Expert Consensus on Perioperative Nutritional Management for Liver Cancer Based on Enhanced Recovery After Surgery (ERAS) Principles (2025 Edition) Postprint

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Abstract

Liver cancer patients have a high incidence of malnutrition due to factors such as liver function impairment, tumor consumption, and treatment-related toxic side effects, which significantly increases the risk of postoperative complications and shortens survival. Multidisciplinary collaborative perioperative nutritional management strategies based on the Enhanced Recovery After Surgery (ERAS) concept have been proven to shorten hospital stay and reduce complications. However, there is currently a lack of specialized consensus on perioperative nutritional management for liver cancer under the ERAS concept both domestically and internationally. This consensus constructs a standardized nutritional management model by integrating evidence-based evidence and multidisciplinary clinical practice experience, focusing on three core components: nutritional screening and assessment methods for liver cancer patients, perioperative nutritional protocols, and multidisciplinary collaboration pathways. It establishes perioperative nutritional management strategies including dynamic nutritional status screening and assessment, staged nutritional support, exercise intervention and psychological support, and precise multidisciplinary collaboration, aiming to unify clinical practice standards and improve nutritional status and disease prognosis in liver cancer patients. This consensus is applicable to hepatobiliary oncology departments and community hospitals, providing scientific and personalized nutritional management protocols under the ERAS concept for perioperative liver cancer patients.

Full Text

Preamble

Expert Consensus on Perioperative Nutritional Management for Liver Cancer Based on the Enhanced Recovery After Surgery Concept (2025 Edition)

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Abstract Patients with hepatocellular carcinoma (HCC) frequently experience malnutrition due to impaired liver function, tumor-related cachexia, and treatment-related toxicities, which significantly increases postoperative complications and reduces survival rates. The Enhanced Recovery After Surgery (ERAS) concept, implemented through multidisciplinary perioperative nutrition management, has been proven to shorten hospital stays and decrease complications. However, there remains a lack of specialized consensus on perioperative nutrition management for HCC patients within the ERAS framework. This consensus integrates evidence-based findings with multidisciplinary clinical experience, focusing on three core aspects: nutritional screening and assessment methods, perioperative nutrition protocols, and multidisciplinary collaboration pathways. It establishes a standardized nutrition management model, including dynamic perioperative nutritional status screening and assessment, staged nutritional support, exercise and psychological intervention, and precise multidisciplinary collaboration strategies. The aim is to standardize clinical practice, improve nutritional status, and enhance outcomes for HCC patients. This consensus is intended for hepatobiliary oncology departments and community hospitals, providing a scientific and personalized perioperative nutrition management plan under the ERAS concept for patients with liver cancer.

[**Key words**] Liver neoplasms; Enhanced recovery after surgery; Perioperative management; Nutritional intervention; Multidisciplinary collaboration

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1. Methodology

1.1 Working Group Formation

This consensus was initiated by the Community Rehabilitation Working Committee of the Chinese Rehabilitation Medicine Association in collaboration with

the Department of Rehabilitation Medicine at Huashan Hospital, Fudan University in May 2025, with formal development launched in July 2025. The consensus working group comprises an expert committee, a development panel, and a secretariat, consisting of multidisciplinary specialists from hepatobiliary oncology surgery, hepatobiliary medical oncology, rehabilitation medicine, nutrition, and related fields. Prior to initiating this consensus, the working group completed the protocol development and registration process, including registration with the International Practice Guideline Registry and Transparency Platform (Registration No.: PREPARE-2025CN1558).

1.3 Evidence Summary

Primary search terms: Enhanced Recovery After Surgery, hepatocellular carcinoma, perioperative period, nutritional support, etc.
Search databases: English databases (PubMed, Web of Science, EMBASE, Ovid, Cochrane Library, Scopus) and Chinese databases (CNKI, Wanfang, VIP, SinoMed), as well as the National Guideline Clearinghouse, Scottish Intercollegiate Guidelines Network, Oncology Nursing Society website, Joanna Briggs Institute, UpToDate, BMJ Best Practice, and Medlive.
Included literature types: Randomized controlled trials, systematic reviews, meta-analyses, retrospective systematic studies, clinical case series, case reports, guidelines, and expert opinions.
Evidence synthesis: Literature abstracts were screened for relevance to ERAS-based perioperative nutrition management in liver cancer. Included studies were evaluated, and key evidence supporting the consensus was summarized in evidence tables. The expert panel formed a draft consensus through open discussion of the evidence, which was refined based on evaluation results and expert feedback through multiple rounds of revision.

