

Clinical practice guidelines for prevention and treatment of postoperative gastrointestinal disorder with Integrated Traditional Chinese and Western Medicine (2023)

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Abstract

Postoperative gastrointestinal disorder (POGD) was a common complication after surgery under anesthesia. Strategies in combination with Traditional Chinese Medicine and Western medicine showed some distinct effects but standardized clinical practice guidelines were not available. Thus, a multidisciplinary expert team from various professional bodies including the Perioperative and Anesthesia Professional Committees of the Chinese Association of Integrative Medicine (CAIM), jointly with Gansu Province Clinical Research Center of Integrative Anesthesiology/Anesthesia and Pain Medical Center of Gansu Provincial Hospital of Traditional Chinese Medicine and WHO Collaborating Center for Guideline Implementation and Knowledge Translation/Chinese Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) Center/Gansu Provincial Center for Medical Guideline Industry Technology/Evidence-based Medicine Center of Lanzhou University, was established to develop evidence-based guidelines. Clinical questions (7 background and 12 clinical questions) were identified through literature reviews and expert consensus meetings. Based on systematic reviews/meta-analyses, evidence quality was analyzed and the advantages and disadvantages of interventional measures were weighed with input from patients'

Jianjun Xue, Ziqing Xu, and Qiang Wang contributed equally to this work.

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preferences. Finally, 20 recommendations were developed through the Delphi-based consensus meetings. These recommendations included disease definitions, etiologies, pathogenesis, syndrome differentiation, diagnosis, and perioperative prevention and treatment.

KEYWORDS

guideline, Integrated Traditional Chinese and Western Medicine, postoperative gastrointestinal disorder

1 | INTRODUCTION

Postoperative gastrointestinal disorder (POGD), occurring after anesthesia and surgery, referred to a clinical syndrome predominantly characterized by multiple gastrointestinal symptoms, including vomiting, abdominal pain, distension, diarrhea, constipation, weakening or disappearance of bowel sounds and gastrointestinal peristalsis, delayed passage of first postoperative flatus and stools.^{1–3} The POGD most commonly occurred after abdominal surgery, with an incidence of 10%–30%.⁴ However, its incidence could be up to 54% in patients undergoing major cardiac surgery due to the redistribution of gastrointestinal blood flow induced by factors such as extracorporeal circulation and aortic occlusion.⁵ Besides, 70%–80% of the elderly patients experiencing spinal fracture surgery suffered from abdominal distension and constipation.⁶ POGD hindered postoperative rehabilitation, prolonged hospital stays, and resulted in patients' dissatisfaction.

In Western medicine, POGD was primarily prevented and treated via nutritional support, maintenance of water–electrolyte balance, gastrointestinal decompression or enhancement of gastrointestinal motility, but the clinical efficacy was limited.^{7,8} In recent years, the therapy derived from Traditional Chinese Medicine (TCM) had gained increasing attention in ameliorating POGD and its efficacy had been demonstrated with various publications. In this context, it was necessary to follow the international guidelines to formulate the clinical practice guideline for the prevention and treatment of POGD with Integrated Traditional Chinese and Western Medicine, so that standardize clinical practice could be implemented to better prevention and treatment of POGD.

2 | METHODS

The guideline was compiled based on the definitions of clinical practice guidelines proposed by the Institute of Medicine (IOM)⁹ with reference to the guideline development processes and relevant methodological standards from the WHO Handbook for Guideline Development¹⁰ and the Guiding Principles for the Formulation/Revision of Clinical Diagnosis and Treatment Guidelines in China (2022 edition) issued by the Chinese Medical Association.¹¹ After-

ward, the guideline was assessed and reported according to the Appraisal of Guidelines for Research and Evaluation (AGREE II)¹² and Reporting Items for Practice Guidelines in Healthcare (RIGHT), respectively.¹³ The development process of this guideline was shown in Figure 1.

2.1 | Guideline initiation and support institutions

This guideline was initiated by the Perioperative Professional Committees and Anesthesiology Professional Committees of the Chinese Association of Integrative Medicine (CAIM), and the project was established by the association in January 2022. Methodological support was provided by Chinese GRADE Centre, World Health Organization (WHO) Collaborating Center for Guideline Implementation and Knowledge Translation, Gansu Provincial Center for Medical Guideline Industry Technology, and the Evidence-based Medicine Center of Lanzhou University. Furthermore, this guide was registered on the International Practice Guidelines Registry Platform (<http://guidelines-registry.cn/>) (Registration No.: IPGRP-2022 CN197).

2.2 | Guideline application and target population

The guideline was formulated for clinicians, anesthesiologists, acupuncturists, and nurses who were involved in perioperative management at all levels of medical institutions. The target population was perioperative patients.

2.3 | Guideline panel

The guideline panel was established based on structure of the clinical practice guideline panel,¹⁴ comprising a chief expert, steering committee, consensus expert group, formulation group (including the secretary group and the evidence evaluation group), and guideline external review expert group (Supplementary material 1). The steering committee and consensus expert group included 39 individuals from 3 countries and 17 Chinese provinces/municipalities, involving 8 disciplines/specialties.

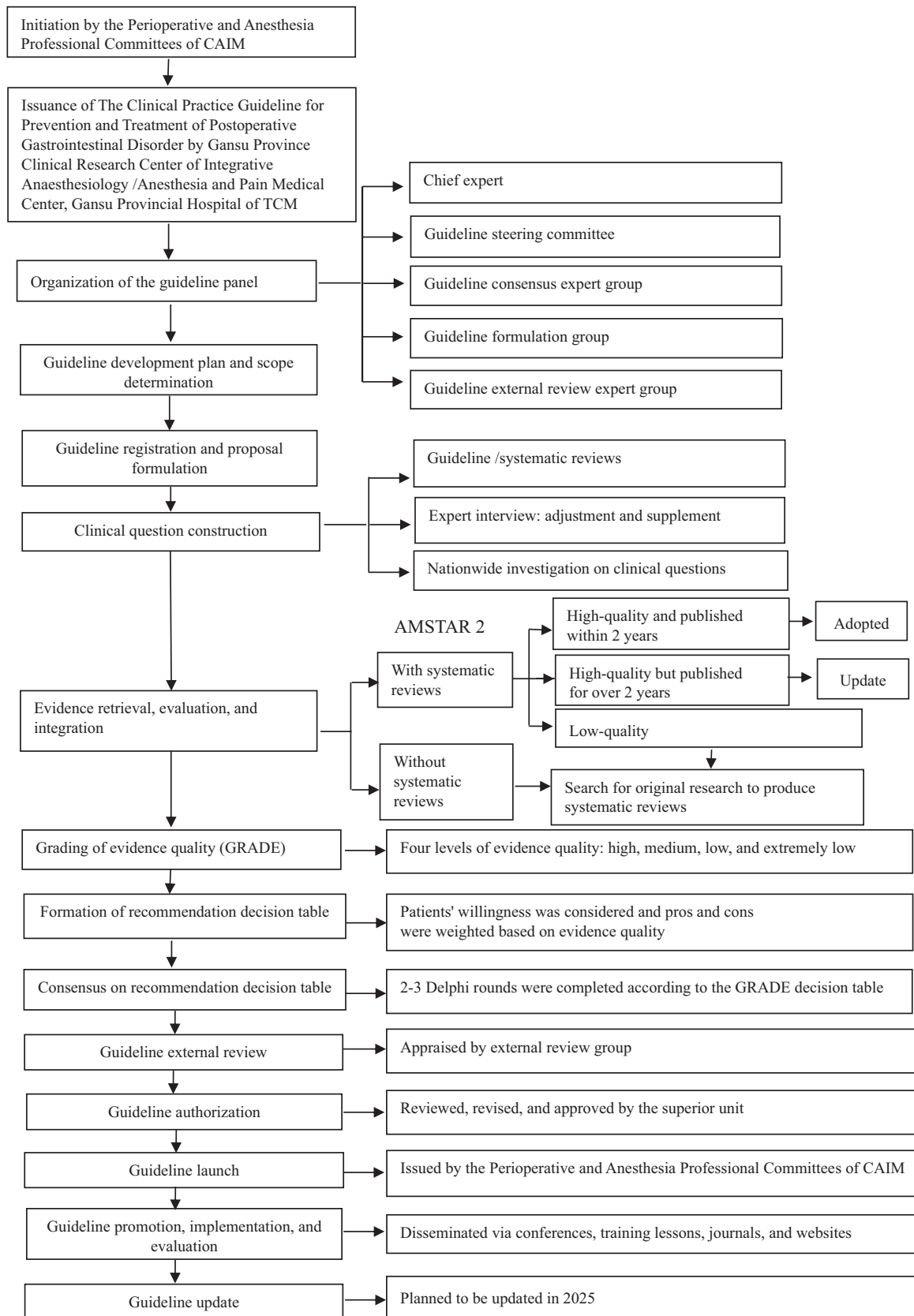


FIGURE 1 Technical roadmap of the clinical practice guideline for preventing and treating POGD using Integrated Traditional Chinese and Western Medicine.

