



Transanal ileus catheter combined with nasal ileus catheter in the treatment of malignant ileus in 14 cases: a case series and literature review

Dongqiang Yang[^], Ping Shi, Yazhou Li, Yanan Li, Kai Yang, Guang Yang

Department of Radiology, The Fourth Hospital of Hebei Medical University and Hebei Tumor Hospital, Shijiazhuang, China

Contributions: (I) Conception and design: D Yang, P Shi; (II) Administrative support: G Yang; (III) Provision of study materials or patients: D Yang, Yazhou Li; (IV) Collection and assembly of data: Yanan Li, K Yang; (V) Data analysis and interpretation: D Yang, P Shi; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Dongqiang Yang; Ping Shi; Guang Yang. Department of Radiology, The Fourth Hospital of Hebei Medical University and Hebei Tumor Hospital, Shijiazhuang, China. Email: yangdq@hebm.u.edu.cn; shirping@hebm.u.edu.cn; yanggzj@163.com.

Background: Malignant intestinal obstruction refers to intestinal obstruction caused by advanced primary tumors or secondary metastatic malignant tumors. Because surgical treatment cannot significantly improve the life cycle, non-surgical treatment is mostly used to improve the symptoms of intestinal obstruction; transanal intestinal obstruction catheter and transnasal intestinal obstruction catheter are palliative therapies for decompression and drainage. Transanal intestinal obstruction catheter is mostly used for rectal and left colon obstruction. Transnasal intestinal obstruction catheter is mostly used for small intestinal obstruction. The two catheters are generally used alone according to the site of obstruction and clinical manifestations, and there are few reports on the combined use of the two catheters. We try to use the two catheters to treat patients with complex conditions and explore a better treatment strategy for malignant intestinal obstruction.

Case Description: Retrospective analysis From January 2016 to April 2022, 14 patients with advanced cancer were diagnosed as malignant intestinal obstruction by imaging data and clinical manifestations. Under the premise of no improvement in the symptoms of placement of a catheter, nasal ileus catheter combined with transanal ileus catheter was used for common decompression and drainage. The efficacy of combined catheterization was evaluated by comparing the differences in imaging data before and after catheterization, as well as analyzing the degree of relief and prognosis of intestinal obstruction symptoms; of intestinal obstruction symptoms was completely relieved in 4 of 14 patients combined catheterization, and spontaneous defecation and exhaust could be performed; intestinal obstruction symptoms were significantly relieved in 3 patients, reexamination of image air-fluid level was reduced by more than 70%, abdominal distension and abdominal pain were significantly relieved, and intermittent defecation and exhaust could be performed; intestinal obstruction symptoms were relieved in 3 patients, reexamination of image air-fluid level was reduced by 20–50%, abdominal distension and abdominal pain were relieved, and defecation and exhaust could not be performed; intestinal obstruction symptoms were not relieved in 4 patients.

Conclusions: Combined application of transanal ileus catheter and transnasal ileus catheter decompression and drainage can be used as a palliative treatment to relieve the symptoms of malignant ileus.

Keywords: Malignant intestinal obstruction; transanal ileus catheter; nasal ileus catheter; case series

Submitted Oct 09, 2022. Accepted for publication Nov 15, 2022.

doi: 10.21037/apm-22-1233

View this article at: <https://dx.doi.org/10.21037/apm-22-1233>

[^] ORCID: 0000-0003-3896-8407.

Introduction

Malignant intestinal obstruction refers to intestinal obstruction caused by a primary malignant tumor or secondary metastatic mass, generally mechanical intestinal obstruction, including tumor bulging mass or invasive stenosis in the lumen, as well as compressive stenosis or adhesive changes outside the lumen of metastatic lesions, generally occurring in colorectal cancer, ovarian cancer, or gastric cancer (1), and is a more common complication of advanced tumors. Studies have shown that the incidence of malignant intestinal obstruction secondary to advanced tumors is 5–50%, and small intestinal obstruction is higher than large intestinal obstruction; the probability of both is >20% (2). Typical clinical symptoms of malignant intestinal obstruction include abdominal distension, abdominal pain, vomiting, cessation of defecation, and exhaustion, due to extensive tumor metastasis or abdominal dissemination. Malignant intestinal obstruction is characterized by symptoms of incomplete intestinal obstruction. Patients with advanced tumors often have organ failure or serious complications, so the purpose of treatment is mostly to improve the quality of life (3). The most common clinical surgical treatment is gastroenterostomy, palliative treatment of gastrointestinal decompression and drainage, drug therapy or stent therapy (4–8). While most patients with advanced cancer have undergone surgical treatment or chemoradiotherapy, the implementation conditions of gastroenterostomy surgery are harsh and the cost performance is not high, and intestinal obstruction catheters are more advantageous in the treatment of malignant

intestinal obstruction because they have minimal trauma and easy operation. Intestinal obstruction catheters are divided into transnasal type and transanal type. Clinically, only one catheter is used for decompression and drainage according to the location of obstruction and the clinical symptoms of patients, while for malignant intestinal obstruction with complex conditions, the therapeutic effect is often less than expected. At present, there are few cases of combined use of two intestinal obstruction catheters in domestic and foreign literature reports, and there is no summary of therapeutic experience and introduction of operating skills; for malignant intestinal obstruction patients who have not significantly relieved single catheter symptoms, we try to combine the two intestinal obstruction catheters to improve the decompression and drainage effect, and found that compared with the drainage effect of one catheter, the two catheters can drain a wider range, the decompression effect is more rapid, and it can play the purpose of passive arrangement of the whole intestinal canal, not only can safely and effectively relieve symptoms, but also prevent further adhesion aggregation of the intestinal canal, can significantly improve the symptoms and quality of life of patients. At the same time, we combined with domestic and foreign literature reports in the past 3 years, analyze the clinical application of relevant treatment, and summarize the operation methods and treatment experience of the combined use of the two catheters. We present the following article in accordance with the AME Case Series reporting checklist (available at <https://apm.amegroups.com/article/view/10.21037/apm-22-1233/rc>).

