Impact of establishing an integrated working group of medical and nursing staff in the endoscopy unit on the course, complications, and prognosis of gastrointestinal endoscopic procedures

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Longcheng Street, Xiaodian District, Taiyuan City, Shanxi Province, chaibaocb@126.com/030032 Pinyin: Bao Chai If supported by a grant, please specify the grant name and grant number (this will not be added after acceptance): 202403021212191 Research on the mechanism by which neck ring structure affects the colonization of enterohemorrhagic Escherichia coli through regulation of T3SS protein components.

Abstracts

Objective To evaluate the impact of establishing an integrated work group of endoscopy unit providers on the course of gastrointestinal endoscopic procedures, complications, and prognosis.

Methods Patients who underwent gastrointestinal endoscopic surgical treatment in our hospital from January 2023 to December 2023 were recruited, and whether or not they received integrated workgroup management by endoscopy unit medical staff was used as an exposure factor to form two cohorts of routine management and workgroup management, and to compare surgical process, complications, and prognosis of different cohorts.

Results A total of 128 patients who underwent gastrointestinal endoscopic surgical treatment were included, of which 61 cases were in the work group management cohort and 67 cases in the routine management cohort. Compared with the conventional management cohort, the working group management cohort had shorter operation time and gastrointestinal function recovery time ($P<0.05$); compared with the conventional management cohort, the working group management cohort had a lower complication rate ($P<0.05$); compared with the group before treatment, the scores of the Quality of Life Evaluation Scale (SF-36) of the two groups after treatment were significantly higher, and the working group management cohort's SF-36 scores were better than those of the conventional management cohort ($P<0.05$).

Conclusion Establishment of an integrated work group of endoscopy unit providers may speed up the process of gastrointestinal endoscopy, reduce complications and improve prognosis.

Keywords Integrated working group of healthcare professionals; Gastrointestinal endoscopy; Surgical process; Complications;

Introduction

Minimally invasive gastrointestinal endoscopy has become an important treatment method in gastroenterology due to its simple operation, less invasive, faster recovery and fewer complications, etc. It is widely used in the treatment of gastrointestinal bleeding, stenosis, tumors, and other diseases through direct observation by gastrointestinal endoscopy to accurately determine the nature and extent of lesions[1] . Gastrointestinal endoscopy is a high-risk procedure performed by professionals, and as an invasive procedure, patients are prone to stress, leading to reduced compliance with treatment[2] . Conventional nursing interventions are useful in helping patients understand gastrointestinal endoscopy, including providing guidance on preparation for the examination, explaining the procedure, and informing patients of possible complications, but they are ineffective in improving patient comfort during endoscopic treatment and are difficult to alleviate through simple explanations and guidance[3,4] . Healthcare integration model is an innovative medical working model, which breaks down the traditional healthcare state of clear boundaries between doctors and nurses, and closely integrates doctors, nurses and patients to form a whole working together[5] . Integrated medical care model refers to the process in which doctors and nurses with certain professional knowledge and competence provide healthcare services to patients under the premise of mutual trust, democratic equality, through objective joint decision-making, open communication and coordination, and shared responsibility[6] . Therefore, our hospital used the establishment of endoscopy room medical and nursing staff integration work group to intervene in patients with gastrointestinal endoscopy diagnosis and treatment, to observe the intervention situation and to conduct a study, which is now reported as follows.

Data

Source of cases

Patients who underwent gastrointestinal endoscopic procedures at our institution from January 2023 to December 2023 were recruited to form two cohorts, routine management and work group management, using as an exposure factor whether or not they received integrated work group management by endoscopy unit medical staff.

Inclusion criteria

(1) endoscopic mucosal resection, endoscopic submucosal dissection, endoscopic varicose vein ligation, endoscopic injection sclerotherapy, and endoscopic retrograde cholangiopancreatography at our institution; (2) cognitively normal; (3) first-time endoscopy patients; and (4) signed informed consent.

Exclusion criteria

(1) those with infectious diseases; (2) those with blood disorders; (3) those with organ insufficiency; and (4) those taking sedative drugs for a long time.

Removal criteria

(1) patients who did not complete the follow-up visit, including those who withdrew on their own and those who missed the visit; and (2) those who could not complete all the observation items for any reason.

Study Subgroups and Intervention Programs

Study Subgroups

Two cohorts of included patients undergoing gastrointestinal endoscopic surgical treatment were formed based on whether or not the patients were managed by an integrated workgroup of endoscopy unit providers during the perioperative period: a routine management cohort versus a workgroup management cohort.