TABLE 1 Clinical questions for POGD prevention and treatment through integrative medicine.

Clinical questions	Clinical question grading
1. Background questions	
(1) POGD definition in Western medicine	Critical
(2) POGD definition in TCM	Critical
(3) POGD etiologies in TCM	Critical
(4) POGD pathogenesis in TCM	Critical
(5) Syndrome differentiation of POGD in TCM	Critical
(6) POGD diagnosis in Western medicine	Critical
(7) POGD diagnosis in TCM	Critical
2. Clinical questions regarding POGD treatment with integrative medicine	
(1) How was the efficacy of preoperative TCM mental therapy in mitigating POGD?	Critical
(2) How was the efficacy of preoperative acupoint stimulation in preventing POGD?	Critical
(3) How was the efficacy of preoperative herb enemas in preventing POGD?	Critical
(4) Was intraoperative acupuncture effective in improving POGD?	Critical
(5) How was the efficacy of TCM formulas in treating postoperative diarrhea?	Critical
(6) How was the efficacy of acupoint stimulation in treating postoperative nausea and vomiting (PONV)?	Critical
(7) How was the efficacy of Chinese medicine prescription in treating postoperative ileus (POI)?	Critical
(8) How was the efficacy of external therapy of TCM in treating POI?	Critical
(9) How was the efficacy of Chinese medicine prescription in treating postsurgical gastroparesis syndrome (PGS)?	Critical
(10) How was the efficacy of TCM external treatment in treating PGS?	Critical
(11) How was the efficacy of early postoperative food intake in facilitating gastrointestinal function recovery?	Critical
(12) How was the efficacy of early postoperative ambulation in promoting gastrointestinal function recovery?	Critical

2.4 | Selection and confirmation of clinical questions

Under the guidance of methodological experts, background questions, clinical questions, and relevant outcomes were preliminarily generated through literature review and interviews with clinical expert. Following the investigation conducted by general surgeons from 3 tertiary A hospitals and discussion of the steering committee, clinical issues and outcomes were further adjusted to form a structured questionnaire. The questionnaire was uploaded to Wenjuanxing, a Chinese online questionnaire platform, and was completed by 130 frontline clinical doctors. Then based on the scores, 7 background questions and 12 clinical questions were determined. Finally, through offline/online expert meetings, a consensus was reached after two Delphi rounds (Tables 1 and 2).

2.5 | Evidence retrieval, synthesis, and evaluation

We searched both English and Chinese databases, including PubMed, Embase, The Cochrane Library, Web of Science, CNKI, Wanfang Data, VIP, and China Biology Medicine Disc (CBMdisc). Additionally, the digital guideline libraries of Guideline International Network (GIN),

Scottish Intercollegiate Guidelines Network (SIGN), World Health Organization website (WHO), National Institute for Clinical Excellence (NICE), and Medlive were also searched. The retrieval details were set as follows: time, from inception to March 2022; language, Chinese and English; research subjects, human beings. Only electronic searches were performed for this guideline without manual searches. References for critical literature and those obtained from other resources were supplemented. The search items included: gastrointestinal motility, gastrointestinal tract, ileus, peristalsis, intestinal obstruction, gastrointestinal transit, constipation, diarrhea, abdominal pain, defect, nausea, vomiting, PONV, "medicine, Chinese traditional," "drugs, Chinese herbal," herbal medicine, traditional medicine, TCM, acupuncture, acupoint, acupuncture points, electroacupuncture, meridians, acupuncture, moxibustion, and auriculotherapy (Supplementary material 2).

According to the preestablished inclusion and exclusion criteria, two members of the study group screened the literature step by step through the title, abstract and full text. After quality evaluation, data were extracted independently according to the predesigned data extraction table. Disputes were resolved through discussion or consultation with experts. The included systematic reviews/Meta-analyses were scored based on the AMSTAR II scale.¹⁵ When updating or conducting systematic reviews/Meta-analyses, the methodological

TABLE 2 Outcomes for POGD prevention and treatment through integrative medicine.

Outcome	Outcome grading
1. Gastrointestinal function recovery outcomes	
(1) Clinical efficacy rate	Critical
(2) Time to first passage of flatus	Critical
(3) Time to first defecation	Critical
(4) Time to first bowel sound	Critical
(5) Time to first food intake	Critical
(6) Symptom incidence (abdominal distension, abdominal pain, intestinal obstruction, diarrhea, vomiting, nausea)	Critical
(7) Symptom score (abdominal distension, abdominal pain, intestinal obstruction, diarrhea, vomiting, nausea)	Critical
(8) Symptom duration (abdominal distension, abdominal pain, intestinal obstruction, diarrhea, vomiting, nausea)	Critical
(9) Time of first ambulation	Critical
(10) Time of gastrointestinal decompression	Critical
(11) Gastrointestinal hormone levels (motilin (MTL), gastrin (GAS), vasoactive intestinal peptide)	Important
2. Safety outcomes	
(12) Occurrence rate of adverse events (AE)	Critical
3. Economic outcomes	
(13) Hospital stay length	Critical
(14) Hospitalization cost	Critical
4. Satisfaction outcome	
(15) Patient satisfaction	Critical

quality of included randomized clinical trials (RCTs) was evaluated via the Cochrane risk of bias tool.¹⁶ Additionally, the GRADE system was adopted throughout the guideline development process.¹⁷ The quality of evidence reflected the authenticity of observations, while the strength of a recommendation indicated the benefits and harms on targeted population generated by the user's adherence to the recommendations. There were four grades for the quality of evidence: high, medium, low, and extremely low; while only two grades were set for the strength of recommendation: strong and weak.

2.6 | Patients' preferences and values

The study group designed questionnaires regarding the clinical problems associated with patients' preferences, and distributed these questionnaires in all surgical wards of Gansu Provincial Hospital of Traditional Chinese Medicine. A total of 90 valid feedback questionnaires were collected. Subsequently, the results were statistically analyzed,

sorted out, and taken into account in the process of recommendation formation.

2.7 | Determination and update of recommendations

Based on the results of the systematic reviews/meta-analyses and the quality of evidence, the advantages and disadvantages of interventional measures were weighed, and patients' preferences and values were considered, so as to initially propose recommendations and evidence strength. Then, in a Delphi method-based consensus meeting, the final recommendations and strength of recommendation were determined. The recommendations of the guideline were planned to be updated in 2025.

2.8 | External review

After reaching a consensus, the recommendations were submitted to the external review group for review and then publicized online for feedback. Subsequently, the recommendations were refined in accordance with the feedback and submitted by the consensus expert group to the guideline steering committee for approval.

2.9 | Funding resources and roles

The development of this guideline was funded by the Science and Technology Plan of Gansu Province-Construction of Clinical Medicine Research Center (20JR10RA435) and Science and Technology Plan of Gansu Province-Key Research and Development (22YF7FA101). Technical guidance fees, labor cost, project organization and implementation cost were covered.