Highlight box

Key findings

- Combined application of decompression and drainage through nasal ileus catheter and transanal ileus catheter is a recommended method to improve the symptoms of malignant ileus.

What is known and what is new?

- Intestinal obstruction catheter is an essential means of palliative treatment of malignant intestinal obstruction.
- Attempts to combine two ileus catheters for simultaneous decompression and drainage were more satisfactory than one ileus catheter.

What is the implication, and what should change now?

- It is recommended that more attempts can be made to combine the two ileus catheters in clinical treatment to improve the symptoms and quality of life of patients with malignant intestinal obstruction.

Case presentation

General patient information

Fourteen patients with malignant intestinal obstruction, admitted to our department from January 2016 to April 2022, were retrospectively analyzed. Initial clinical symptoms were abdominal distension and abdominal pain or cessation of defecation and exhaustion. According to the site and clinical manifestations of obstruction, a transnasal or transanal intestinal obstruction catheter was used for decompression and drainage, and the effect was not significantly improved. Two intestinal obstruction catheters were used in combination for symptomatic treatment of 9 male and 5 female patients, aged 41–74 years. The general data of 14 patients with malignant intestinal obstruction treated with a combination of 2 ileus catheters are shown in *Table 1*.

Table 1 General data of 14 patients with malignant intestinal obstruction and catheterization time of 2 intestinal obstruction catheters

No.	Sex	Age (years)	Disease	Preoperative clinical symptoms	Transnasal ileus catheter placement time	Transanal ileus catheter placement time
Patient 1	Female	49	Postoperative recurrence of bilateral ovarian serous papillary adenocarcinoma	Abdominal distension aggravated for 3 days	12 January 2016	25 January 2016
Patient 2	Male	67	Multiple abdominal metastasis after interventional therapy for liver cancer	No flatus and defecation for 1 week, abdominal distension for 3 days	28 July 2016	01 August 2016
Patient 3	Male	69	Postoperative recurrence of adenocarcinoma of esophagogastric junction	No flatus and defecation for 36 hours	2 June 2017	8 June 2017
Patient 4	Female	48	Postoperative recurrence of ovarian serous papillary adenocarcinoma	Abdominal pain, no flatus and defecation for 7 days	27 July 2017	1 August 2017
Patient 5	Male	51	Multiple abdominal metastasis secondary to rectal cancer	Abdominal distension, no flatus and defecation for 2 days	21 September 2017	20 September 2017
Patient 6	Female	41	Multiple metastasis of undifferentiated carcinoma of cervix	Abdominal pain for 1 month	8 November 2018	3 November 2018
Patient 7	Male	66	Multiple metastases of sigmoid colon cancer	Abdominal distension for over half a month, aggravated for 3 days	24 May 2018	14 May 2018
Patient 8	Female	59	Multiple postoperative metastases of high-grade serous carcinoma of right ovary	Abdominal pain, no flatus for 3 days	20 January 2020	16 January 2020
Patient 9	Male	44	Multiple metastasis after interventional therapy for liver metastasis of rectal cancer	Abdominal distension aggravated, defecation without flatus for 3 days	24 March 2020	23 March 2020
Patient 10	Male	74	Colon cancer secondary to rectal cancer surgery	Abdominal distension for 3 days	2 July 2020	15 July 2020
Patient 11	Male	58	Multiple metastasis after cardiac cancer surgery	Abdominal distension and abdominal pain for 5 days	4 August 2020	05 August 2020
Patient 12	Male	74	Recurrence combined with multiple metastases after sigmoid colon cancer surgery	Abdominal pain and abdominal distension for over 10 days	18 June 2021	2 July 2021
Patient 13	Male	74	Rectal adenocarcinoma	Worsening defecation difficulty for over 1 month	22 December 2021	27 December 2021
Patient 14	Female	71	Postoperative recurrence of pancreatic ductal adenocarcinoma combined with liver metastasis	Abdominal pain and abdominal distension for 3 days	27 January 2022	29 April 2022

All 14 cases were patients with advanced malignant tumors complicated with multiple frequencies of abdominal distension and abdominal pain, most of which were accompanied by symptoms of stopping autonomous defecation and exhaust for a long time, and were

diagnosed as complete or incomplete intestinal obstruction by standing abdominal plain film or gastrointestinal radiography combined with typical clinical symptoms; gastrointestinal decompression was performed using a transnasal or transanal intestinal obstruction catheter