1.4 Literature Quality Evaluation

Guidelines were evaluated using the Appraisal of Guidelines for Research and Evaluation II (AGREE II) instrument. Systematic reviews were assessed using the AMSTAR checklist. Expert consensus statements were evaluated using the JBI Expert Consensus Critical Appraisal Tool. RCTs were appraised using JBI criteria for randomized controlled trials (2016). For clinical decision analyses and evidence summaries, appropriate evaluation standards were selected based on the literature type by tracing original source documents.

1.5 Consensus Dissemination, Implementation, and Update

This consensus will be disseminated through academic exchanges, interpretations, new media posts, and academic journals to promote implementation in hepatobiliary oncology departments and community hospitals. Expert panel members will regularly evaluate emerging evidence and clinical needs to update the consensus content as necessary.

2. Consensus Content

The expert panel identified key questions regarding ERAS-based perioperative nutrition management for liver cancer patients through open discussion. Based on comprehensive appraisal of domestic and international literature, consensus guidelines, and expert clinical experience, combined with current practice status, a draft consensus was developed. After multiple rounds of expert discussion and revision, the final consensus focuses on three core dimensions. The target users include hepatobiliary oncology surgery, hepatobiliary medical oncology, gastrointestinal oncology, rehabilitation medicine, and community hospital departments. The target population comprises liver cancer patients in the perioperative period.

2.1 Nutritional Screening and Assessment for Liver Cancer Patients

Liver cancer patients often develop malnutrition due to metabolic disorders, reduced intake, and tumor consumption, with reported malnutrition rates of 29.4%-86.6% [4-6]. Malnutrition is an independent risk factor for postoperative complications and mortality [17-19]. Accurate nutritional screening and assessment are crucial for guiding perioperative nutrition management, significantly reducing infection risk, promoting wound healing, shortening hospital stays, and improving clinical outcomes [20-21].

Nutritional risk screening enables rapid identification of patients requiring further assessment and support. All liver cancer patients should complete initial screening within 24 hours of admission [22-23]. Patients with positive screening results require comprehensive nutritional assessment [24].

Screening tools: Several validated tools are available for liver cancer patients, categorized as general or liver disease-specific instruments.
(1) **Nutritional Risk Screening 2002 (NRS 2002):** This general tool demonstrates high sensitivity for predicting nutrition-related complications, with a score $ $3 indicating nutritional risk [25-27]. However, its BMI calculation requirement limits applicability in patients with ascites, hepatic encephalopathy, or inability to stand [28-29].
(2) **Mini Nutritional Assessment-Short Form (MNA-SF):** This general tool is suitable for elderly patients, assessing weight changes, dietary intake, mobility, and psychological status [30-31].
(3) **Royal Free Hospital-Nutritional Prioritizing Tool (RFH-NPT):** This liver-specific tool is recommended as the preferred screening instrument for liver disease by ESPEN guidelines [32-33]. It incorporates weight changes and adjusts for fluid retention, demonstrating superior sensitivity for identifying nutritional risk in liver disease, particularly liver cancer and cirrhosis, compared to NRS 2002 [34].
(4) **Liver Disease Undernutrition Screening Tool (LDUST):** This instru-

ment rapidly screens for muscle/fat wasting and fluid retention common in liver disease, showing high detection rates for liver disease-related malnutrition [35-36].

Notably, advanced cancer patients and those over 65 years have higher false-negative rates with some screening tools [37-38]. Therefore, regardless of screening results, these populations require detailed nutritional assessment.

[**Recommendation**] All newly admitted liver cancer patients must complete nutritional risk screening within 24 hours, led by nursing staff. NRS 2002 or liver-specific tools (RFH-NPT or LDUST) are preferred. Patients with positive initial screening should proceed directly to nutritional assessment. Advanced cancer patients and those aged $ $65 years should routinely undergo nutritional assessment regardless of initial screening results.

2.2 Nutritional Status Assessment

For patients with positive nutritional risk screening or high-risk factors (advanced cancer, age $ $65, critical illness), systematic nutritional assessment must be completed by clinicians or dietitians within 48 hours of admission to guide precise nutritional interventions [39-40].