2.10 | Guideline dissemination and implementation

After the release of the guideline, the Perioperative Professional Committees and Anesthesia Professional Committees of CAIM will promote the guideline in the following ways: (1) conference promotion: in the next 5 years, it will be promoted in the conferences of Integrated Traditional Chinese and Western Medicine, perioperative period and anesthesia at home and abroad; (2) promotion via training courses: learning sessions will be organized regularly in different provinces to ensure that anesthesiologists, clinicians and nurses understand this guideline; (3) journal article promotion: a series of articles related to the guideline will be published, which include methodologies and detail interpretation; (4) website promotion: the guideline will be published on the websites of New Youth Anesthesia, Univadis, and DXY. In the next 5 years, research will be carried out to evaluate the impact of the guideline on the prevention and treatment of POGD for future refinement of the guideline.

3 | RESULTS

Based on research advances both nationally and internationally, 7 recommendations were proposed on 7 background issues concerning the definition, etiology and pathogenesis, syndrome differentiation, and diagnosis of POGD through Delphi consultation and expert consensus meeting. In terms of the 12 clinical problems related to perioperative prevention and management of POGD, the pros and cons of intervention measures were weighed and patient preferences and values were considered based on the results of systematic review/meta-analyses and evidence quality. Finally, 13 corresponding recommendations were yielded through the Delphi-based expert consensus meeting. The involved all recommendations were listed in Table 3.

3.1 | Recommendations for background questions

Recommendation 1: Definition of POGD in Western medicine

POGD was a nonmechanical obstructive digestive tract disease that was induced by multiple factors such as surgical trauma, anesthesia, and patients' psychological status; it could lead to aberrant postoperative brain-gut interactions and was manifested as symptom spectrum disorders, gastrointestinal motility disturbance, visceral hypersensitivity, mucosal immune function alteration, intestinal flora change, abnormal processing function of the central nervous system (CNS).^{8,18–21} The common clinical subtypes include PONV, PGS, POI, and postoperative diarrhea.

Recommendation 2: Definition of POGD in TCM

The term POGD was not clearly documented in TCM. The clinical manifestations of patients show that the disease was mainly implicated with "stuffiness and fullness," "regurgitation," "nausea," "vomiting," "intestine impediment," "intestinal obstruction," and "diarrhea" in TCM.^{22–26}

Recommendation 3: Disease cause of POGD in TCM

In TCM field, it was considered that there were three main etiologies of POGD:

1. Exterior pathogen invasion: (i) Surgical factors: surgery could disperse pathogens and meanwhile impair the meridians, leading to blocked circulation of qi and blood. As a result, the zang-fu organs were affected due to the lack of nourishment, thus damaging qi, blood, and body fluids, while blood extravasate gave rise to blood stasis, blocking qi movement.^{27–29} (ii) Anesthetic factors: anesthetics acted on the house of the original spirit, causing vital activity dysfunction and loss of vitality, eventually affecting spleen and stomach functions. (iii) Temperature: the patient's internal organs were exposed to the outside during the operation. Hence, the six pathogenic factors, especially the pathogenic wind-cold, directly invaded the body to impair the transportation and transformation function of the spleen and stomach. (iv) Circulatory management: anesthetic and blood loss could induce intraoperative hypotension,

gastrointestinal hypoperfusion, and insufficient blood perfusion, resulting in deficient qi and blood nourishment in zang-fu organs.

2. Spleen-stomach weakness: patients with chronic diseases, especially those with cancer, suffered from spleen-stomach weakness due to long-term illness or long-term diet disorders and immobilization (bed rest). Consequently, they were unable to take in water or grain, transport or transform essence, ascend lucidity, or descend turbidity. Besides, they tended to suffer from intestinal tract obstruction caused by turbid qi stagnation and stomach qi ascending counterflow.³⁰
3. Emotional disorder: preoperative fear, anxiety, and other adverse emotions could lead to liver-qi stagnation and emotional disorder. The disorder would transform into fire, consumes qi, and damaged yin, thus injuring the essence qi. Besides, it would also cause liver depression to restrict the spleen, bringing about liver and spleen disharmony, which could lead to postoperative disorder of spleen and stomach transportation and transformation.^{31,32}

Recommendation 4: Pathogenesis of POGD in TCM

POGD was a deficiency syndrome complicated by excess patterns, with deficiency in zang-fu organs, qi, and blood as the root, and blood stasis, qi stagnation, and phlegm retention as the branch.³³ "The six fu-organs were unobstructed in function." The disease involved the spleen, stomach, large intestine, and small intestine and meanwhile were closely associated with the heart, liver, gallbladder, and other zang-fu organs. The key pathogenesis was stomach descending dysfunction and fu-organ qi obstruction.³⁴ The spleen and stomach, serving as the hub of qi movement of the body, manifested abdominal distension and pain if the middle energizer experiences qi obstruction.³⁵ Stomach qi ascending counterflow led to vomiting. Spleen transportation and transformation dysfunction induced water-dampness retention in the middle energizer, thus leading to diarrhea ("excessive dampness represents diarrhea"). The intestines could not receive spleen and stomach qi to intake, digest, and excrete, thereby resulted in constipation, stuffiness, and fullness.³⁶

Recommendation 5: Syndrome differentiation of POGD in TCM

A total of five common syndrome subtypes were identified: syndrome of liver depression and spleen deficiency, yang brightness fu-organ syndrome, syndrome of qi stagnation and blood stasis, spleen-stomach weakness syndrome, and syndrome of cold and heat in complexity. The identification process was based on the TCM theories of zang-fu organs and eight-principle syndrome differentiation, with reference to opinions regarding POGD syndrome differentiation from Consensus of Experts on Diagnosis and Treatment of Irritable Bowel Syndrome in TCM (2017)³⁷ (issued by China Association of Chinese Medicine, Spleen and Stomach Disease Branch) and relevant literature.^{29,38} Besides, the results of consultation with experts were combined, and the syndrome factors and characteristics of this disease were also comprehensively analyzed. The diagnostic criteria of different syndromes were as follows:

TABLE 3 Recommendations for background and clinical questions.

Number	Recommendations	SR/RE
Background questions		
1	Definition of POGD in Western Medicine	
2	Definition of POGD in TCM	
3	Disease cause of POGD in TCM	
4	Pathogenesis of POGD in TCM	
5	Syndrome differentiation of POGD in TCM	
6	Diagnosis of POGD in Western medicine	
7	Diagnosis of POGD in TCM	
Clinical questions		
8	Preoperative TCM mental therapy was recommended to facilitate the early recovery of postoperative gastrointestinal functions.	1B
9	TCM external treatments such as acupuncture, acupoint pressing, auricular point therapy, electrical stimulation of acupoints, and music therapy were recommended to ease mood disorders like preoperative fear and anxiety.	1B
10	It was recommended to adopt acupoint stimulation techniques such as transcutaneous electrical acupoint stimulation (TEAS), electroacupuncture, auricular acupressure, and acupoint application before abdominal and spinal surgery to prevent POGD.	1B
11	For special operations or patients requiring preoperative bowel preparation, oral administration/enemas of Chinese medicine prescriptions such as major purgative decoction, Minor Purgative Decoction and their modified prescriptions, Bowel Cleansing Formulas were recommended to prevent and treat POGD.	2C
12	Intraoperative general acupuncture or electroacupuncture was recommended to prevent POGD.	1B
13	Patients undergoing diarrhea after gallbladder and gastrointestinal tumor surgery were recommended to take oral TCM formulas such as modified Middle-Tonifying Qi-Replenishing Decoction, True Man Zang Organ-Nourishing Decoction, and Qinseng, Poria and White Atractylodes Powder.	1B
14	Acupoint stimulation techniques were recommended on patients experiencing surgery to prevent and treat PONV. Commonly applied techniques include electroacupuncture, TEAS, general acupuncture, auricular acupressure, acupoint pressing, and the combination of different acupoint stimulation techniques.	1C
15	As for patients with paralytic ileus after abdominal surgery, they were recommended to combine conventional Western medicine treatment with Chinese medicine formulas such as modified Major Purgative Decoction, modified Minor Purgative Decoction, and modified Four Milled Ingredients Decoction.	1B
16	Patients with paralytic ileus after abdominal and spinal surgery were suggested to receive TCM enemas, general acupuncture, electroacupuncture, acupoint application, and other TCM external treatments alone or in combination with conventional Western medicine treatments, or they could accept combined external and oral TCM treatments. In this way, the gastrointestinal function recovery could be accelerated.	1B
17	For patients with gastroparesis syndrome after gastrointestinal tumor operation, they were suggested to administer Purgative decoctions, Xiangsha Six Gentlemen Decoction/Four Ggentlemen Decoction, Pinellia Heart-Draining Decoction, or Qi-regulating decoctions in addition to routine Western medicine treatment.	2B
18	Patients with gastroparesis syndrome following gastrointestinal tumor surgery should be treated with acupuncture, electroacupuncture, TCM enemas, acupoint injection, acupoint application, and other TCM external treatments alone or in combination with conventional Western medicine treatment to advance the early recovery of gastrointestinal functions.	1B
19	It was suggested that surgical patients eat and drink water early after surgery (within 24 h) to promote the postoperative recovery of gastrointestinal functions.	1B
20	Patients should get out of bed as soon as possible (within 24 h) to promote the recovery of gastrointestinal functions.	1C