according to the site of obstruction and the extent of spread of the lesion; the angiographic catheter with a guide wire was inserted into the abdominal cavity under the guidance of digital subtraction angiography (DSA), and the location of the obstruction and the degree of dilatation of the local lumen were assessed according to the angiographic results, the drainage end of the lateral orifice of the intestinal obstruction catheter was sent as far as possible to the lesion segment with significant intestinal dilatation along the guide wire, and 10–15 mL of distilled water was injected into the balloon forward after satisfactory position, and the image was stored to record the position of the end of the catheter. The specific operation steps are the same as the first catheter catheterization, but more frequent and careful postoperative reexamination is required. If necessary, standing abdominal plain film or gastrointestinal radiography should be performed every 24 hours to evaluate the drainage effect of the two intestinal obstruction catheters and the degree of relief of intestinal obstruction. If the symptoms are relieved, a intestinal obstruction catheter with better drainage should be removed as appropriate for observation and follow-up, and enteral feeding tube should be used for symptomatic treatment as appropriate. After complete remission of symptoms, all drainage catheters can be removed and relevant imaging examinations can be regularly reviewed. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by Ethics Committee of the Fourth Hospital of Hebei Medical University and Hebei Tumor Hospital (No. 2021KY182). Written informed consent was obtained from the patient for publication of this case series and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

Typical case

Case 3 was admitted on May 21, 2017 due to stopping exhaust and defecation for 36 hours. The patient complained of intermittent abdominal distension and abdominal pain in upper abdomen for 3 days. Physical examination showed abdominal distention, drum sounds on percussion and weak bowel sounds. Combined with relevant clinical manifestations and previous diagnosis and treatment history, the patient was diagnosed with postoperative recurrence of adenocarcinoma of esophagogastric junction complicated with malignant intestinal obstruction. Gastrointestinal decompression, enema and other symptomatic treatment were routinely given. After

conservative treatment for 5 days, the symptoms were still not significantly relieved. Upper gastrointestinal radiography showed intestinal obstruction on May 27, 2017; lower gastrointestinal radiography showed pneumatosis in ascending colon and transverse colon on May 29, 2017. Combined with laboratory tests, it was considered that the recurrence of primary disease after operation had been widely disseminated in the abdominal cavity. In order to relieve the patient's symptoms, a catheter decompression and drainage of intestinal obstruction could be performed first. On June 2, 2017, nasal ileus catheter implantation was performed; 300–500 mL of intestinal obstruction fluid was drained daily after operation. The patient's abdominal distension symptoms were not significantly relieved. Repeated erect abdominal plain film on the 3rd day after operation showed that the air-fluid level shadow was not clearly reduced than before and the local colonic dilatation was obvious. After analysis of the patient's condition, considering multiple metastases of lesions and multiple adhesive obstructions of intestinal canal, combined drainage with two catheters was required. Transanal ileus catheter implantation was performed on June 8, 2017. The daily drainage volume of the two catheters was 1,000–1,500 mL after operation. Gastroenterography on June 13, 2017 suggested that the colonic dilatation was basically relieved. After operation, the patient's abdominal distension and abdominal pain symptoms were completely relieved. On June 17, 2017, the patient could spontaneously exhaust and defecate, and ate water orally. On June 22, 2017 and June 26, 2017, two reexaminations of erect abdominal plain film showed no air-fluid level shadow, and the intestinal obstruction was completely relieved. The whole course of treatment lasted 36 days, and the patient was discharged without complaints of abdominal distension, abdominal pain or other discomfort, and could eat normally orally and defecate spontaneously.

Treatment outcome

Four of the 14 patients (patient 3, patient 7, patient 10, patient 13) could spontaneously defecate and exhaust after combined application of the 2 ileus catheters. Re-examination of standing abdominal plain films showed no significant air-fluid level shadows, and the ileus symptoms were completely relieved. Enteral nutrition could be performed orally or via nasoenteric feeding tubes. The treatment course for complete resolution of ileus in patient 3 is shown in *Figure 1*.

