

Investigation Into Early Postoperative Inflammatory Small Bowel Obstruction By Applying The Gastrointestinal Decompression

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ABSTRACT

Objective to investigate Early Postoperative Inflammatory Small Bowel Obstruction (EPISBO) by applying the gastrointestinal decompression to relieve abdominal distension. **Methods** 36 cases of patients were randomly divided into two groups, namely, control group (20 cases) and observation group (16 cases). The routine continuous gastrointestinal decompression was assigned to the control group, while gastrointestinal decompression with dynamic and profound adjustment of gastric tube and abdomen movement was assigned to the observation group, which could induce abundant gastric juice and gas, and significantly relieve abdominal distension. A test was performed for each of the two groups to observe the relieving time of the abdominal distension and the difference of abdominal girth of 5cm minimum before and after gastrointestinal decompression. **Results** Compared with the control group, the patients in the observation group with abdominal distension had earlier pain relief. More patients in the observation group had a difference of abdominal girth of 5 cm minimum before and after gastrointestinal decompression. **Conclusion** in gastrointestinal decompression, the method of dynamic and profound adjustment of gastric tube and abdomen movement improves the effect of the gastrointestinal decompression, which relieves abdominal distention and promotes the postoperative recovery of organs' functions. It is safe, effective, and significant for clinical application.

Keywords: *Children; Gastrointestinal decompression; Early Postoperative Inflammatory Small Bowel Obstruction (EPISBO)*

INTRODUCTION

The EPISBO usually occurs in children within three weeks after pediatric intestinal surgery. The main symptoms are vomiting, abdominal distension and the cease of fart and defecation. The best treatment is medical treatment. Gastrointestinal decompression was adopted to remove the accumulated gastric contents and gas, which subsequently reduces the gastrointestinal tract distension and digestive tube wall tension, relieve abdominal distention and reduce the stimulation of gastric content, so as to promote the recovery of gastrointestinal

function [1-3]. If not, with disease aggravation and increasing abdominal pressure, a lot of gastric juice could return into the trachea and cause the aspiration pneumonia, which is life threatening. From February 2012 to April 2014, Xinxiang Central Hospital had applied dynamic depth adjustment of gastric tube and abdomen rocking into relieving pediatric abdominal distension.

MATERIAL AND METHOD

General Material

The cases of 36 patients (children) with EPISBO were chosen during hospitalization in xxx hospital from February 2012 to April 2014.

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They were comprised of 20 male patients and 16 female patients, they were aged between 2 months to 10 years old. All the patients suffered abdominal post operation EPISBO, and were randomly divided into two groups, 20 cases for control group, 16 cases for observation group. Among the 36 cases of patients, there were 13 cases of acute intussusception surgical repairs, 10 cases of enterolysis, 5 cases of enterostomy, 5 cases of necrotizing enterocolitis (NEC), 3 cases of volvulus reposition surgery.

METHOD

The infantile gastric tubes had one hole at the top and three side holes. The size of the gastric tubes can affect the effect of gastrointestinal decompression. Therefore, the strict suitable selection of gastric tubes should be done according to the each child's age [4,5]. Generally, the type 6th ~ 8th suited for children of 1 year of age, type 8th ~10th suited for children within 1 to 3 years old, the type 10th or above suited for children of more than 3 years of age[2]. Gastric tube insertion depth was the tube depth of the first side hole. This study adopted two methods for gastric tube insertion for the two groups of patients, details are shown below article. Firstly, based on Basic Nursing Science, the gastric tube insertion length should be the distance from earlobe to xiphoid via tip of nose. Secondly, according to the application of previous nursing experience data, the gastric tube insertion length should be half the length of the earlobe to belly button distance, via nose tip and xiphoid. Both methods were applied evenly in both groups. After the successful insertion of gastric tube, the gastrointestinal decompression was performed. The gastric tube connected to the negative pressure bottle, was drained regularly and the negative pressure condition was maintained. The abdominal girth in both groups before and after surgery was measured accordingly. And the two methods

applied for the two groups were compared after the measurement. In control group, the conventional pediatric gastrointestinal decompression method was employed. The gastric tube depth maintained the same as above mentioned. The negative pressure bottle was drained regularly. The maintained negative pressure bottle could enable the gastric juice and gas flow into the bottle. In the observation group, when there was no gastric juice drained and the gastric tension became serious, the dynamic depth adjustment on gastric tube was adopted to lose the fixed tape of gastric tube and then adjust the tube insertion depth till the draining of gastric juice and gas is accomplished. At the same time, the abdomen was rocked gently. Furthermore, a high volume of gastric juice and gas were drained out under the continuing negative pressure. The gastric tube was fixed by tape till the abdomen girth reduced for more than 5 cm. The first relief time in both groups were recorded, along with the case quantity of difference of abdominal girth of minimum of 5 cm before and after the surgery.

Statistic method

Fisher exact probability was utilized to detect the comparison between the enumeration data of both groups. Two independent samples-*t*-test were employed for the comparison of measurement data. $p < 0.05$ implies the difference had statistically significance.

RESULTS

The observation group patients had earlier first pain relief time than the patients in control group. And more patients in observation group with difference of abdominal girth of minimum of 5 cm before and after gastrointestinal decompression than that of control group, the difference had statistical significance ($p < 0.01$), details are shown in below table 1 and table 2.

Table 1: The comparison of the first pain relief time after surgery

Group name	Case quantity	First pain relief time
Control group	20	84.96± 14.64
Observation group	16	37.68± 9.84
t vale		5.759
P value		<0.01

Table 2: The comparison of 5 cm minimum difference value before and after the gastric decompression between two groups

Group name	N	5 cm Minimum difference of the value before and after the gastric decompression
Control group	20	3
Observation group	16	16
P value		<0.01

DISCUSSION

Medical treatment is the best treatment for EPISBO to enable children avoid the pain of reoperation. Among many treatments, gastrointestinal decompression is the first and direct measure employed in the elimination of abdominal distension, and also effective method to avoid the flow of gastric juice into the trachea, the formation of aspiration pneumonia and the formation of even life-threatening condition [3]. The combination of effective safe gastrointestinal decompression and comprehensive medical treatment can better improve the gastrointestinal peristalsis function and improve the recovery. In conventional data of gastrointestinal decompression for the gastric tube insertion method, due to the 2~3 side holes, and the 4~6cm distance from the top hole and the last side hole, the last side hole can only reach esophagus area, when the top hole reached the cardiac area. It can only drain out the upper gastric juice and gas. Although the conventional gastric insertion depth of gastric tube can reach the stomach, the pedia gastric tube is soft and flexible, and could curl, fold and form the valve, while children turned around or in semi reclining position. Hence the inability to successfully drain out the gastric

juice. So, no matter the depth of the inserted gastric tube depth, the gastric juice remains very difficult to drain out using a conventional fixed depth of gastric tube. The growing gastric juice could compress the abdomen and the loss of pedia cardioesophageal sphincter, thereby reducing gastrointestinal function. All these factors increased the risk of esophageal reflux.

No matter what the gastric tube insertion depth of the two methods were, the dynamic depth adjustment of gastric tube could drain out the gastric juice in upper stomach and gastrointestinal juice and solve the gastric tube fold problem. The further pushed gastric tube can drain out the juice and gas in upper stomach. The little pull of gastric tube could stretch the folds and valve. The combination of dynamic depth adjustment of gastric tube and abdomen rocking could better drain out the gastrointestinal sticky juice. During the flow of gas and gastric tube twisting, the deposit sticky gastric juice could become diluted, so as to reduce the concentration of gastric juice. The dynamic depth adjustment of gastric tube and abdomen rocking could induce the draining of gastric juice and gas, relieve the gastric tension and improve the postoperative bowel function recovery. The abdomen rocking method did

not increase gastric tension, and there was no risk for wound burst. The new method is safe, effective, and significant for clinical popularization and application.

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