Intervention programs

Routine management cohort: (1) preoperative: inform the patient of the diagnosis and treatment precautions, help the patient to complete the preoperative preparation; (2) intraoperative: pay attention to the patient's vital signs, give the patient a mouth cushion, elevate the patient's lower jaw, tilt the head back, continuous mask oxygenation, and closely observe respiration, blood pressure changes; (3) postoperative: after the patient is free of choking and coughing, eat a light diet after 2h, and closely observe the vital signs.

Workgroup management cohort: (1) Establishment of an integrated workgroup of medical and nursing staff in the endoscopy unit: composed of the head nurse

of the gastroenterology department, the responsible physician, the intervention staff, and the anesthesiologist, with one head nurse, five nursing staff, two responsible physicians, and two anesthesiologists, with the head nurse acting as the head of the group and the director of the gastroenterology department as the advisor, who will work together with the members of the workgroup to discuss and formulate the intervention plan, which will include a preoperative visit, intraoperative cooperation, and postoperative intervention. The program flow includes preoperative visit, intraoperative cooperation, and postoperative intervention, and the specific flow is adjusted according to the patient's situation. (2) Implementation of the program: ① Preoperative visit: the members of the working group went into the ward to visit the patients and their families, explaining the purpose of the operation, methods, disease-related knowledge, so that the patients know their own diseases, focusing on the necessity and safety of the operation, as far as possible to eliminate negative emotions. At the same time, the team members can list the successful cases of treatment to the patients, or invite the successful cases of treatment to share their own experiences with the patients through the Internet, to improve the patients' confidence and compliance. Inform patients to eat fluids, fasting and water fasting time before surgery, and help patients to complete the preoperative examination. ② intraoperative cooperation: work group members to prepare the relevant instruments, to help patients change the surgical position, do a good job of vital signs monitoring, during the operation, close monitoring of vital signs, if any abnormalities, inform the physician in a timely manner, the intraoperative team members to actively communicate, do a good job in the use of intraoperative drugs, samples sent for testing, and so on. ③ Postoperative intervention: after the operation, after anesthesia awake, safely send the patient back to the ward, to be oxygen, vital signs monitoring, handover with the ward nursing staff: close monitoring of the patient's condition, to avoid complications, the development of dietary regimens for the patient, including a small amount of fluid after the patient's exhaustion, in the recovery of intestinal function, from the semi-liquid food gradually over to the normal diet, the return to the normal diet to low-fat, After resumption of normal diet, low-fat, easy-to-digest food, small meals and multiple meals are the main focus, and according to the patient's condition to ensure balanced nutritional intake, to ensure that the nutrients between the food complement each other, and to inform the patient that he needs to combine work and rest and maintain a positive and optimistic attitude to cooperate with the postoperative examination. ④ Precautions: If the patient has pain after surgery, tell the patient to prohibit forceful activities, if necessary, inject analgesic drugs to relieve pain; if fever occurs, tell the patient no need to panic, mild fever is a normal phenomenon, and the temperature is <38 ℃, the postoperative period of 3-5d can be recovered by itself; if the body temperature is >38 ℃, and the time is more than 7d, the need to inform the physician, to take targeted therapeutic

measures; such as nausea occurred in the patient, Vomiting, nursing staff should pay attention to observation, to avoid patient aspiration; If abdominal distension is serious, gastrointestinal decompression can be carried out; If the occurrence of hiccups, can choose to compress the supraorbital nerve, or a short period of time inhalation of carbon dioxide and other ways of relief.

Outcomes

Primary outcome: time to surgery and time to recovery of gastrointestinal function were recorded for both cohorts.

Secondary outcomes: recording the occurrence of perforation, bleeding, and infection in both cohorts; assessing quality of life using the Quality of Life Evaluation Scale (SF-36)[7], including emotional/physical function (function), somatic pain, and other 8 items, each with a score of 100 points, and the higher the score, the higher the quality of life.

Statistical analysis

SPSS23.0 software was used to calculate all kinds of data, the measurement information was expressed as (±s) and t-tested, and the count information was expressed as n (%) and χ^2 test, if $P<0.05$, there was a statistically significant difference between the groups.

Results

Baseline information for both cohorts

There was no statistically significant difference in the baseline data of male and female distribution, age, and surgical procedure between the two groups ($P>0.05$). See Table 1.

