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Research Progress on Optimization Strategies for Perioperative Accelerated Recovery Nursing Pathway in Lung Cancer

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Abstract: Focusing on the improvement of perioperative accelerated recovery nursing pathways for lung cancer, this study reviews existing literature. The standardized nursing pathway established through interdisciplinary collaboration can shorten postoperative mobilization timing and overall hospitalization duration. Patient education videos combined with psychological interventions enhance patient compliance with diagnostic and therapeutic procedures, reducing the need for clinical analgesics. A comprehensive perioperative respiratory prophylaxis and control protocol decreases the incidence of atelectasis. Evidence-based node-based nursing pathways improve implementation coverage and shorten overall hospitalization duration. Comfortable ward environments alleviate patient psychological anxiety, while nursing protocols are adjusted according to minimally invasive surgical characteristics.

Keywords: Lung cancer; Enhanced Recovery After Surgery (ERAS); Perioperative nursing; Nursing pathway; Optimization strategy

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1. Introduction

Lung cancer is the malignant tumor with the highest incidence and mortality rates in China, with surgical intervention being the primary treatment modality. The introduction of Enhanced Recovery After Surgery (ERAS) principles has improved patient outcomes, yet implementation of nursing pathways faces challenges, such as insufficient evidence translation, fragmented measures, and poor compliance. Systematically refining nursing pathways, integrating multidisciplinary collaboration, precise respiratory management, evidence-based standardization, and innovative service models are critical for enhancing rehabilitation quality. This article reviews recent advancements in improvement strategies from dimensions including interdisciplinary

collaboration, health education, respiratory management, complication prevention and control, and minimally invasive adaptation, providing references for continuous clinical pathway optimization.

2. Strategies for multidisciplinary collaboration and improvement of health education nursing pathways

2.1. Development and implementation of an interdisciplinary collaborative nursing model

Li Jingxiao and Yin Jianing (2026) demonstrated that interdisciplinary collaborative accelerated rehabilitation surgery nursing can improve perioperative care quality for lung cancer patients. The core approach involves establishing a multidisciplinary team comprising surgeons, anesthesiologists, respiratory therapists, dietitians, and specialized nurses to break down disciplinary barriers and establish standardized perioperative care pathways. Clinical controlled studies showed that patients in the interdisciplinary group exhibited shorter postoperative first ambulation time, shorter thoracic drainage tube retention duration, and shorter hospital stays compared to the conventional care group, with lower postoperative pain scores and complication rates. Implementing a closed-loop pathway of "preoperative assessment-intraoperative coordination-postoperative rehabilitation" with dedicated ERAS nurses for continuous quality control can reduce omissions and delays in nursing interventions [1]. Zhang Junye (2020) reported that in thoracoscopic pneumonectomy patients, nurse-led preoperative rehabilitation training combined with comprehensive anesthesia planning by anesthesiologists reduced postoperative pulmonary complication rates from 18.6% to 7.4% [2].

2.2. Innovative approaches to diversified health education and psychological support

Liu Junxiao et al. (2022) innovatively introduced a patient video-based health education combined with an accelerated rehabilitation surgery nursing model. Traditional verbal education fails to motivate patients effectively. By producing short videos featuring real-life testimonials from recovered patients and preoperatively screening these videos alongside targeted nursing explanations, anxiety scores were reduced, while postoperative early ambulation and effective sputum expectoration compliance were improved [3]. The study demonstrated that the observation group achieved an 82.5% ambulation compliance rate on postoperative day 1, significantly higher than the control group's 61.3%. Wang Yu (2020) emphasized the embedded value of perioperative psychological nursing in accelerated recovery pathways. Nurses should use standardized psychological assessment scales to identify high-anxiety patients preoperatively and provide individualized cognitive behavioral interventions to help patients confront surgery and build rehabilitation confidence. Data from the study showed that lung cancer patients receiving systematic psychological support experienced approximately 30% fewer postoperative analgesia pump presses, with psychological interventions enhancing patients' self-control over pain and indirectly optimizing analgesia pathways [4]. Yan Li (2020) proposed refining health education pathways into five time nodes: "admission day – preoperative day – surgical day – postoperative day – discharge day," each accompanied by illustrated health manuals and QR code video resources. This structured, visualized approach promotes active patient and family participation in nursing decision-making, effectively addressing fragmented information dissemination in traditional nursing practices and emerging as a key strategy for improvement [5].