Assessment scales: Structured scales are recommended for liver cancer patients.
(1) **Subjective Global Assessment (SGA):** As the gold standard, this simple tool covers weight changes, dietary intake, symptoms, functional status, and physical examination, with minimal interference from fluid retention, making it particularly suitable for cirrhosis and liver cancer patients [41-42].
(2) **Patient-Generated Subjective Global Assessment (PG-SGA):** The preferred tool for cancer patients, combining patient self-assessment and clinician evaluation with quantitative scoring (0-1: no intervention needed; 2-3: nutritional intervention required; $ 4 : $ *dietitianinvolvementnecessary*$).Itenablesprecisetieredinterventionswith$ 44].(3) $ *$*RoyalFreeHospital − ModifiedSGA(RFH − SGA)* : *$* *Designedforend−stageliverdisease,thistooladdsmid−armcircumference(MAC),tricepsskinfoldthickness$ *armmusclecircumference(MAMC = MAC − 3.14×*$TSF), with MAMC <5th percentile indicating malnutrition [34,45].
(4) **Global Leadership Initiative on Malnutrition (GLIM):** This diagnostic framework uses phenotypic indicators (weight loss, low BMI, muscle wasting) combined with etiologic criteria and laboratory tests for rapid diagnosis, though muscle mass validation is required in practice [46-48].

For patients with fluid retention, additional assessment indicators are recommended for more comprehensive evaluation [49]:
(1) **Dynamic non-dominant hand grip strength (HGS):** With 81% sensitivity, this directly reflects muscle function decline and nutrition-related complication risk, outperforming traditional grip strength measurements [50].
(2) **Calf circumference (CC), triceps skinfold thickness (TSF), and**

mid-arm circumference (MAC): These directly reflect muscle/fat loss, effectively circumventing fluid retention effects [51-52].

[**Recommendation**] Patients with positive nutritional risk screening or high-risk liver cancer patients must undergo structured assessment by dietitians/physicians within 48 hours. SGA or PG-SGA are preferred (PG-SGA is mandatory for liver cancer patients; score $ $4 requires dietitian intervention). Dynamic monitoring of non-dominant hand grip strength and calf circumference should supplement the assessment.

1.3 Nutritional Status Diagnosis

For high-risk liver cancer patients, multidimensional integrated assessment enables precise nutritional diagnosis to guide individualized interventions and improve outcomes. Diagnostic methods include functional assessment, laboratory tests, and imaging studies.

1.3.1 Functional Assessment Comprehensive evaluation of physiological function and psychological status forms the foundation of nutritional diagnosis.
(1) **Karnofsky Performance Status Score:** Systematically quantifies daily activity capacity and self-care ability [53].
(2) **Hospital Anxiety and Depression Scale (HADS):** Screens for depressive symptoms and cognitive dysfunction, particularly useful in elderly patients with psychological stress [54-55].
(3) **Physical performance tests:** Objective indicators reflecting functional reserve, including 6-minute walk test, 30-second chair stand test, and single-leg stance test, which reflect cardiopulmonary endurance, lower limb muscle endurance, and static balance, respectively [56-57].

1.3.2 Laboratory Tests Multidimensional laboratory tests support nutritional diagnosis:
(1) **Nutritional prognostic indicators:** Include C-reactive protein (CRP) and Glasgow Prognostic Score (GPS). Elevated CRP shows superior prognostic value over albumin in liver cancer patients [58-59]; GPS score 1-2 is an independent risk factor for reduced survival after hepatectomy, though non-specific inflammation must be excluded [60].
(2) **Protein metabolism indicators:** Include creatinine height index and prealbumin. Creatinine height index requires 3-day urine collection, comparing average creatinine to standard values for gender/height; <60% indicates severe protein deficiency and is unaffected by fluid retention but requires normal renal function without acute infection [61]. Prealbumin (t1/2 = 1.9 days) is more sensitive to nutritional changes than albumin but remains susceptible to hepatic dysfunction and fluid status [62-63]. Albumin alone has limited diagnostic value in liver cancer patients due to universal hypoalbuminemia and requires combination with other parameters [64].

(3) **Immunonutrition indicators:** Prognostic Nutritional Index (PNI) = [albumin (g/L) + 5×lymphocyte count ($×10^{9}$/L)]. Low values correlate with shortened postoperative survival, though accuracy may be reduced by hypersplenism or infection [65-67].
(4) **Body composition and cellular function:** Bioelectrical impedance analysis (BIA) provides muscle mass, fat mass, and phase angle data. Phase angle reflects cell membrane integrity; low preoperative phase angle predicts increased postoperative infection and mortality, outperforming traditional albumin [68-70].