Table 1 Comparison of baseline data between the two groups (± s, n/%)

Groups	Distinguishing between the sexes		Age (years)	Type of surgery	
	Male	Daughter		Endoscopic mucosal resection	Endoscopic submucosal dissection
Routine management cohort (n=67)	32 (47.76)	35 (52.24)	53.26±2.19	14 (20.90)	16 (23.88)
Working Group Management Cohort (n=61)	31 (50.82)	30 (49.18)	53.78±2.28	12 (19.67)	13 (21.31)

Comparison of two queue surgery processes

Compared with the conventional management cohort, the work group management cohort had shorter operative time and gastrointestinal function recovery time ($P<0.05$); see Table 2.

Table 2 Comparison of surgical processes in the two cohorts (± s)

Groups	Surgical time (min)	Recovery time of gastrointestinal function (d)

Routine management cohort (n=67)	95.23±5.10	1.85±0.35
Working Group Management Cohort (n=61)	106.95±6.22	2.67±0.49
t	11.699	10.967
P	0.000	0.000

Comparison of complications between the two cohorts

The workgroup management cohort had a lower complication rate compared with the conventional management cohort ($P<0.05$); see Table 3.

Table 3 Comparison of complications in the two cohorts (n,%)

Groups	Perforate	Hemorrhage	Infections	Rate of occurrence
Routine management cohort (n=67)	0 (0.00)	1 (1.49)	1 (1.49)	2 (2.98)
Working Group Management Cohort (n=61)	1 (1.64)	3 (4.92)	5 (8.20)	9 (14.75)

χ^2				5.630
P				0.018

Comparison of quality of life between the two cohorts

Compared with the group before treatment, SF-36 scores were significantly higher in both groups after treatment, and all SF-36 scores in the work group management cohort were better than those in the conventional management cohort (*P*<0.05). See Table 4.

Table 4 Comparison of quality of life in the two cohorts (± s, points)

Groups	Physiological function		Physiological capability		Gener
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-interve
Routine management cohort (n=67)	70.12±2.06	86.37±2.69*	71.39±2.11	85.34±2.64*	70.38±
Working Group Management Cohort (n=61)	70.25±2.11	83.01±2.43*	71.44±2.15	82.68±2.43*	70.51±
t	0.353	7.389	0.133	5.913	0.356

P	0.725	0.000	0.895	0.000	0.723

Table 4 Comparison of quality of life in the two cohorts (± s, points)

Groups	Social function		Vigor		Menta
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-interve
Routine management cohort (n=67)	75.06±2.15	88.09±2.89*	76.01±2.16	85.44±2.91*	73.05±
Working Group Management Cohort (n=61)	75.42±2.19	86.13±2.63*	76.09±2.18	83.10±2.63*	73.17±
t	0.938	3.999	0.208	4.756	0.310
P	0.350	0.000	0.835	0.000	0.757

**P*<0.05 compared to pre-intervention in this group.

Discussion

With the rapid progress of medical science and technology, digestive endoscopy has become an important means of diagnosis and treatment of digestive system diseases, and its development status is remarkable[8]. At

present, digestive endoscopy technology has transformed from a single gastrointestinal examination to a multi-method examination and treatment system covering the entire digestive tract. Endoscopic equipment has been upgraded iteratively, and high-definition, even three-dimensional, AI-assisted endoscopic equipment has been introduced one after another, which enables doctors to carry out more accurate diagnosis and treatment of digestive tract diseases[9,10]. From simple endoscopic biopsy and mucosal stripping biopsy to complex endoscopic mucosal stripping, endoscopic submucosal tumor debulking, endoscopic transmucosal tunneling tumor resection, endoscopic technology continues to break through the limitations of traditional surgeries, providing more minimally invasive and highly effective treatment options for patients[11]. However, gastrointestinal endoscopic treatment patients are often accompanied by negative emotions such as mental tension and anxiety due to lack of surgical knowledge, concern about prognosis, and consideration of medical costs. These emotional fluctuations not only affect the patient's endocrine immune system, but also may cause physiological reactions such as increased heart rate and blood pressure, which adversely affect the patient's postoperative recovery[12]. Under the conventional nursing model, nursing staff mainly implement nursing interventions in accordance with medical advice, and doctors and nurses often present two parallel lines of work, with less intersection between doctors and patients, and between nurses and patients. As a result, many of the needs of patients cannot be met through nursing care, and the effectiveness of nursing care is not obvious[13,14] .

The healthcare integration model is an effective integration of existing healthcare resources under the guidance of a patient-centered philosophy, providing multidisciplinary, comprehensive, and integrated management services to patients through close collaboration between physicians and nurses, with the core goal of this model being to improve patient prognosis and increase patient satisfaction with healthcare services[15].