3. Perioperative respiratory management and optimization of complication prevention pathways

3.1. Systematization of comprehensive perioperative respiratory management measures

Tian Maosheng et al. (2022) systematically analyzed the clinical significance of perioperative comprehensive respiratory management for rapid recovery after lung cancer surgery, proposing a tripartite management approach: "preoperative airway preparation – intraoperative lung protection – postoperative airway clearance." Preoperatively, active circulatory breathing technique (ACBT) combined with inspiratory lung volume training was recommended, administered no less than twice daily for 5–7 days; during surgery, anesthesiologists and nurses collaborated to implement lung-protective ventilation strategies; postoperatively, high-frequency chest wall oscillation and sputum expectoration devices were standardizedly used, and patients were guided to perform early deep breathing and coughing exercises. The study demonstrated that implementation of this comprehensive approach reduced the incidence of postoperative atelectasis from 15.2% to 5.8%, with an average hospital stay shortened by 2.4 days [6]. Zhang Junye (2020) observed similar outcomes in patients undergoing thoracoscopic pneumonectomy, emphasizing that nurses should initiate bedside respiratory function exercises within 6 hours postoperatively—using simple methods such as balloon inflation or respiratory trainers—to promote lung re-expansion without increasing patient discomfort. Yan Li (2020) highlighted the combined use of nebulized inhalation and positional drainage, noting that while postoperative analgesia is essential, it may suppress the cough reflex. They recommended administering nebulized inhalation at least four times daily under effective analgesia, combined with the healthy-side lateral decubitus position for drainage to facilitate deep sputum expulsion.

3.2. Application of accelerated rehabilitation nursing in postoperative complication prevention and control

Lin Liling (2023) reported that in the accelerated recovery nursing pathway, risk assessment should be performed 24 hours before surgery, with patients stratified using the Caprini Thrombosis Risk Assessment Scale. Early implementation of triple prophylactic measures, including ankle pump exercises, intermittent pneumatic compression devices, and low-molecular-weight heparin for high-risk patients, could reduce the incidence of postoperative lower extremity deep vein thrombosis from 4.3% to 0.9%. She proposed optimizing the postoperative nausea and vomiting (PONV) management pathway, including preoperative prophylactic antiemetics such as areprostinib, strict postoperative nausea monitoring, and adjunctive non-pharmacological interventions like menthol oil acupoint massage [7]. Wang Yu (2020) addressed the conflict between incision pain and early ambulation, recommending a multimodal analgesia strategy with regular administration of nonsteroidal anti-inflammatory drugs (NSAIDs) to reduce opioid use. Patients were encouraged to perform ankle flexion-extension and straight leg raises in bed 4–6 hours postoperatively, with assisted ambulation within 12 hours. Clinical practice demonstrated that this pathway advanced the first postoperative flatus expulsion time to 18.5±3.2 hours, significantly faster than the 30.1±5.4 hours observed in the conventional nursing group. Li Jingxiao and Yin Jianing (2026) further highlighted the unique advantages of interdisciplinary collaboration in rapid complication identification and management. During nursing rounds, when oxygen saturation levels were detected to decline, respiratory therapists could immediately initiate bedside airway clearance and consult physicians for fiberoptic bronchoscopy sputum aspiration. This closed-loop response mechanism reduced complication exacerbation risk by over 60%.