Note: Strength of recommendation (SR): strong (1), weak (2). Reliability of evidence (RE): high (A), medium (B), low (C), extremely low (D).

1. Syndrome of liver depression and spleen deficiency

Manifestations: abdominal distension, borborygmus, abdominal pain, hiccup, constipation or diarrhea, immediate diarrhea after abdominal pain and pain relief afterward, appetite loss, poor flatus passage, bitter taste in the mouth, vexation and irritability, frequent sighing, pale red tongue or red edge, thin yellow tongue coating, wiry pulse.

2. Yang brightness fu-organ syndrome (qi stagnation in fu-organs)

Manifestations: abdominal distension and pain around the navel with refusal to press, constipation or passing of flatus, nausea and vomiting, belching, dry and bitter mouth, thick yellow and dry tongue coating with a prickly edge (sometimes even scorched, dry, and cracked coating), deep, slow, and excess or slippery and rapid pulse.

3. Syndrome of qi stagnation and blood stasis

Manifestations: no flatus, constipation, abdominal distension, pain in chest and rib-side with refusal to press, stuffiness and fullness in the chest and rib-side, nausea and vomiting, poor appetite, dry stool, pale and dark tongue with petechiae or ecchymosis, wiry and/or astringent pulse.

4. Spleen-stomach weakness syndrome

Manifestations: dull pain in the gastric cavity with a preference for warmth and pressure, distension and fullness, poor appetite, poor defecation, fatigue, weak breathing, laziness for speech, limb weakness, spontaneous sweating, pale red tongue, thin and white fur, deep and thready pulse.

5. Syndrome of cold and heat in complexity

Manifestations: stuffiness and fullness in epigastrium, which was soft and painless when pressed; vomiting, thirst, and vexation; epigastric discomfort, borborygmus, and diarrhea; abdominal distension, dry and bitter mouth, pale red tongue, white or yellow greasy tongue coating; wiry and thready or wiry and slippery pulse.

Recommendation 6: Diagnosis of POGD in Western medicine

Following selective auxiliary examinations based on the detailed medical history and physical examination, POGD could be diagnosed if vital organ diseases and metabolic abnormalities were excluded. The diagnostic criteria were primarily in accordance with the Consensus of Experts on Diagnosis and Treatment of Irritable Bowel Syndrome in TCM (2017) issued by the Spleen and Stomach Disease Branch of China Association of Chinese Medicine, *Rome IV diagnostic criteria for functional gastrointestinal disorders*, and relevant literature^{8,18,37} (Table 4).

TABLE 4 Diagnostic criteria for POGD.

Serial number: medical history, symptoms, physical signs, imaging manifestations

- (1) Medical history: Patients underwent anesthesia and surgery, without a history of preoperative functional gastrointestinal disorders.
- (2) Symptoms: Postoperative gastrointestinal symptoms, including nausea, vomiting, abdominal distension, abdominal pain, constipation, diarrhea, etc.
- (3) Physical signs: Through inspection of physical examination, abdominal asymmetric distension was observed and tenderness might appear after palpation in the abdomen; hyperactive or diminished bowel sounds were heard on auscultation.
- (4) Electrogastrogram: Electrogastrogram denoted abnormal gastrointestinal electrical rhythms such as bradygastria or tachygastria.
- (5) Imaging manifestations: Gastroparesis syndrome ultrasound or X-ray examinations exhibit no gastric peristalsis, weak peristalsis, or ineffective peristalsis; the stomach contains copious fluid accumulation; postoperative paralytic ileus manifests multiple dilated bowel loops and gas-liquid interfaces in erect or lateral positions of X-ray.

Note: Preliminary diagnosis could be made if (1) (2), and (3) were met, and the diagnosis and subtype could be confirmed when (4) or (5) was also satisfied.

Recommendation 7: Diagnosis of POGD in TCM

As the term for POGD was not clearly documented in TCM, we formulated TCM diagnostic criteria of POGD according to the disease definitions in TCM.^{22–26}

1. Patients underwent anesthesia and surgery without a history of functional gastrointestinal disorders.
2. Patients who manifested postoperative symptoms such as abdominal fullness, hiccup, nausea, vomiting, abdominal distension, abdominal pain, constipation, and diarrhea could be diagnosed to have “stuffiness and fullness,” “nausea,” “vomiting,” “intestine impediment,” “intestinal obstruction,” “constipation,” or “diarrhea” in TCM.

3.2 | Recommendations for clinical questions

3.2.1 | Clinical question 1: How was the efficacy of preoperative TCM mental therapy in mitigating POGD?

Recommendation 8: Preoperatively, TCM mental therapy was recommended to facilitate early postoperative gastrointestinal function recovery. (1B)

Reasons for recommendation:

Qingzhi (Emotion) was a unique concept in TCM, that is, seven emotions and five moods. *Yellow Emperors Internal Classic* mentions that anger injures the liver, joy injures the heart, thinking injures the spleen, sadness injures the lung, and fear injures the kidney, indicating that emotional activities were closely correlated to the

functions of five zang-fu organs. The pathogenesis of emotions triggering diseases was that abnormal emotional activities induced qi movement disorders and dysfunction in zang-fu organs.³¹ The evidence evaluation group developed a systematic review, which showed that the time to first flatus passage (SMD = -2.77, 95% CI: -3.82 to -1.72, $p < 0.00001$), time to first defecation (SMD = -3.50, 95% CI: -6.12 to -0.89, $p = 0.009$), and time to first food intake (SMD = -4.02, 95% CI: -5.35 to -2.69, $p < 0.00001$) after the operation were shortened by TCM emotional regulation, suggesting that the postoperative recovery of gastrointestinal functions was facilitated.

Patient preference: The guideline formulation group investigated 90 patients for their preferences for the emotional regulation protocol. 92.2% of them were willing to accept the protocol and 5.6% were unwilling to accept it.

Recommendation 9: Acupuncture, acupoint pressing, auricular point therapy, electrical stimulation of acupoints, and music therapy were recommended to improve mood disorders like preoperative fear and anxiety. (1B)

Reasons for recommendation:

Preoperative anxiety, as a kind of emotional disorder, had an incidence of 60%–80%.³⁹ The systematic reviews/meta-analyses of Tong, et al.,⁴⁰ Chen et al.,⁴¹ and Uschenko, et al.⁴² (evaluated as high quality via the AMSTAR 2 scale) demonstrated that acupuncture, acupressure, and auricular therapy could alleviate preoperative anxiety. The systematic review developed by the evidence evaluation group suggested that acupoint electrical stimulation (SMD = -1.96, 95% CI: -2.57 to -1.34, $p < 0.00001$) and music therapy (SMD = -1.54, 95% CI: -1.84 to -1.25, $p < 0.00001$) could lower the preoperative anxiety score and relieve patients' preoperative anxiety states.