Priority core indicators strongly associated with liver cancer prognosis include CRP, prealbumin, and BIA phase angle. When resources are limited, at minimum CT-based muscle mass analysis, prealbumin, and CRP should be completed.

1.3.3 Imaging Studies

(1) **Dual-energy X-ray absorptiometry (DXA):** Precisely quantifies whole-body muscle and fat distribution [71].

(2) **Abdominal CT or MRI:** Standardized muscle mass assessment via cross-sectional area measurement at the third lumbar vertebra. This represents the gold standard for body composition analysis but involves higher cost, complexity, and radiation exposure [72-75].

[**Recommendation**] For nutritional diagnosis, liver cancer patients should complete a baseline assessment battery: (1) Quantify skeletal muscle mass using preoperative imaging (CT/MRI); (2) Perform standardized Karnofsky performance status testing and HADS depression screening.

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2. ERAS-Based Perioperative Nutrition Management for Liver Cancer

Perioperative nutrition management for liver cancer patients should follow ERAS principles throughout preoperative, intraoperative, postoperative, and post-discharge phases. Dynamic nutritional screening and assessment enable diagnosis and inform personalized nutrition support plans to reduce complications, accelerate recovery, and improve outcomes. The management pathway is illustrated in Figure 1 [Figure 1: see original paper].

2.1 Preoperative Management

Pre-habilitation: Outpatients with positive nutritional risk screening should receive a 7-day home nutrition pre-habilitation program before admission, involving oral nutritional supplements (250-300 mL) three times daily at fixed

intervals, with concurrent daily online follow-up to monitor compliance and nutritional status [75-77].

Nutritional screening: Dynamic screening identifies malnutrition risk early and reduces postoperative complications [78]. NRS 2002 or PG-SGA should be used for nutritional risk screening after admission to rapidly assess status and guide management [12,79]. A three-tier "screen-assess-diagnose" model identifies high-risk patients early [17,80].

Nutritional support: Malnourished patients should receive oral nutritional supplements before surgery; those with severe swallowing dysfunction or gastrointestinal impairment may require enteral nutrition (EN) or parenteral nutrition (PN) [17,80-82]. Studies show that 400-600 kcal/day of high-protein/immune nutrition oral supplements starting one week preoperatively improves postoperative status [83-84]; 5-day supplementation with arginine and ω-3 fatty acids reduces infection risk [85-86]; 3-day preoperative enteral nutrition suspension (TP-MCT) at 500-1000 mL/day ($ $25 g protein) significantly shortens time to first flatus after hepatectomy [84,87]; oral branched-chain amino acids (BCAA) on the night before surgery prevent postoperative albumin decline and improve ammonia levels [88-89]. Diabetic patients should switch to insulin therapy 3 days preoperatively for optimal glycemic control [90-91].

Exercise guidance: Multidisciplinary teams should customize preoperative exercise programs, focusing on respiratory training (e.g., balloon blowing) 2-3 times daily for 15 minutes to enhance cardiopulmonary reserve and prevent postoperative pulmonary complications [92-94].

Psychological care: Clinical nurses should establish trusting relationships, acknowledge patient anxiety, provide clear surgical information and expectations, explain pre- and postoperative care points, and address sleep disturbances and pain promptly [95-97].

[**Recommendation**] Preoperative nutrition management should be guided by nutritional risk screening, concurrent with exercise and psychological care. Dynamic screening should be performed in outpatient and inpatient settings. High-risk outpatients should initiate 7-day home pre-habilitation with oral supplements (3$×$250-300 mL/day). High-risk inpatients require preoperative enteral nutrition (500 mL/day for 3 days) and 50 g BCAA on the night before surgery. Diabetic patients need insulin conversion 3 days preoperatively.

2.2 Intraoperative Management

Nutritional access establishment: Establish dedicated intravenous access for nutritional infusion during surgery, with proper line maintenance for postoperative PN [81,98]. For patients with severe swallowing dysfunction or gastrointestinal impairment (nausea, vomiting, distension), place a nasoenteric tube precisely 20 cm distal to the Treitz ligament, avoiding nasogastric tubes (or remove before awakening) to provide safe access for early postoperative EN

[78,99].

Physiological stability maintenance: Restrict intraoperative intravenous fluids to <2000 mL to avoid fluid overload [100-101]. Maintain active warming throughout: increase operating room temperature, cover non-operative areas with warming blankets, and warm intravenous fluids and irrigation solutions to 37.5°C [102-103]. Maintain hemodynamic stability to reduce hypothermia-related coagulopathy and infection risk [104].

