiological monitoring was performed. If symptoms of peritonitis developed or if the obstruction did not resolve spontaneously after seventy two hours of admission, a laparotomy was performed. The duration of hospital stay, time between admission and first oral feed, passage of stool/flatus was recorded. ***Results:*** The mean duration of hospital stay was 5.2 days. 7 (24%) patients not improving after seventy two hours of conservative therapy underwent exploratory laparotomy. Patients who responded to conservative therapy, the time to oral feed was 3 days. No serious adverse reaction was noted after liquid paraffin administration. . ***Conclusion:*** The use of liquid paraffin in adhesive small bowel obstruction is safe and reduces the need for surgical intervention.

Keywords: Liquid paraffin, post operative adhesions, nasogastric feed, osmotic laxative.

INTRODUCTION

Postoperative adhesive obstruction is a common etiology leading to readmission of patients with enhanced morbidities in children with an incidence ranged from 1-9 % [1, 2]. Appendectomy, stoma formation and closure, nissen fundoplication, and ladd's procedures are the most common procedure leading to adhesive small bowel obstruction. The risk of post-operative adhesive obstruction is highest during the first post- operative year [3, 4].

Various conservative methods are used for managing post operative adhesive bowel obstruction in children. The commonest protocol includes nasogastric tube suction and fluid resuscitation, and radiological studies with water-soluble contrast agents, such as gastrografin, which may serve to determine the need for surgery [5]. Different studies in adults have compared modalities and found gastrografin to be helpful in both diagnostic and therapeutic terms. It is generally believed that the osmotic action of gastrografin serves to relief obstruction and thereby avoids surgery [6, 7]. The reported success rates vary from 40 to 70 percent. Pediatric small bowel obstruction are generally managed as a surgical emergency with less reports available regarding conservative usage of osmotic agents. Probably the increased likelihood of pediatric patients to land up in perforation has avoided the need for conservative management so far.

METHODS

This prospective study was conducted in the department of Pediatric Surgery, SMS Medical college and Attached Hospitals, Jaipur. Thirty patients between 1day and 16 years of age with simple adhesive bowel obstruction were included. A detailed history, including information on previous abdominal surgery and clinical examination was performed and managed conservatively with IV fluids, naso-gastric suction and correction of any electrolyte or acid base balance for 48hours unless there is evidence of strangulation. Also, patients with evidence of peritonitis, history of intra-

abdominal malignancy, abdominal radiotherapy, chemotherapy, renal and/or liver failure and immunocompromised state and inflammatory bowel disease were excluded from study. After the first 48hours, the patients were given liquid paraffin through nasogastric tube that was kept closed for 3hours. Serial plain abdominal radiographs were taken at 3, 6, 12 and 24hours post liquid paraffin administration. The evaluating parameters were the success rate, time to start full oral feeding and total duration of hospital stay. The patients followed up to detect any evidence of complications or recurrence. Informed consent will be taken from patient's guardians to participate in this study after explaining all the risks and benefits.

RESULTS

Thirty patients (16 males and 14 females) age ranged from 1day to 16 years with simple adhesive intestinal obstruction during period from October 2017 to October 2018 were included. Same surgical team evaluated and intervened on all patients.

Table 1: Patient profile with respect to age groups

Age in year	No. of patients
0-2	9
2-6	11
6-12	7
12-16	3

The commonest age incidence was between two to six years (38%). All the patients had previously performed abdominal procedures. Exploration for appendicular perforation was the commonest previously performed procedure accounting for 36% patients, followed by band obstruction and intussusception in 15% each respectively. The result showed increase in clinical improvements and radiological improvements in patients treated with nasogastric liquid paraffin. A clinical improvement was defined as reduction of abdominal distention, decreased abdominal pain, decreased nasogastric tube output and passage of flatus or stool. A radiological improvement was defined as decrease in number of dilated bowel loops or diameter of dilated small bowel on X ray imaging.

Table 2: Type of primary surgery and number of cases

Surgery	No. of patient
Appendectomy	11
Intussusception	4
Colostomy closure	4
Bands	5
Meckels perforation	2
Malrotation	2
Duodenal atresia	2

The mean duration of hospital stay was 5.2 days. 7 (24%) patients not improving after seventy two hours of conservative therapy underwent exploratory laparotomy. Patients who responded to conservative therapy, the time to oral feed was 3 days.

DISCUSSION

Postoperative adhesions still continue to be a common cause of small bowel obstruction. This may follow almost any type of abdominal surgery [8, 9]. Various measures have been suggested to reduce the incidence of adhesions post surgery, with obstruction have focused on the adult population with different outcomes [10, 11]. Most of the studies on conservative management of small bowel have focused on the adult population with favorable outcomes. The success rates have been mentioned between 73 to 90%. The duration of administration of the agents have been variable [11]. A large number of workers have mentioned the use of orally administered gastrografin. Some studies used hyperosmolar contrast media for diagnostic and therapeutic purposes [12]. Liquid paraffin has been used used for the management of childhood constipation in addition to lactulose and other osmotic laxatives [13]. Liquid paraffin has been traditionally considered as a lubricant or stool softener. The mechanism of action in post-operative adhesiolysis is unclear. Probably, the lubricant action serves to increase intestinal peristalsis and provide better passage of gut contents [14]. This helps to relieve the obstruction. It is however, not an osmotic laxative and does not increase the bulk of stool contents. The popularity of liquid paraffin stems from its tolerability, ease of titration and ability to administer large dosages. The earliest mention of liquid paraffin comes from Sir W. Arbuthnot Lane, of Guy's Hospital in 1913, who recommended it as a treatment for stasis and chronic constipation [14].

Studies using lactulose and gastrografin for relieve of obstruction have been complicated by the development of dehydration and electrolyte imbalances particularly in children. Liquid paraffin stands as a better option for increased and prolonged administration without hampering the hydration status of the patients. However had better tolerance and compliance compared to polyethylene glycol. Tolia *et al*., reported that liquid paraffin is less efficacious than oral lavage solution to relieve disimpaction [15]. A randomized direct comparison of liquid paraffin with other agents has not been done.

CONCLUSION

Liquid paraffin may be helpful management of post operative adhesive obstruction and avoid need of surgical intervention. However, further randomized controlled study on large number of patients with longer follow up period is recommended to prove the therapeutic effect of liquid paraffin in management of adhesive small bowel obstruction and in minimizing the need for surgery and recurrence.

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