Compared with the routine management cohort, the working group management cohort has shorter operation time and gastrointestinal function recovery time, which may be attributed to the following reasons: the healthcare personnel integration working group optimizes the workflow, fixes the pairing of the responsible personnel with the medical team, realizes the sharing of information between healthcare personnel and accelerates the decision-making process; the doctor and the nursing personnel discuss the diagnosis and treatment plan together, ensures that both parties have a full grasp of the patient's condition and improve the efficiency of cooperation; perioperative health education to improve patients' understanding of and compliance with rapid recovery, and promote postoperative recovery; through the above mechanisms, the medical and nursing integration working group enhances the

tacit understanding between doctors and nurses through regularized health education and co-management, and then effectively shortens the surgical process and improves the efficiency and quality of medical care[16].

Compared with the routine management cohort, the work group management cohort has a lower complication rate, which may be attributed to the following reasons: the integrated work group of healthcare professionals optimizes the nursing process, and ensures that both parties have a comprehensive grasp of the patient's condition through the close cooperation between the doctor and the nurse, who discuss the diagnosis and treatment plan; the integration of healthcare professionals helps to improve the efficiency of cooperation in surgery and reduce complications caused by improper cooperation; through the integration of healthcare professionals' care, the Strengthen patient health education, improve patient compliance with the treatment plan, thus reducing the risk of complications; according to the patient's condition and individual differences, adjust the nursing program at any time to better prevent complications[17]; fully do the preoperative preparation, closely observe the patient's condition changes after the operation, and take immediate measures to deal with the complications once they are detected; through the above mechanism, the healthcare integration working group can help to reduce the risk of complications through optimizing the nursing process, strengthening the patient management and complication prevention and treatment and other mechanisms to effectively reduce the incidence of postoperative complications in gastrointestinal endoscopy patients.

Compared with the routine management cohort, the SF-36 scores of the work group management cohort were higher in each of the SF-36 scores, which may be attributed to the following reasons: the integrated work group of healthcare professionals, as an innovative healthcare service model, realizes close cooperation between doctors and caregivers through the in-depth integration of healthcare and caregiving resources, and provides patients with more comprehensive, efficient, and personalized healthcare services. Doctors and nurses receive and assess the condition together, so that nursing staff have a more comprehensive understanding of the patient's condition, physical condition, psychological state and living habits, etc. This comprehensive understanding helps nursing staff to more accurately determine the patient's needs, and to formulate and implement a more precise nursing plan, thus improving the quality and accuracy of nursing care[18]. At the same time, doctors' in-depth understanding of nursing enhances the respect, understanding and trust between doctors and nurses, and promotes effective communication between them. Close cooperation between doctors and nurses helps to jointly solve problems in the process of patient treatment and reduce adverse nursing events and complications caused by miscommunication. The integrated

working group of medical and nursing staff requires nurses to have higher professionalism and comprehensive ability to adapt to the needs of working together with doctors. Through close cooperation with doctors, the professional ability of nursing staff is continuously improved, which also helps their professional development and personal growth[19,20]. Doctors and nurses work together to formulate a plan according to the specific conditions of the patient to ensure the relevance and effectiveness of the treatment plan; through the follow-up visits of doctors and nurses together to provide extended nursing guidance, to help the patient to maintain a healthy lifestyle, such as a healthy diet, appropriate amount of activity, etc., so as to promote the patient's long-term recovery and improve the quality of life. The integrated working group of healthcare professionals has improved patients' understanding and acceptance of the treatment plan by strengthening the communication between healthcare professionals and patients; the active participation and cooperation of patients, together with the careful treatment and care of healthcare professionals, have jointly promoted the improvement of patients' compliance behavior and the significant improvement of their quality of life.

Limitations

This study has the following limitations: the sample size of the study is small, which is not fully representative of all digestive endoscopy patients; the indicators are more subjective; in the future, we will expand the coverage of the samples to ensure the diversity and representativeness of the samples, and use more objective indicators to further explore in depth the mechanism of the integrated working group of healthcare professionals to shorten the surgical process. Through these improvements, the comprehensiveness and accuracy of the study can be further enhanced to provide stronger support for the care of gastrointestinal endoscopic surgery patients.

Conclusion

Establishing an integrated working group of endoscopy unit providers can speed up the process of gastrointestinal endoscopy, reduce complications, and improve prognosis.

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