Patient preference: The guideline study group interviewed 90 patients for their opinions on the protocol of preoperative acupoint stimulation. 4.4% of patients were unwilling to accept the therapy, 27.8% chose acupuncture therapy, 22.2% chose acupoint pressing, 26.67% chose music therapy, and 13.3% chose auricular therapy.

3.2.2 | Clinical question 2: How was the efficacy of preoperative acupoint stimulation in preventing POGD?

Recommendation 10: It was recommended to apply acupoint stimulation techniques such as TEAS, electroacupuncture, auricular acupressure, and acupoint application before abdominal and spinal surgery to prevent POGD. (1B)

Therapeutic protocol: (1) Recommended acupoints: Zusanli (ST36), Neiguan (PC6), Shangjuxu (ST37); auricular acupoints: Shenmen (HT7), Sympathetic (AH6a), Stomach (CO4), Spleen (CO13). (2) Intervention timing: TEAS and electroacupuncture could be applied before anesthesia induction for 30 min each time. Auricular acupressure and acupoint application could be employed one day before operation and continued until 2–3 days after the surgery.

Reasons for recommendation:

The recovery of gastrointestinal motility after abdominal surgery was impaired due to intraoperative traumatic traction stimulation, artificial pneumoperitoneum, and anesthetic effects. Hence, the incidence of POGD 24 h after the surgery reaches 10%–30%.⁴³ While the prevalence of POGD after spinal surgery was 2.6%–36.5% due to the activation of the splanchnic sympathetic nervous system by spinal nerve compression caused by particular posture and intraoperative procedures.⁴⁴ In TCM, it was suggested that acupoint stimulation could invigorate the spleen, and harmonize the stomach, calm the mind and tonify deficiency by regulating yin, yang, qi, blood, and zang-fu functions, and modulating emotions.⁴⁵ According to the systematic review prepared by the evaluation group, it was revealed that TEAS (SMD = -0.74, 95% CI: -1.33 to -0.14, $p = 0.02$), electroacupuncture (SMD = -0.60, 95% CI: -0.77 to -0.43, $p < 0.00001$), auricular acupressure (SMD = -2.06, 95% CI: -2.79 to -1.33, $p < 0.00001$), and acupoint application (SMD = -0.92, 95% CI: -1.60 to -0.25, $p = 0.008$) could shorten the time to first postoperative flatus passage and promote the recovery of gastrointestinal functions.

Patient preference: The guideline formulation group investigated 90 patients for their preferences for preoperative acupoint stimulation protocol. 5.6% of patients were unwilling to accept the therapy, 20% chose TEAS, 22.2% chose electroacupuncture, 15.6% chose auricular acupressure, and 34.4% chose auricular application.

3.2.3 | Clinical question 3: How was the efficacy of preoperative herbal enemas in preventing POGD?

Recommendation 11: For special operations or patients requiring preoperative bowel preparation, oral administration/enemas of Chinese medicine prescriptions such as major purgative decoction, Minor Purgative Decoction and their modified prescriptions, Bowel Cleansing Formulas were recommended to prevent and treat POGD. (2C)

Reasons for recommendation:

Routine mechanical bowel preparation before surgery was not recommended in the rapid recovery guidelines worldwide.^{46–48} Preoperative oral administration or enemas of TCM possesses unique advantages over mechanical bowel preparation. The oral administration of TCMs, which were absorbed by the mucosa has the effects of purging heat, dredging bowels, promoting qi circulation and removing stagnation. Besides, it could also advance gastrointestinal function recovery by increasing gastrointestinal peristalsis, increasing intestinal blood volume, facilitating gastrointestinal hormone secretion, regulating intestinal microorganisms and improving postoperative nutritional status.⁴⁹ The TCM enema therapy could directly stimulate intestinal peristalsis to empty the bowels, soften feces, and clean the intestinal tract. Meanwhile, the effective TCM components were directly absorbed by the intestinal mucosa, thus improving drug bioavailability.⁵⁰ At present, the commonly used oral or enema formulas included major purgative decoction, Minor Purgative Decoction, and their modified prescriptions. The Bowel Cleansing Formulas was derived from major purgative decoction. In this formula, Radix et Rhi-

zoma Rhei (rhubarb) was purgative and could dissolve accumulation, clear heat, drain fire, inhibit intestinal water absorption, and increase intestinal peristalsis, thereby promoting the recovery of flatus passage and defecation functions; Natrii Sulfas (sodium sulfate) moistens dryness, softens hard masses, and dissipates masses; Fructus Aurantii Immaturus (immature orange fruit) breaks stagnant qi, disperses mass, smooths the middle and regulates qi; Cortex Magnoliae Officinalis (officinal magnolia bark) moved qi, resolved accumulation, dried dampness, and removed fullness; all these herbs combined were able to drain heat, advance defecation, and cleanse gastrointestinal stagnation.⁵¹ The systematic review formulated by the evidence evaluation group showed that preoperative oral administration/enemas of TCMs (purgative decoctions and Bowel Cleansing Formulas) could shorten the time to first postoperative flatus passage (SMD = -1.66, 95% CI: -2.16 to -1.16, $p < 0.00001$), time to first defecation (SMD = -1.07, 95% CI: -1.42 to -0.71, $p < 0.00001$), and time to bowel sound recovery (SMD = -1.31, 95% CI: -1.63 to -0.99, $p < 0.00001$), thus reaching the goal of preventing and treating POGD.

Patient preference: The guideline formulation group investigated 90 patients regarding the intestinal preparation protocol of TCM oral administration/enemas. 88.9% of the patients were willing to accept the protocol, 6.7% were unwilling, and 4.4% noted that they would observe the efficacy and select the protocol when necessary.

3.2.4 | Clinical question 4: Was intraoperative acupuncture effective in improving POGD?

Recommendation 12: Intraoperative general acupuncture or electroacupuncture was recommended to prevent POGD. (1B)

Reasons for recommendation:

Currently, only a small number of studies carried out to delve into the POGD ameliorating role of acupuncture alone. However, the clinical application of acupuncture boasted unique advantages over medication. First, it could promote the release of endogenous opioid peptides to play an analgesic role, which could lead to reduced opioid dosage and fewer adverse reactions.⁵² Second, it was able to regulate hemodynamics to mitigate gastrointestinal ischemia-reperfusion (I/R) injuries, thus helping protect gastrointestinal functions.⁵³ In addition, acupuncture could also regulate gastrointestinal motility and decrease visceral sensitivity.⁴⁵ A systematic review report created by the evidence evaluation group demonstrated that the time to first flatus passage (SMD = -0.56, 95% CI: -0.83 to -0.28, $p < 0.0001$), time to first defecation (SMD = -0.99, 95% CI: -1.31 to -0.67, $p < 0.00001$), and time to bowel sound recovery (SMD = -0.95, 95% CI: -1.44 to -0.46, $p = 0.0002$) after the operation were shortened by acupuncture, suggesting the favorable efficacy of acupuncture in the postoperative recovery of gastrointestinal functions.

Patient preference: The guideline study group interviewed 90 patients for their preference with acupuncture therapy, and found that 87.8% of them were willing to accept the protocol while 8.9% were unwilling.

3.2.5 | Clinical question 5: How was the efficacy of Chinese medicine prescriptions in treating postoperative diarrhea?