Psychological care: Provide environmental orientation and psychological reassurance after entering the operating room to alleviate anxiety and minimize physiological stress responses, establishing foundations for rapid postoperative recovery [78].

[Recommendation] Intraoperatively, establish nutritional access while maintaining physiological stability (fluid restriction + warming) with psychological intervention to stabilize internal environment, reduce surgical stress, and ensure postoperative recovery.

2.3 Postoperative Management

Nutritional support: For stable patients with low malnutrition risk (NRS 2002 <3, PG-SGA <2, normal prealbumin), early oral feeding is recommended [105-106]. Advance diet in stages: clear liquid → full liquid → semi-liquid → soft diet → regular diet. Postoperative day 0: trial water intake (10 mL, increasing to 200 mL) then high-calorie clear liquids if tolerated [107]. Day 1: clear liquids (e.g., rice water) $ $500 mL [84]. Day 2: full liquids 50-100 mL every 2-3 hours plus high-protein/immune formula oral nutritional supplements (ONS) [108]. Day 3: semi-liquids (e.g., millet porridge, egg custard) with ONS 200 mL three times daily [109]. Day 4 onward: soft diet for one month with ONS between meals. This protocol reduces gastrointestinal stimulation while ensuring intake [83]; ONS significantly improves nutritional status and bowel function recovery [79].

For patients with malnutrition risk, supplement with PN/EN based on individual status, following a "PN → combined EN+PN → EN"stepwise transition. For patients without oral intake contraindications, ONS is the preferred EN method [82,110]. Patients unable to take oral supplements may receive 10% glucose 500 mL/12h via nasoenteric tube, advancing to enteral nutrition emulsion from 250 mL/12h [111]. One protocol recommends: 100% PN on postoperative day 1; 50%EN+50%PN on days 2-3; 70%EN+30%PN on days 4-5; 100%EN by days 6-7. This meets energy/protein needs at different recovery stages, accelerates bowel function recovery, and reduces complication risk [90,112].

Early mobilization: Begin bed exercises (ankle pumps, turning) 6 hours postoperatively. Assist with out-of-bed activity >3 times daily for 15-20 minutes on day 1, progressively increasing to walking and resistance exercises from day 2 [113-114]. Early mobilization accelerates gastrointestinal motility, shortens

time to first flatus, and reduces complications [92].

Gastrointestinal function modulation: Start oral lactulose 10-15 mL 1-2 times daily plus probiotics (e.g., *Bifidobacterium* triple viable preparation, lactobacillus, or yogurt) from 6 hours postoperatively until flatus/defecation to restore gut microbiota balance. Chewing gum and Zusanli acupressure on postoperative day 1 can synergistically improve gastrointestinal motility and prevent ileus [107,114-117].

[**Recommendation**] Postoperative nutrition management should focus on two core principles: (1) **Stepwise nutritional transition**—for low-risk patients, advance from clear liquids to regular diet within 24 hours, adding ONS (3$\times$200 mL/day) after 24 hours; for at-risk patients, initiate PN within 24 hours and transition to full EN within 7 days. (2) **Gastrointestinal recovery**—combine lactulose with probiotics from 6 hours postoperatively and assist with out-of-bed activity within 24 hours. This strategy meets energy/protein needs, shortens time to first flatus, improves albumin levels, and accelerates recovery.

2.4 Post-Discharge Management and Follow-Up

Continued nutritional support: Re-screen nutritional risk at discharge. High-risk patients should continue ONS intervention post-discharge: 250-300 mL of high-protein formula three times daily (9:30, 15:00, 21:30) for one month. This consolidates nutritional improvements, increases albumin levels, and reduces readmission risk [74,118-119].

Dynamic monitoring: Establish a remote nutrition follow-up system via online platforms to record daily food intake and adverse reactions, providing personalized adjustments (calorie distribution, protein supplementation) to improve compliance and prevent deterioration [74,120].

Outpatient reassessment: Schedule outpatient follow-up at 2 weeks post-discharge to comprehensively evaluate nutritional indicators (weight, albumin, prealbumin), gastrointestinal recovery, and complications, adjusting the nutrition plan accordingly [121-122]. Patients achieving nutritional targets may transition to routine dietary guidance; those not meeting targets require extended ONS or escalation to tube feeding/PN. