

The Study of Complications of Intestinal Obstruction Catheter

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Abstract: The paper is to study the severe complications in the application of intestinal obstruction catheter. It retrospectively analyzed the clinical data of 142 patients who were treated by intestinal obstruction catheter in the gastrointestinal surgery department of China-Japan Union Hospital of Jilin University from December 2006 to September 2017, and analyzed the serious complications. There are 12 cases of severe complications in this group, and the incidence is 8.45%. 1 case of shedding of fore-end of the catheter from the anus; 4 cases of rupture of anterior balloon; 3 cases of intestine intussusception after extubation; 1 case of knotting inside the gastric cavity; 1 case of catheter hydraulic piston obstruction, and 2 cases of catheter obstruction and cannot be dredged. It can be concluded that The serious complications of the intestinal obstruction catheter should be paid attention to in clinical application, timely treatment after onset of symptoms and standard operation and active prevention.

1. Introduction

Acute intestinal obstruction is one of the most common acute abdomen diseases, which accounts for 20% ^[1] of the incidence of acute abdomen diseases. Except for the strangulated obstruction needs emergency surgery, the other obstructions all can be treated with expectant treatment, gastrointestinal decompression is the main measure to alleviate intestinal pressure. Intestinal obstruction catheter is a new method to alleviate intestinal pressure, which can effectively and rapidly remove the obstruction symptoms ^[2]; for the complex and recurrent intestinal obstruction it is possible to adopt intestinal obstruction catheter plication of small intestine. During the process of massive application of intestinal obstruction catheter, our department summarized the serious complications of intestinal obstruction catheter and made reasonable prevention and treatment. The detailed contents of the report are as follows:

2. Data and Methods

2.1. General Information

The study objects are 142 cases of patients who were treated by via-nose intestinal obstruction catheter in the gastrointestinal surgery department of China-Japan Union Hospital of Jilin University from December 2006 to September 2017 (including 68 cases of via-nose intestinal obstruction catheter plication of small intestine), observing the relevant complications of intestinal obstruction catheter in the treatment process. The selection of case does not include the following cases: strangulated intestinal obstruction, severe cardiopulmonary insufficiency, high obstruction, patients do not compliance to treatment. All patients all firstly remain the gastric intubation after admission, and the gastrointestinal decompression was not relieved obviously. Among them, there are 72 cases of men and 70 cases of women; aged between 38 -83 years old, with an average age of 54.4 years. The orthostatic X-ray abdominal plain film and abdominal CT examination were performed before operation. The adopted intestinal obstruction catheter is three-cavity two-balloon

(front balloon, rear balloon) via-nose intestinal obstruction catheter produced by Dalian Kuliaite Medical Treatment Products Co.Ltd.

2.2. Operation Method

The intestinal obstruction catheter is indwelled to the stomach via nose, and guide the catheter to the descending section of duodenum under the guidance of gas-troscopy, to ensure the second balloon is delivered to the pylorus; infuse 10-15ml dis-tilled water to the front balloon of the catheter, and pull out the hydrophilic guide wire and confirm its position by X-ray, and reconfirm the intestinal obstruction catheter is in descending section of the duodenum. The catheter will move to obstruction as the peristalsis. After conservative treatment, 74 cases of patients gradually discharged and defecated and the intestinal obstruction were relieved.

2.3. Operation Methods

2.3.1. Surgical Treatment of Adhesive Intestinal Obstruction

54 cases of adhesive intestinal obstruction were treated with conservative treatment, although with relief of abdominal distension, but no exhaust and defecation. Laparotomy was performed to remove adhesion, at the same time the intestinal obstruction catheter plication of small intestine was applied. The preoperative in-dwelling catheters of 32 cases were guided to ileocecus by hand. The retrograde plication was performed for 12 cases, namely the retrograde catheterization was arranged in the small intestine from ileocecus. The catheter of 10 cases was pulled out via nose and gastrostomy intubation was performed for place.

2.3.2. Surgical Treatment of Malignant Intestinal Obstruction

14 cases of malignant intestinal obstruction caused by extensive metastasis of tumor were relieved by conservative treatment. The intestinal obstruction catheter was pulled out through the nose, the gastrostomy intubation was performed and there was no obvious stenosis and the 10 ml water balloon of intestinal obstruction can pass more than 2m long small intestine, meanwhile, the enterostomy was performed.

2.4. Extubation Time

Non-surgical patients, after exhausting and defecation, then fix the catheter and pump out the balloon, gradually feed liquid diet until semi-liquid diet; if the patient still without any discomfort, then gradually pull out catheter; as for patients of adhesive intestinal construction anterograde plication of intestine, one week after operation, if the radiography is unobstructed, then gradually pull out the catheter; as for patients of adhesive intestinal construction retrograde plication of intestine, two weeks after operation, gradually pull out the catheter; as for the malignant intestinal obstruction, long time indwelling catheter, do not pull it out if without obvious complications.