Recommendation 13: Patients with diarrhea after gallbladder and gastrointestinal tumor surgery were recommended to take oral Chinese medicine such as modified Middle-Tonifying Qi-Replenishing Decoction, True Man Zang Organ-Nourishing Decoction, and Qinseng, Poria, and White Atractylodes Powder. (1B)

Reasons for recommendation:

In patients undergoing cholecystectomy, limited bile concentration results in incomplete fat emulsification and absorption, thus inducing osmotic diarrhea; besides, the unconcentrated bile with intestinal peristalsis-promoting function was prone to cause postoperative diarrhea, the incidence of which was up to 5%–15%.^{54,55} For patients with gastrointestinal cancer, they were susceptible to diarrhea because their intestinal mucosa was injured due to multiple factors preoperative bowel preparation, intraoperative vagotomy, perioperative antibiotic use, and chemotherapy drugs, leading to reduced absorption area and impaired absorption function in the intestinal mucosa. A prospective, multicenter clinical study reported that the diarrhea incidence after intestinal tumor surgery was as high as 18.4%.⁵⁶ Postoperative diarrhea was also a common cause of chronic diarrhea. It occurred frequently and was difficult to recover, so patients were usually painful with low life quality. In terms of the treatment, the Western medicine at present mainly focused on regulating the intestinal flora, protecting the intestinal mucosal barrier, and promoting bile excretion. Bifidobacterium, montmorillonite powder, and compound azintamide were commonly applied clinically.^{57,58} However, these treatment approaches rarely yielded stable long-term efficacy and were usually associated with frequent relapses.

Spleen-stomach weakness, liver depression, and spleen deficiency were common syndromes of diarrhea. Thus, Chinese medicine remedies typically concentrated on fortifying the spleen, tonifying qi, and dispelling dampness. Specifically, the middle-tonifying and qi-replenishing decoction was frequently employed for invigorating the spleen, supplementing qi, and raising yang to arrest diarrhea; Ginseng, Poria, and White Atractylodes Powder was commonly applied for warming yang, fortifying the spleen, and draining dampness to combat diarrhea; True Man Zang Organ-Nourishing Decoction was a representative formula for warming kidney, fortifying spleen, astringing the intestines, and relieving collapse. The systematic review conducted by the evidence evaluation group revealed that for patients with diarrhea after gallbladder and gastrointestinal tumor surgery, Chinese medicine might improve the effective treatment rate (RR = 1.33, 95% CI: 1.27 to 1.40, $p < 0.00001$), reduce the total symptom score after treatment (SMD = -1.47, 95% CI: -1.94 to -1.00, $p < 0.00001$), decrease defecation frequency (SMD = -1.73, 95% CI: -2.19 to -1.27, $p < 0.00001$), and lower the recurrence rate of postoperative diarrhea (RR = 0.27, 95% CI: 0.14 to 0.49, $p < 0.0001$).

Patient preference: The guideline study group interviewed 90 patients for their opinions on this protocol, 78.9% were willing to

accept it, 8.9% were unwilling, and 12.2% chose to observe first and then receive the treatment when necessary.

3.2.6 | Clinical question 6: How was the efficacy of acupoint stimulation in treating PONV?

Recommendation 14: Patients experiencing surgery should adopt acupoint stimulation techniques to prevent and treat PONV. Commonly applied techniques comprised electroacupuncture, TEAS, general acupuncture, auricular acupressure, acupoint pressing, and a combination of different acupoint stimulation techniques. (1C)

Therapeutic protocol: (1) electroacupuncture, TEAS, and general acupuncture: recommended acupoints included Hegu (LI4), Neiguan (PC6), Zusanli (ST36), and Sanyinjiao (SP6). Either preventive intervention conducted preoperatively/intraoperatively or early treatment offered postoperatively was allowed. (2) Acupoint pressing: It was recommended to simply press the bilateral P6 before or after surgery or wear an acupoint pressing wristband before surgery until 1–3 days postoperatively. (3) Auricular acupressure: recommended auricular acupoints included sympathetic (AH6a), Shenmen (HT7), stomach (CO4), spleen (CO13). The acupressure could be performed before surgery, after patients wake up from anesthesia, after surgery, or throughout the whole process.

Reasons for recommendation:

PONV was a prevalent postoperative complication, with an incidence of about 30% in ordinary patients within 24 h postoperatively. The figure in patients with high-risk factors could reach 80%.⁵⁹ The systematic review performed by the evidence evaluation group indicated that perioperative electroacupuncture (RR = 0.58, 95% CI: 0.46 to 0.73, $p < 0.00001$), TEAS (RR = 0.57, 95% CI: 0.50 to 0.64, $p < 0.00001$), general acupuncture (RR = 0.77, 95% CI: 0.65 to 0.91, $p = 0.002$), auricular acupressure (RR = 0.51, 95% CI: 0.45 to 0.58, $p < 0.00001$), and acupoint pressing (RR = 0.64, 95% CI: 0.54 to 0.75, $p < 0.00001$) could reduce the incidence of PONV at 0–24 h after the operation. Alternatively, the combination of different acupoint stimulation techniques could also help prevent and treat PONV (RR = 0.36, 95% CI: 0.30 to 0.44, $p < 0.00001$).

Patient preference: The guideline formulation group conducted a survey among 90 patients regarding their views on preventing PONV via acupoint stimulation. 2.2% of the patients were unwilling to accept the therapy, 15.6% chose TEAS, 20% chose electroacupuncture, 32.2% chose general acupuncture, and 15.6% selected acupoint pressing.

3.2.7 | Clinical question 7: How was the efficacy of Chinese medicine prescriptions in treating POI?

Recommendation 15: Among patients with paralytic ileus after abdominal surgery, they were recommended to combine conventional treatments in Western medicine with Chinese medicine prescriptions such as modified Major Purgative Decoction, modified Minor Purgative Decoction, and modified Four Milled Ingredients Decoction. (1B)

Reasons for recommendation:

POI was characterized by bowel dilation, peristalsis loss, and inability to advance gastrointestinal contents.⁶⁰ It had a high incidence of approximately 10%–27% after abdominal surgery.⁶¹ Furthermore, the condition was predominantly associated with intestinal nerve reflex, release of neurotransmitter and inflammatory mediator, anesthetic agents, and surgical modalities (such as surgical incision size, intestinal tissue traction).²⁰ In the Western medicine, the principal interventions included intraoperative prevention, continuous gastrointestinal decompression, somatostatin, enteral and parenteral nutrition support, anti-infection, etc.; however, all these approaches failed to present favorable efficacy.

With the principle of “the six fu-organs were unobstructed in function,” unblocking the interior and leading to purgation, regulating qi, and relieving pain were the predominant treatment methods in TCM, which were supplemented by invigorating blood circulation, dispelling blood stasis, dissolving phlegm, dissipating masses, clearing heat, and detoxifying.⁶² In this way, the postoperative recovery of gastrointestinal functions could be effectively accelerated. The systematic review by the evidence evaluation group illustrated that after abdominal surgery, oral administration of major purgative decoction (RR = 1.18, 95% CI: 1.15 to 1.22, $p < 0.00001$), fu-organ dredging decoction (RR = 1.23, 95% CI: 1.17 to 1.30, $p < 0.00001$), minor purgative decoction (RR = 1.18, 95% CI: 1.08 to 1.29, $p = 0.0002$), or four milled ingredient decoction (RR = 1.34, 95% CI: 1.18 to 1.53, $p < 0.00001$) on the basis of routine Western medicine therapies could elevate the effective rate of postoperative paralytic ileus treatment.

Patient preference: The guideline study group investigated 90 patients for their preferences with this therapy, 88.9% of whom were willing to accept the protocol and 8.9% were unwilling.

3.2.8 | Clinical question 8: How was the efficacy of external therapy of TCM in treating POI?