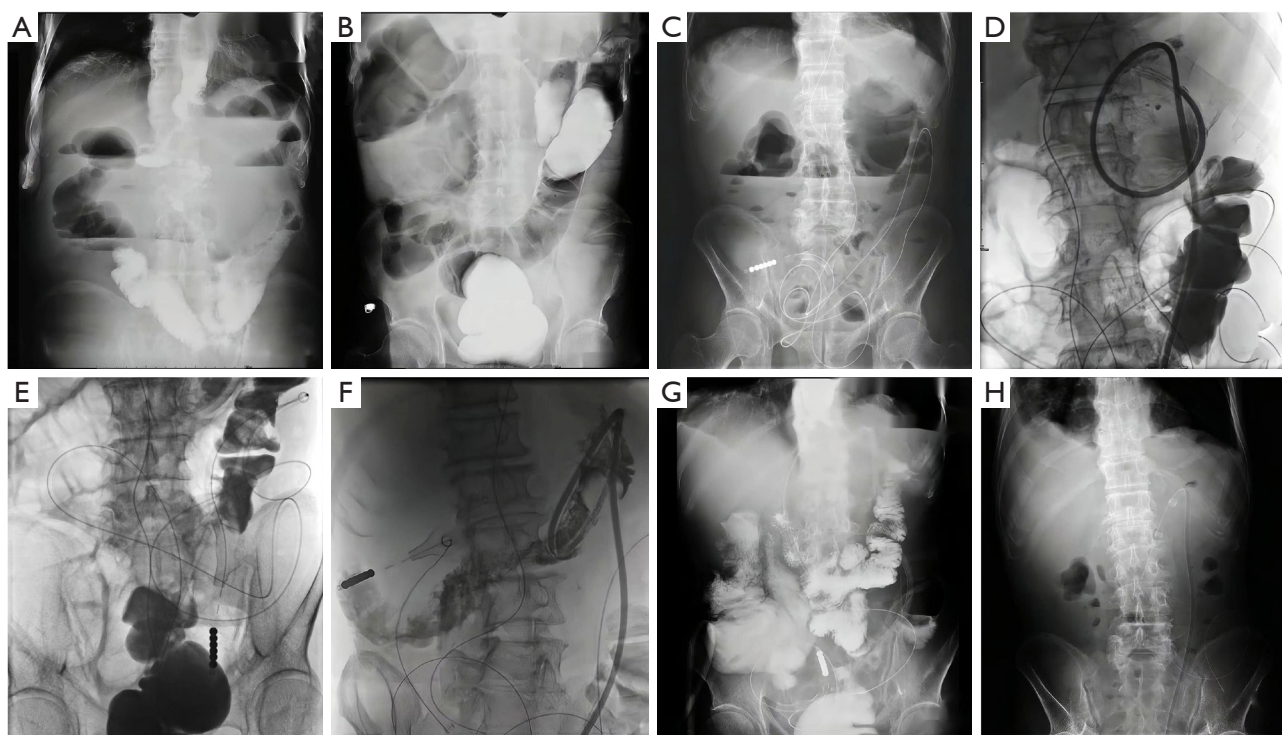


Figure 1 Treatment course of 2 ileus catheters in patient 3. (A) Multiple air-fluid level shadows arranged in steps on standing abdominal plain film 10 days before surgery; (B) significant colonic dilatation on lower gastrointestinal radiography 6 days before surgery; (C) air-fluid level shadows were reduced, but the colon was still significantly dilated on standing abdominal plain film 2 days after transnasal ileus catheter placement; (D) transanal ileus catheter placement; (E) radiography after placement of intestinal obstruction catheter confirmed the drainage effect; (F) showed that the colonic dilatation was basically relieved 5 days after operation; (G) air-fluid level shadows were eliminated by gastrointestinal radiography 6 days after surgery; (H) complete remission of intestinal obstruction on standing abdominal plain film 18 days after surgery.

Three patients (patient 2, patient 8, patient 9) had significant relief of intestinal obstruction symptoms after combined use of the 2 catheters, and the air-fluid level shadow on re-examination of standing abdominal plain film was reduced by more than 70% compared with before. Patients could intermittently defecate and exhaust a small amount. Patient 9's treatment course is shown in *Figure 2*.

In 3 patients (patient 6, patient 12, patient 14), the symptoms of intestinal obstruction were relieved after combined use of the 2 catheters, and the air-fluid level shadow on re-examination of standing abdominal plain film was reduced by 20–50% compared with before. Symptoms of abdominal distension and abdominal pain were significantly improved, but spontaneous defecation and exhaust were unable. Patient 14's treatment course is shown in *Figure 3*.

Four patients (patient 1, patient 4, patient 5, patient 11) had no relief of intestinal obstruction symptoms after

combined application of the 2 catheters. There was no significant change in air-fluid level shadows on re-examination of standing abdominal plain film, and the symptoms of abdominal distension and abdominal pain were slightly improved or not improved. Two patients underwent palliative surgery for transverse colon double-lumen colostomy and 2 gave up treatment and were discharged automatically. Patient 4's treatment course is shown in *Figure 4*.

Discussion

Malignant intestinal obstruction is a serious complication of end-stage abdominal malignant tumors, and is often accompanied by severe malnutrition or cachexia. The median survival time is only 1–9 months, and is common in patients with colorectal cancer, ovarian cancer, and gastric cancer (9). In addition to the literature review, in

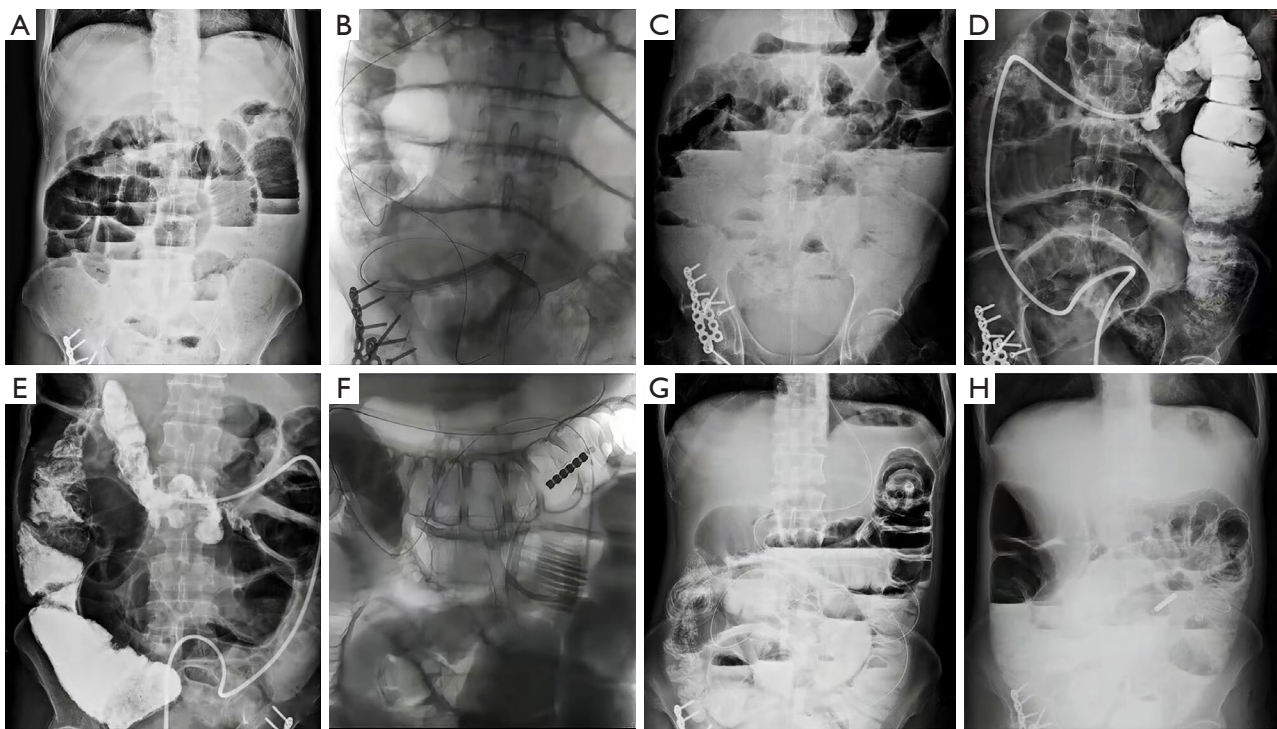


Figure 2 Treatment course for patient 9. (A) Multiple air-fluid level shadows arranged in steps on standing abdominal plain film 1 day before operation; (B) transanal intestinal obstruction catheter was placed; (C) re-examination of standing abdominal plain film 1 day after operation showed insignificant reduction of air-fluid level shadows; (D) poor effect by transintestinal obstruction catheter angiography; (E) multiple local stenosis in ascending colon and right transverse colon; (F) transnasal intestinal obstruction catheter insertion; (G) reduction of air-fluid level shadows on gastrointestinal radiography 2 days after combined catheterization; (H) re-examination of standing abdominal plain film 3 days after operation showed significant relief of intestinal obstruction.

our case series, we also discuss 1 patient with liver cancer and 1 patient with pancreatic cancer. Typical symptoms of malignant intestinal obstruction are repeated frequent abdominal distension, abdominal pain, cessation of defecation, and exhaustion. Most of the clinical application of drugs to relieve cancer pain (10), and long-term parenteral nutrition for maintenance treatment, greatly reducing the quality of life of patients with tumor survival. We hope to improve the painful symptoms of intestinal obstruction through minimally invasive techniques (11,12), increase the intake of appropriate enteral nutrition to improve the microenvironment in the small intestine, reduce infection while also increasing immunity, which will lay the foundation for subsequent surgical treatment or chemoradiotherapy for cancer patients and improve the quality of life of patients with end-stage tumors.

The treatment of malignant intestinal obstruction is divided into surgical treatment and non-surgical treatment. Because most patients are advanced cancer patients

who have experienced recurrence and metastasis after radical surgical treatment, or have undergone excessive chemoradiotherapy, in addition to the functional disorder of their own primary tumor, they will be accompanied by tumor-related moderate to severe malnutrition, the surgical basis is relatively weak, and serious complications can easily occur after surgery or even lead to death, and the surgical methods are mostly palliative surgery, short-circuit surgery and fistulization. Rodríguez *et al.* reported that palliative gastrojejunostomy allows rapid return to oral intake in patients with malignant intestinal obstruction (13). Read *et al.* reported that patients with intestinal obstruction who underwent intestinal bypass surgery could have restored eating ability with a great probability and could withstand further antitumor treatment (14). Zhang *et al.* reported that surgical treatment of malignant intestinal obstruction has certain advantages in the life cycle (15), but most of our surgical treatment patients had single-lesion obstruction, and diffuse multiple obstruction accounts for a greater