3. Results

There were 12 cases of severe complications in this group, and the incidence was 8.45%. 1 case of shedding of fore-end of the catheter from the anus, the incidence rate was 0.70% (1/142) ; 4 cases of rupture of anterior balloon, the incidence of 2.81%(4/142); 3 cases of intestine intussusception after extubation, the incidence of 2.11%(3/142); 1 case of knot inside the catheter gastric cavity, the incidence rate was 0.70% (1/142) ; 1 case of catheter water balloon obstruction the incidence rate was 0.70% (1/142) , and 2 cases of catheter obstruction, unable to perform negative pressure suction and the guide wire cannot be dredged, the incidence rate was 1.40% (2/142) .

4. Discussions

Gastrointestinal decompression is the most commonly used and basic conservative treatment for intestinal obstruction [3], the traditional nasogastric tube decompression can only drain the fluid in

the gastric cavity, while the fluid in the intestinal cavity cannot be drained adequately ^[4]. The via-nose intestinal obstruction catheter can make full use of the intestinal peristalsis and move slowly in the intestine. It can effectively drain for the above part of the obstruction and relieve or remove the intestinal obstruction ^[5]. At present, it is widely used in clinic. Although the intestinal obstruction catheter has high safety, there are still some complications during the application, some complications even need surgical intervention, which requires doctors to be vigilant and perform reasonable treatments. No massive hemorrhage and intestinal perforation were found in this group, and all the complications were relieved after reasonable treatments.

The knot inside the catheter gastric cavity is rare, and the incidence of this group is 0.70%. The distal end is blocked and cannot directly pull out the catheter via the nose. Intestinal obstruction catheter is curled and swirled in gastric cavity, indwelling is relatively common, but the knot inside the stomach is rare, mainly because of the slow progress of the distal end of the catheter, and too fast and too long insertion of near end via nose, it will be gradually relieved as the gradual progress of the distal end. We reinserted the guide wire for support, gradually adjust and relieve the knot by gastric forceps under gastroscopy. As for the aspect of prevention, Xu Xiaolu et al ^[6] think that after the implantation of catheter, the patient should receive X-ray examination 1-2 times in each day, to confirm the catheter position and make timely adjustment; at the same time we believe that we should avoid artificial insertion of the catheter, the progress of the catheter is based on the gravity, and it is possible to take a small amount of paraffin oil by oral for the purpose of lubrication.

Catheter blockage is relatively common; it can be relieved by washing or guiding wire dredging. But 2 cases in this group cannot be dredged because of the large particles of food residue, therefore we pulled out and replaced the catheter. When intestinal contents are undigested food residues or thicker stools, if the drainage volume is low or no liquid is elicited, it is possible to inject the 20 mL normal saline by injector for douching of catheter, so as to prevent obstruction ^[7] douching several times a day to avoid obstruction.

Intussusception is a serious complication of extubation, with an incidence of 2.11% in this group, 2 cases of antegrade intussusception of intestine; 1 case of indwelling intestine obstruction catheter via nose. 3 cases were cured by emergency operation. Pay attention to that extubation should not be pulled out in one time, but should be completed in 3 to 5 days and 2-3 times in each day, gradually pull it out; while extubation, the patient should be given paraffin oil by oral, and then slowly and uniformly pull it out, do not pull it under strong negative pressure ^[8]; patients should eat immediately after each extubation so as to promote intestinal peristalsis and avoid intussusception.

The incidence of rupture of catheter balloon is 2.81% in this group, the catheter loss of action and cannot move along with the intestinal peristalsis, it should be replaced by new catheter and indwelling again. As for the treatment process try to avoid excess injection of liquid into the balloon, generally not more than 20 milliliters, so as to avoid the balloon rupture, at the same time intestinal arrangement during the operation should be gentle.

There is 1 case of balloon obstruction of catheter in this group caused by the injection of normal saline in the balloon, and cannot be pulled out of the throat during extubation and cannot be pulled out directly, then the balloon back to the stomach, and the balloon was punctured under gastroscopy. The treatment process should pay attention to that does not inject saline into the balloon so as to avoid the obstruction caused by crystallization ^[9].

The case of defecation of catheter via the anus is rare in clinic, and the incidence rate of this group is 0.85%. This case has received subtotal colectomy due to constipation. The catheter completely entered into the nasal cavity, and the front end was defecated through the anus. The patient had severe colic in the abdomen, and the symptoms were relieved by cutting the front end of the catheter and pull out via the nose.

In short, the clinical application of via-nose intestinal obstruction catheter is safe and effective, worthy of extensive clinical application, but there are still rare and severe complications, need to strictly enforce the rules of operation in the process of treatment, carefully observation of drainage, regularly recheck imageological examination and adjust at any time, so as to minimize the occurrence of serious complications.

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