4. Evidence application and novel service models in nursing pathway implementation

4.1. Standardization of accelerated recovery nursing pathways based on optimal evidence

Liu Dandan et al. (2022) systematically summarized the best evidence for perioperative accelerated recovery nursing in lung cancer patients. They identified 22 strong recommendations across seven dimensions: preoperative pre-rehabilitation, intraoperative management, early postoperative mobilization, nutritional support, pain management, catheter management, and discharge follow-up. Key recommendations included preoperative smoking cessation for at least 4 weeks, preoperative carbohydrate loading (consumption of 400 mL of 12.5% carbohydrate beverage 2 hours before surgery), intraoperative maintenance of normal body temperature (> 36℃), and removal of urinary catheters within 24 hours postoperatively. These findings provide clear evidence for standardizing nursing pathways [8]. Liu Dandan et al. (2022) similarly highlighted significant gaps between evidence and clinical practice, attributing this to low nurse awareness of evidence, lack of evaluation mechanisms for pathway implementation, and poor interdepartmental collaboration. They emphasized "evidence translation" as a critical component of improvement strategies, recommending the establishment of an ERAS nursing pathway checklist to convert each evidence item into quantifiable nursing tasks, with daily random checks conducted by head nurses. In a study on perioperative application of single-port thoracoscopic surgery in non-small cell lung cancer patients, Ma Kejian and Yang Junfeng (2024) designed a nursing pathway incorporating 18 quality control nodes based on optimal evidence. Results showed that the pathway group achieved a shorter postoperative hospital stay of 5.3 ± 1.2 days compared to 7.8 ± 1.9 days in the control group, with a pathway completion rate of 94.5% [9].

4.2. Innovative integration of comfortable ward settings and video-based patient education

Che Guowei and Li Hongjuan (2025) proposed the concept of establishing and applying "comfortable wards," emphasizing that perioperative lung cancer patients require not only physiological rehabilitation but also psychological comfort and environmental support. The core elements of comfortable wards include a family-like ward environment, individualized analgesia and sedation regimens, and diversified comfort nursing measures [10]. Their research data demonstrated that under the comfortable ward model, patients 'self-rated postoperative anxiety scale (SAS) scores decreased by 41.6%, nighttime sleep duration increased by an average of 1.8 hours, and the frequency of voluntarily requesting analgesics reduced by 52%. This model is deeply integrated with the accelerated recovery nursing pathway, forming a comprehensive "physiological-psychological-environmental" tripartite strategy. Liu Junxiao et al. (2022) suggested that patient video-based health education could serve as a concrete implementation form of psychological support in comfortable wards. They produced rehabilitation story videos featuring patients of different ages and surgical procedures, which were cyclically played on ward television systems, alongside organizing offline patient exchange meetings. Patients generally reported that viewing real-life cases of successful recovery significantly alleviated surgical fear and enhanced tolerance for postoperative pain and discomfort. This peer education model, combined with professional nursing guidance, compared to traditional one-way education, effectively improved patients' self-efficacy and facilitated the transition of nursing pathway activities from "passive execution" to "active participation."

4.3. Fine-tuning of perioperative nursing pathways for minimally invasive surgery

Mark Jian and Yang Junfeng (2024) proposed an optimized "load reduction and acceleration" nursing pathway for single-port thoracoscopic surgery in non-small cell lung cancer (NSCLC) patients. The preoperative regimen was modified from mandatory 12-hour fasting to oral clear liquid intake 2 hours before surgery. During the procedure, thoracic drainage tubes were not routinely placed; instead, fine tubes (14F) were used with portable drainage bottles. Postoperatively, patients were encouraged to consume fluids 2 hours after surgery, transition to a liquid diet at 4 hours, and ambulate at 6 hours. The authors emphasized that nurses must master the identification and management of common post-minimally invasive surgery complications. For instance, shoulder traction pain observed in some patients after single-port thoracoscopic surgery could be effectively alleviated through trapezius muscle massage and positional adjustments. Tian Maosheng et al. (2022) noted that minimally invasive surgery patients exhibited better postoperative cough control compared to open-chest surgery patients, but vigilance remained required for "silent hypoxia." They recommended dynamic monitoring of oxygen saturation using portable pulse oximeters every 4 hours to track post-exertional oxygen levels. These refined adjustments reflect the trend toward transitioning nursing pathways from "one-size-fits-all" approaches to "precision medicine." Integrating evidence-based applications, innovative models, and minimally invasive adaptation, current peripartum accelerated recovery nursing pathways for lung cancer have evolved into a multi-tiered framework characterized by "evidence-driven approaches, model integration, and surgical procedure customization." Future high-quality clinical studies are still needed to further validate the long-term efficacy and health economics value of different optimization strategies.