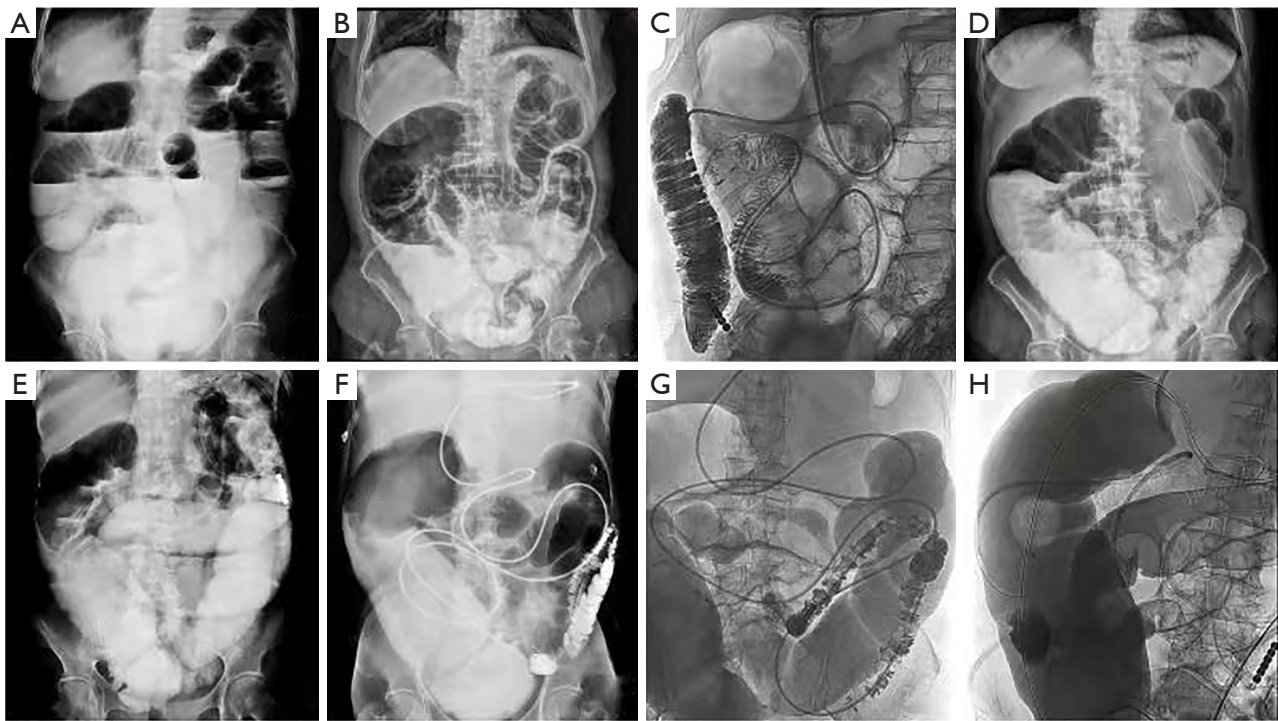


Figure 3 Patient 14 treatment course. (A) Multiple air-fluid level shadows arranged in steps on standing abdominal plain film 5 days before operation; (B) multiple intestinal dilatation in local small intestine on gastrointestinal radiography 4 days before operation; (C) transnasal ileus catheter insertion; (D) intestinal obstruction was not significantly relieved by re-examination of radiography 2 days after operation; (E) intestinal obstruction symptoms were slightly improved by re-examination of radiography 8 days after operation; (F) small intestinal obstruction was improved by re-examination of radiography 2 months after operation, and local dilatation of colon was obvious; (G) intraoperative radiography confirmed the stenosis site and obstruction range; (H) transnasal ileus catheter insertion combined with drainage and decompression.

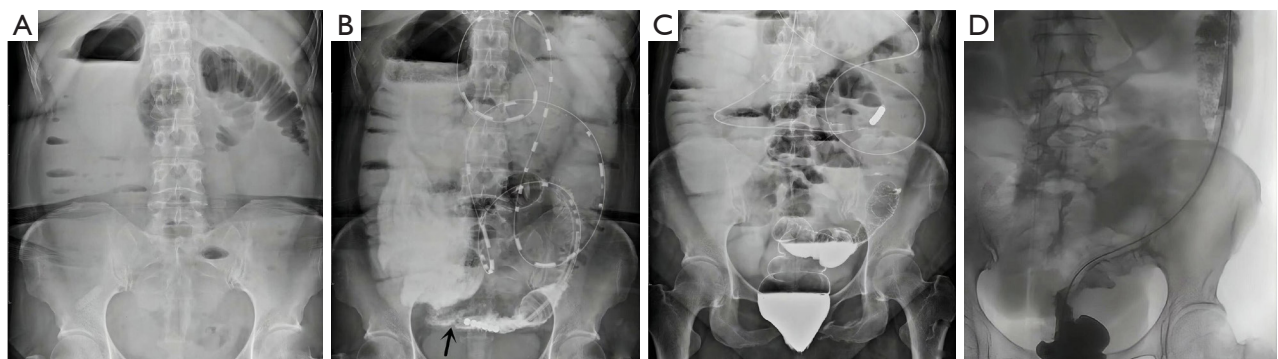


Figure 4 Patient 4 treatment course. (A) Multiple air-fluid level shadows arranged in steps on standing abdominal plain film 1 day before surgery; (B) intraoperative angiography of catheter insertion for nasal ileus, such as extraluminal pressure stenosis shown by the arrow, and the ileus catheter could not pass through; (C) air-fluid level shadows were not significantly reduced 3 days after surgery, the ileus catheter still could not pass through the stenotic segment, and local colon dilatation was significant; (D) transnasal ileus catheter insertion.

proportion of malignant intestinal obstruction. Because the route of catheterization operation is mostly oral or transanal, and the operation process is simpler and faster than the operation, the physiological basis of the patient is relatively loose, there are fewer contraindications, and the indications are broader. Matsuda *et al.* reported that self-expanding metal stents for the treatment of malignant large intestinal obstruction can promote the purpose of 1-stage operation without stoma (16). This treatment group of preoperative decompression is more patients with early malignant intestinal obstruction. Oh *et al.* reported that palliative self-expandable metal stent in the treatment of right malignant intestinal obstruction has a higher success rate and lower complications than the left side (17). The related stent therapy is also limited to single stenosis lesions and cannot be applied to patients with multiple abdominal metastases or extensive dissemination of tumor foci in the abdominal cavity. Drainage decompression is more common in the single application of nasoileus catheter or transanal ileus catheter, especially for the relief of abdominal distension and abdominal pain and other related clinical symptoms. Lai *et al.* reported that fluoroscopy-guided placement of long intestinal canal in the treatment of severe malignant intestinal obstruction, and the symptom relief rate of abdominal pain and vomiting are very high, and the incidence of serious complications is very low (18); however, it is difficult to achieve rapid improvement of symptoms for complex malignant intestinal obstruction through a separate drainage approach.