Recommendation 16: Patients with paralytic ileus after abdominal and spinal surgery were suggested to receive TCM enemas, general acupuncture, electroacupuncture, acupoint application, and other TCM external treatments alone or in combination with oral TCM medications, so as to promote gastrointestinal function recovery. (1B)

Therapeutic protocol: (1) TCM enemas: The commonly used TCM enema formulas included modified Major Purgative Decoction, modified Minor Purgative Decoction, and modified Fu-Organ Dredging Decoction. One dose of the formula was decocted twice a day to 100–200 mL each time. An enema continues for over 30 min in the morning and evening, respectively, with 7 days as a course of treatment. (2) General acupuncture: recommended chief acupoints: Zusanli (ST36), Tianshu (ST25), Shangjuxu (ST37), Neiguan (PC6). After filiform needle insertion, neutral reinforcement and reduction or drainage were performed. The needle was retained for 30 min after the obtaining qi, which was conducted once a day with 5–7 days as a course of treatment. (3) Electroacupuncture: acupoint selection and manipulation of electroacupuncture were in line with the requirements of

general acupuncture. After obtaining qi, the electroacupuncture device related to the dilatational wave set at 2/100 Hz. Based on patients' tolerant intensity, the stimulation lasted 30 min once a day, with 5–7 days as a course of treatment. (4) Acupoint application: recommended acupoints: Zusanli (ST36), Shenque (CV8), Dachangshu (BL25). The external applied TCM formulas with the effects of clearing heat, dredging fu-organs, alleviating swelling, and resolving stagnation were utilized. Each patch was fixed for 4 h and replaced once a day, with 7 days as a course of treatment. (5) Integration of Western medicine and TCM: The specific TCM formulas were listed in Recommendation 15.

Reasons for recommendation:

TCM enemas could fortify the spleen and stomach, invigorate qi circulation, remove stagnation, and ease postoperative inflammation.⁴⁹ Commonly used TCM enema prescriptions in clinic settings, such as modified Major Purgative Decoction, modified Minor Purgative Decoction, and modified Fu-Organ Dredging Decoction, were able to dredge intestines, and supplement the stomach and spleen.^{63,64} TCM enemas in combination with oral administration of modified Major Purgative Decoction, modified Minor Purgative Decoction, modified Four Milled Ingredient Decoction, and modified Fu-Organ Dredging Decoction helped to protect the intestinal mucosal barrier, moisten intestines, relieve constipation and inflammation, and promote intestinal peristalsis, thereby facilitating the intestinal environment recovery.⁶⁵ Acupuncture could regulate gastrointestinal motility, protect gastric mucosa, and reduce visceral sensitivity, thus played a positive role in treating postoperative ileus.^{45,66} Acupoint application referred to the external application of TCM medications with effects of clearing heat, dredging fu-organs, alleviating swelling, and resolving stagnation at Zusanli (ST36), Shenque (CV8), Dachangshu (BL25), and other acupoints. After the medications were transdermally absorbed through the above acupoints, the effects of dredging fu-organs, resolving masses, detoxifying, and alleviating swelling were further enhanced.⁶⁷ The evidence evaluation group developed a systematic review revealed that after abdominal and spinal surgery, on the basis of routine Western medicine treatment, TCM enemas (RR = 1.19, 95% CI: 1.10 to 1.28, $p < 0.00001$), general acupuncture (RR = 1.21, 95% CI: 1.14 to 1.30, $p < 0.00001$), electroacupuncture (RR = 1.10, 95% CI: 1.03 to 1.17, $p = 0.004$), acupoint application (RR = 1.19, 95% CI: 1.09 to 1.29, $p < 0.0001$), oral Chinese medicine prescriptions combined with TCM enema (RR = 1.13, 95% CI: 1.09 to 1.18, $p < 0.00001$), or TCM combined with acupuncture (RR = 1.17, 95% CI: 1.01 to 1.36, $p = 0.03$) could improve the effective rate of postoperative paralytic ileus treatment.

Patient preference: The guideline formulation group interviewed 90 patients regarding their opinions on external TCM therapies for the treatment of postoperative ileus. 4.4% of patients were unwilling to accept the protocol, 23.3% chose TCM enemas, 10% chose electroacupuncture, 12.2% chose regular acupuncture, 18.9% chose acupoint application, and 30% selected TCM external treatment combined with oral TCM oral administration.

3.2.9 | Clinical question 9: How was the efficacy of Chinese medicine prescription in treating postsurgical gastroparesis syndrome (PGS)?

Recommendation 17: Patients with gastroparesis syndrome after gastrointestinal tumor operation were suggested to administer Purgative decoctions, Xiangsha Six Gentlemen Decoction/Four Ggentlemen Decoction, Pinellia Heart-Draining Decoction, or Qi-regulating decoctions in addition to routine Western medicine treatment. (2B)

Reasons for recommendation:

PGS, a commonly perioperative complication of digestive tract tumors, was a gastric motility disorder secondary to surgery caused by nonmechanical obstruction factors with disrupted gastric emptying as the major manifestation. In most cases, it developed 3–12 days after surgery. The incidence of PGS after gastrectomy was about 0.4–5.0%.⁶⁸ PGS occurred in approximately 2%–3% of patients undergoing abdominal surgery, accounting for 19% of all PGS cases.⁶⁹

In TCM, there were two major therapeutic approaches of PGS. The first approach, primarily comprising purgative decoctions, focused on dispelling pathogens, dissolving blood stasis, invigorating qi circulation, descending counterflow qi, and dispersing accumulation. While the second approach concentrated on reinforcing healthy qi. In this method, Xiangsha Six Gentlemen Decoction/Four Ggentlemen Decoction was commonly selected for fortifying the spleen, boosting and regulating qi, and relieving distension; the Pinellia Heart-Draining Decoction was a representative formula in terms of harmonizing the stomach and descending turbidity. Besides, Qi-regulating formulas also played an effective role in treating PGS.^{51,70} The systematic review conducted by the evidence evaluation group demonstrated that in combination with routine Western medicine treatment, oral administration TCM formulas could improve the effective rate of PGS treatment (RR = 1.32, 95% CI: 1.26 to 1.38, $p < 0.00001$), shorten the time to first postoperative flatus passage (SMD = -2.04 , 95% CI: -2.98 to -1.10 , $p < 0.0001$), the time to food intake (SMD = -1.71 , 95% CI: -2.22 to -1.20 , $p < 0.00001$), and the length of hospital stay (SMD = -5.37 , 95% CI: -7.00 to -3.74 , $p < 0.00001$), thereby advancing postoperative recovery.

Patient preference: The guideline formulation group made a survey among 90 patients for their views on the therapy. 87.8% were willing to accept the protocol while 8.7% were unwilling.

3.2.10 | Clinical question 10: How was the efficacy of TCM external treatment in treating PGS?

Recommendation 18: Patients with PGS after gastrointestinal tumor surgery should be treated with acupuncture, electroacupuncture, TCM enemas, acupoint injection, acupoint application, and other TCM external treatments alone or in combination with conventional Western medicine treatment to advance early gastrointestinal function recovery. (1B)

Therapeutic protocol: (1) General acupuncture: recommended acupoints: Zhongwan (CV12), bilateral Zusanli (ST36), Neiguan (PC6), Shangjuxu (ST37). After filiform needle insertion, neutral reinforcement and reduction or drainage was performed. The needle was retained for 30 min after obtaining qi, which was conducted once a day, with 5–7 days as a course of treatment. (2) Electroacupuncture: The procedures of electroacupuncture acupoint selection and manipulation were identical to the requirements of general acupuncture. After obtaining qi, the electroacupuncture device was connected to needles with the dilatational waves of 2/100 Hz. The intensity was adjusted in accordance with patient's tolerance. The electrical stimulation lasts 30 min once a day, with 5–7 days as a course of treatment. (3) TCM enemas: commonly used TCM formulas included Purgative decoctions and Qi-regulating decoctions. Enemas were performed twice a day and one dose was applied every day, with 7 days as a course of treatment. (4) Acupoint injection: recommended acupoints were bilateral Zusanli (ST36), which was injected with mecobalamin, metoclopramide, etc. once a day. (5) Acupoint application: recommended acupoints: Zusanli (ST36) and Shenque (CV8); each patch was fixed for 4 h and replaced once a day, with 7 days as a course of treatment.