5. Conclusion

The current perioperative accelerated recovery nursing pathway for lung cancer has evolved from isolated measures to a systematic integration, with a well-defined interdisciplinary collaboration mechanism that highlights the pivotal role of nurses in pathway implementation. Patient video feedback and comfortable wards enhance patient engagement, while evidence-based standardized checklists address bottlenecks in evidence translation. Minimally invasive surgical adaptations emphasize the differentiated needs of surgical procedures. Future research should focus on addressing continuous monitoring of pathway adherence, validating the health economics benefits of refined strategies through multicenter data, and advancing the nursing pathway from merely having a pathway available to continuously refining it.

Disclosure statement

The authors declare no conflict of interest.

References

[1] Li J, Yin J, 2026, Application Effect Analysis of Accelerated Rehabilitation Surgery Nursing with Interdisciplinary Collaboration in Perioperative Care for Lung Cancer Patients. China Community Physician, 42(4): 91–93.

[2] Zhang J, 2020, Application and Efficacy of Accelerated Rehabilitation Nursing in the Perioperative Period of Patients Undergoing Thoracoscopic Pneumonectomy. Contemporary Nurse (Mid-Month Issue), 27(8): 42–45.

[3] Liu J, Wang C, Wang W, et al., 2022, Application of Patient Video Health Education Combined with Accelerated Rehabilitation Surgery Nursing in the Perioperative Period of Lung Cancer Patients. Qilu Journal of Nursing, 28(4): 78–81.

[4] Wang Y, 2020, Application of Enhanced Recovery After Surgery (ERAS) in the Perioperative Care of Lung Cancer Surgery Patients. Practical Electronic Journal of Clinical Nursing, 5(7): 102–103.

[5] Yan L, 2020, Exploring the Effect of Accelerated Rehabilitation Nursing in Perioperative Care for Lung Cancer Surgery Patients. China Practical Medicine, 15(15): 165–167.

[6] Tian M, Zhang Q, Shang P, et al., 2022, Clinical Significance of Perioperative Comprehensive Respiratory Management for Postoperative Rapid Recovery in Lung Cancer Patients. Journal of Shandong First Medical University (Shandong Academy of Medical Sciences), 43(2): 125–129.

[7] Lin L, 2023, Analysis of the Efficacy of Accelerated Rehabilitation Nursing in Perioperative Care for Lung Cancer Surgery Patients. Journal of Aerospace Medicine, 34(9): 1113–1114.

[8] Liu D, Kang L, Zhong J, 2022, Best Evidence Summary on Enhanced Recovery After Surgery Nursing for Lung Cancer Patients During the Perioperative Period. Evidence-Based Nursing, 8(7): 892–896.

[9] Mark J, Yang J, 2024, Clinical Efficacy of Accelerated Recovery Surgery in Perioperative Care for Non-Small Cell Lung Cancer Patients Undergoing Single-Port Thoracoscopic Surgery. Reflex Therapy and Rehabilitation Medicine, 5(14): 92–95.

[10] Che G, Li H, 2025, Establishment and Application of "Comfortable Ward" in Accelerated Recovery Surgery. Cancer Prevention and Treatment Research, 52(8): 651–655.