Fourteen patients with complicated malignant intestinal obstruction who had experienced recurrence after radical surgery or multistage chemoradiotherapy combined with multiple metastases were treated with transanal or transanal ileus catheters. The effect of transanal ileus catheters alone could not rapidly improve symptoms or achieve the purpose of enteral nutrition in a short time, while the symptoms of intestinal obstruction were relieved to different degrees in 10 patients who were treated with the combination of the 2 catheters, of which 4 patients could completely relieve the intestinal obstruction by defecation and exhaust themselves and could rely on enteral nutrition to maintain the treatment. An advantage of the combined use of 2 ileus catheters in the treatment of malignant intestinal obstruction is that the negative pressure drainage of the whole intestinal segment can directly improve multiple luminal dilations, and then rapidly relieve the relevant symptoms of abdominal distension and abdominal pain in patients. The drainage degree of the catheter and the

distribution range of side holes are more effective than the single ileus catheter to avoid the localized dilatation of partially adherent intestinal canal due to incomplete drainage. At the same time, the ileus catheter is a closed drainage system, which can accurately calculate the body fluid and electrolyte imbalance according to the drainage volume of the 2 catheters, and facilitate clinicians to quickly make adjustments. Zuo *et al.* reported that body fluid management and electrolyte balance monitoring are more convenient through the ileus catheter (19). The wide distribution of the 2 ileus catheters is more effective for the support arrangement of the whole intestinal canal and can prevent the adhesion and intussusception between the intestinal canal, which is similar to the fixed arrangement in the digestive tract. Fu *et al.* reported that small intestinal internal fixation with built-in catheters can prevent further aggravation of adhesive intestinal obstruction, and can be used for the treatment of small intestinal fistula through intestinal obstruction catheters (20). There is also a combination of 2 intestinal obstruction catheters that can take into account the delivery line suitable for enteral nutrition or drug therapy, and when the patient's intestinal obstruction symptoms are alleviated by combined catheterization, enteral nutrition can be performed by injecting the appropriate amount of nutrients through the nasoileus catheter to relieve intestinal wall edema and improve the microenvironment in the intestine to avoid the occurrence of intestinal infection. At the same time, Chinese patent medicines and other drugs can also be injected through the intestinal obstruction catheter to promote the relief of intestinal obstruction. Qi *et al.* reported that nasal intestinal obstruction tube perfusion of compound Da-Cheng-Qi Decoction can promote intestinal exhaustion and defecation and significantly improve the effect of treating malignant intestinal obstruction (21).

We summarized the relevant treatment and operation of 14 patients with combined catheterization. First, the judgment of the drainage position of malignant intestinal obstruction should be accurate and comprehensive. The obstruction site and obstruction range can be identified by repeated standing abdominal plain film and gastrointestinal radiography, and other auxiliary examination indicators can also be used to assess the degree and nature of intestinal obstruction. Akbas *et al.* reported that the benign and malignant degrees and urgency of intestinal obstruction can be distinguished by hemoglobin, albumin, lymphocyte, and platelet levels (22). After the 2 catheters are placed in the body, the proximal end of the intestinal obstruction

catheter can be repeatedly pulled through the artificial, the peristalsis and advancement of the whole small intestine can be promoted, and the possibility of multiple intestinal adhesions in the obstructed area can be reduced. Finally, the combined use of decompression and drainage of the 2 intestinal obstruction catheters can strive for a larger operation space for palliative fistulization surgery, and it can also be combined with intraperitoneal injection of antitumor drugs to improve malignant intestinal obstruction, and the symptoms can be relieved by injecting drugs through the nasal ileus catheter to further improve the symptoms of intestinal obstruction. Pandiaraja *et al.* reported that a new intestinal obstruction model can be applied to patients after catheter treatment (23). Ba *et al.* reported intraperitoneal chemotherapy combined with decompression and drainage to inhibit tumor metastasis (24). Duck *et al.* reported a prospective study of improving malignant intestinal obstruction by injecting Lanreotide Autogel (25).

Conclusions

Combined application of transanal ileus catheter and transnasal ileus catheter in the treatment of malignant intestinal obstruction can effectively drain and decompress, rapidly improve the clinical manifestations of abdominal distension and abdominal pain, lay the foundation for palliative surgery and further antitumor treatment, improve the quality of life of patients with advanced cancer, and can be used as an effective palliative treatment to relieve malignant intestinal obstruction.

Acknowledgments

The authors thank the patients for their cooperation and participation in the study.

Funding: This study was supported by Department of Health of Hebei Province grant (No. 20220151).

Footnote

Reporting Checklist: The authors have completed the AME Case Series reporting checklist. Available at <https://apm.amegroups.com/article/view/10.21037/apm-22-1233/rc>

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <https://apm.amegroups.com/article/view/10.21037/apm-22-1233/coif>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by Ethics Committee of the Fourth Hospital of Hebei Medical University and Hebei Tumor Hospital (No. 2021KY182). Written informed consent was obtained from the patient for publication of this case series and accompanying images. A copy of the written consent is available for review by the editorial office of this journal.

Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

References

1. Tigert M, Lau C, Mackay H, et al. Factors impacting length of stay and survival in patients with advanced gynecologic malignancies and malignant bowel obstruction. *Int J Gynecol Cancer* 2021;31:727-32.
2. Baddeley E, Mann M, Alison A, et al. Symptom burden and lived experiences of patients, caregivers and healthcare professionals on the management of malignant bowel obstruction: A qualitative systematic review. *Palliative Medicine* 2022;36:895-911.
3. Simon ST, Pralong A, Radbruch L, et al. The Palliative Care of Patients With Incurable Cancer. *Dtsch Arztebl Int* 2020;116:108-15.
4. Bento JH, Bianchi ET, Tustumi F, et al. Surgical Management of Malignant Intestinal Obstruction: Outcome and Prognostic Factors. *Chirurgia (Bucur)* 2019;114:343-51.
5. Gould Rothberg BE, Quest TE, Yeung SJ, et al. Oncologic emergencies and urgencies: A comprehensive review. *CA Cancer J Clin* 2022;72:570-93.
6. Caparica R, Amorim L, Amaral P, et al. Malignant bowel obstruction: effectiveness and safety of systemic chemotherapy. *BMJ Support Palliat Care*. 2020 [Epub ahead of print]. doi: 10.1136/bmjspcare-2020-002656.