Reasons for recommendation:

It has been recorded in *Rhymed Discourse for External Remedies* that “the principle of external treatment was exactly the principle of internal treatment; the medicine used in external treatment was identical to the medicine of internal treatment. But the difference lies in the application approaches. The mechanism and drugs were the same, but the usage methods exhibit significant discrepancies”. In PGS patients, TCM enemas address both the manifestations and root cause of the disease, showing synergistic effects and significant clinical efficacy.⁷¹ The formulas were identical to the oral administration formulas. Acupuncture could boost the rehabilitation of PGS patients by stimulating acupoints and meridians to adjust zang-fu organ functions.⁷² Through electroacupuncture, manpower was effectively saved, acupuncture efficacy was enhanced, gastric motility was regulated, the gastric myoelectric activity was fostered, and gastrointestinal hormone secretion was increased. Acupoint injection was able to achieve dual efficacy through acupuncture stimulation on acupoints and the targeting function of drugs.⁷³ Among all the recommended acupoints, Zusanli (ST36) was the first choice in the prevention and treatment of PGS, whereas stimulation on this acupoint was often combined with other therapeutic techniques due to its single effect. Through acupoint application, medications were absorbed by implicated acupoints and local skin to stimulate meridian qi, which was transported to the five zang-fu organs through the skin-meridian system to play a regulatory role systemically. Clinically, Shenque (CV8) on the abdomen was usually selected as the targeted acupoint for PGS treatment. Shenque (CV8), where genuine qi resides, was located on the conception vessel (CV). The medications applied on the umbilicus could be absorbed directly and transmitted to the five zang- and six fu-organs through the meridians under the umbilicus to stimulate the spontaneous regulation function of the human body, thus improving gastrointestinal functions. It was noted in the systematic review developed by the evidence group

that postoperative acupuncture (RR = 1.18, 95% CI: 1.08 to 1.30, $p = 0.0003$), TCM enemas (RR = 1.25, 95% CI: 1.12 to 1.39, $p < 0.0001$), and the combination of external therapies (RR = 1.18, 95% CI: 1.10 to 1.27, $p < 0.00001$) could lift the effective rate of postoperative PGS treatment in patients with gastrointestinal cancer.

Patient preference: The guideline formulation group investigated 90 patients regarding external TCM therapies for PGS. 4.4% of patients were unwilling to accept the protocol, 12.2% chose TCM enemas, 7.8% chose electroacupuncture, 18.9% chose general acupuncture, 18.9% chose acupoint application, and 35.6% selected external treatment combined with oral administration of TCMs.

3.2.11 | Clinical issue 11: How was the efficacy of early postoperative food intake in facilitating gastrointestinal function recovery?

Recommendation 19: It was suggested that patients undergoing surgery should take in food and water via mouth early after surgery (within 24 h), which was able to promote postoperative gastrointestinal function recovery. (1B)

Reasons for recommendation:

With the advancement of the concept of enhanced recovery after surgery (ERAS), evidence regarding the safety and feasibility of oral intake of food and water in the early postoperative period had been provided in perioperative management measures. Studies had confirmed that early postoperative (within 24 h) oral food and water intake could reduce insulin resistance caused by preoperative fasting (food and water), provide energy, protein, and other nutrients, and promote intestinal function recovery. This helped to maintain the integrity of the intestinal mucosal barrier and function and prevent flora imbalance and translocation, thus reduce the incidence of postoperative enterogenic infection and shortening the length of postoperative hospital stay.^{74–76} Compared with enteral nutrition supplementation methods such as nasogastric tube feeding, oral intake of food and water could better satisfy physiological and metabolic needs, through which tube-related complications and patient discomfort could be diminished. The evidence evaluation group conducted a systematic review and demonstrated that early postoperative intake of food and water could shorten the time to first flatus passage (SMD = -1.86 , 95% CI: -2.08 to -1.65 , $p < 0.00001$), time to first defecation (SMD = -1.28 , 95% CI: -1.48 to -1.09 , $p < 0.00001$), and the recovery time of bowel sounds (SMD = -2.00 , 95% CI: -2.36 to -1.64 , $p < 0.00001$), thereby fostering postoperative gastrointestinal function recovery.

3.2.12 | Clinical issue 12: How was the efficacy of early postoperative ambulation in promoting gastrointestinal function recovery?

Recommendation 20: Patients should get out of bed as soon as possible (within 24 h after the surgery), so as to promote gastrointestinal function recovery. (1C)

Reasons for recommendation:

It was previously revealed that postoperative bed rest was associated with complications such as atelectasis, muscle atrophy, decreased exercise capacity, and deep venous thrombosis of lower limbs. As a result, the length of hospital stay was prolonged, hospitalization costs gone up, and patient felt less satisfactory.⁷⁷ Early postoperative ambulation was a critical measure of the ERAS mode. However, only few patients chose to get out of bed early after the surgery due to the impact of postoperative orthostatic hypotension, pain, indwelling catheter, and preoperative physical status classification of American Society of Anesthesiologists (ASA).^{78,79} An observational study concerning patients ambulating after major abdominal surgery delineated that only 5% of patients got out of bed on the first day and that 80% did not leave the bed until the fifth postoperative day.⁸⁰ Another investigation on the compliance with ERAS-related strategies in 12 hospitals of 4 European countries demonstrated that only 6% of patients practiced sitting and standing on the night of surgery, and 9% ambulated on the first postoperative day.⁸¹ Early postoperative ambulation within 24 h was strongly recommended in multiple ERAS guidelines worldwide,⁸²⁻⁸⁴ implying that early ambulation played a vital role in postoperative recovery. The evidence evaluation group developed a systematic review showed that early postoperative ambulation could shorten the time to first postoperative flatus passage (SMD = -1.66, 95% CI: -2.46 to -0.85, $p < 0.0001$), time to first bowel movement (SMD = -1.45, 95% CI: -2.43 to -0.47, $p = 0.004$), and time to bowel sound recovery (SMD = -8.14, 95% CI: -15.57 to -0.70, $p = 0.03$), thereby facilitating gastrointestinal function recovery after the operation.

4 | SUMMARY

Early diagnosis, prevention, and treatment of POGD were crucial to promote postoperative recovery, and were especially significant for better prognosis in patients with critical illness. This guideline was the first evidence-based guideline regarding the prevention and treatment of POGD with integrated Traditional Chinese Medicine and Western medicine worldwide. It covered a wide range of contents, including disease definitions, etiologies, pathogenesis, syndrome differentiation, diagnosis, and application of herbal medicines during perioperative period. Furthermore, in this guideline, 20 recommendations developed in the Delphi-based expert consensus meetings were provided. To achieve this, the team's experience in developing 2 guidelines related to the integrated Traditional Chinese Medicine and Western medicine^{85,86} was summarized, the definitions of clinical practice guidelines proposed by IOM⁹ and the Guiding Principles for the Formulation/Revision of Clinical Diagnosis and Treatment Guidelines¹¹ were referred to the existing evidence provided by systematic reviews/meta-analyses was comprehensively searched and subjected to quality analysis. Furthermore, the pros and cons of intervention measures were weighed, and patient preferences were also taken into account. With all these efforts, we intended to foster

the standardization of clinical application of integrated Traditional Chinese Medicine and Western medicine in preventing and treating POGD, thereby lowering POGD incidence and boosting the postoperative recovery of gastrointestinal functions. However, there were limitations to the promotion and application of the guidelines due to the unstandardized design of the original studies on TCM techniques such as acupuncture, and the quality of the existing systematic reviews/meta-analyses reports and methodological quality needs to be improved.⁸⁷

5 | DISCLAIMER

This guideline was formulated in strict accordance with the guideline formulation standards of WHO and the Chinese Medical Association, guideline research and evaluation tools, and international guideline reporting standards. It was designed to offer insight into clinical and medical services. It was not the medical standards that must be followed in all cases, nor the health care measures provided for particular individuals. The conflict-of-interest regulations and ethical standards of WHO regarding guideline formulation were strictly followed during the development of this guideline. All participating members signed conflict-of-interest statements as they were proved via evaluation to have no direct conflict of interest during the guideline establishment process.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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