7. Lueders A, Ong G, Davis P, et al. Colonic stenting for malignant obstructions-A review of current indications and outcomes. *Am J Surg* 2022;224:217-27.
8. Wu CH, Lee MH, Tsou YK, et al. Efficacy and Adverse Effects of Self-Expandable Metal Stent Placement for Malignant Duodenal Obstruction: The Papilla of Vater as a Landmark. *Cancer Manag Res* 2020;12:10261-9.
9. Morgan RD, Stamatooulou S, Mescallado N, et al. Screening tool for malignant bowel obstruction in relapsed, metastatic ovarian cancer. *ESMO Open* 2019;4:e000463.
10. Shi M, Zhang J. Strategies of chemotherapy for peritoneal metastasis of gastrointestinal cancer. *Zhonghua Wei Chang Wai Ke Za Zhi* 2021;24:214-9.
11. Chen F, Dong Q, Zhang F. Is self-expandable metallic stents superior to transanal decompression tubes for the treatment of malignant large-bowel obstruction: a meta-analysis. *Ann Palliat Med* 2021;10:7378-87.
12. Makhejani KR, Haq MMU, Iqbal J, et al. Self-expanding Metallic Stent Placement in Malignant Terminal Ileal Stricture. *J Coll Physicians Surg Pak* 2019;29:S89-91.
13. Rodríguez JI, Kutscher M, Lemus M, et al. Palliative gastrojejunostomy in unresectable cancer and gastric outlet obstruction: a retrospective cohort study. *Ann R Coll Surg Engl* 2021;103:197-202.
14. Read M, Powers BD, Pimiento JM, et al. Management of Malignant Small Bowel Obstruction: Is Intestinal Bypass Effective Palliation? *Ann Surg Oncol* 2022;29:6980-7.
15. Zhang ZZ, Zhang XW, Zhu QK, et al. Efficacy comparison of surgical and non-surgical treatment of malignant intestinal obstruction. *Zhonghua Wei Chang Wai Ke Za Zhi* 2020;23:1206-10.
16. Matsuda A, Yamada T, Matsumoto S, et al. Short-term outcomes of a self-expandable metallic stent as a bridge to surgery vs. a transanal decompression tube for malignant large-bowel obstruction: a meta-analysis. *Surg Today* 2019;49:728-37.
17. Oh HH, Cho SB, Hong JY, et al. Clinical outcomes of palliative self-expandable metal stent placement in right- and left-sided malignant colon obstruction: A Honam Association for the Study of Intestinal Disease (HASID) multicenter study. *Medicine (Baltimore)* 2022;101:e30156.
18. Lai H, Wu K, Liu Y, et al. Fluoroscopy-guided long intestinal tube placement for the treatment of malignant bowel obstruction. *Oncol Lett* 2019;17:5154-8.
19. Zuo L, Cao L, Ding C, et al. Strategy to small intestine obstruction caused by Crohn's disease on the basis of transnasal ileus tube insertion. *BMC Surg* 2022;22:183.
20. Fu JH, Zhao N, Liu B, et al. Advances in clinical application of obstruction catheter in prevention and treatment of intestinal obstruction. *Zhonghua Wei Chang Wai Ke Za Zhi* 2021;24:931-5.
21. Qi X, Shimin Y, Yu W. The effect of compound Da-Cheng-Qi Decoction on the treatment of malignant bowel obstruction with transnasal ileus tube. *Complement Ther Clin Pract* 2021;43:101316.
22. Akbas A, Koyuncu S, Hacim NA, et al. Can HALP (Hemoglobin, Albumin, Lymphocytes, and Platelets) Score Differentiate Between Malignant and Benign Causes of Acute Mechanic Intestinal Obstruction? *Cancer Biother Radiopharm* 2022;37:199-204.
23. Pandiaraja J, Chakkarapani R, Arumugam S. A study on patterns, indications, and complications of an enteric stoma. *J Family Med Prim Care* 2021;10:3277-82.
24. Ba M, Cui S, Long H, et al. Safety and Effectiveness of High-Precision Hyperthermic Intraperitoneal Perfusion Chemotherapy in Peritoneal Carcinomatosis: A Real-World Study. *Front Oncol* 2021;11:674915.
25. Duck L, Demolin G, D'Hondt L, et al. Efficacy and Safety of Lanreotide Autogel in the Treatment of Clinical Symptoms Associated With Inoperable Malignant Intestinal Obstruction: A Prospective Phase II Study. *Clin Ther* 2021;43:2136-2145.e2.

(English Language Editor: R. Scott)

Cite this article as: Yang D, Shi P, Li Y, Li Y, Yang K, Yang G. Transanal ileus catheter combined with nasal ileus catheter in the treatment of malignant ileus in 14 cases: a case series and literature review. *Ann Palliat Med* 2022;11(11):3520-3529. doi: 10.21037/apm-22-1233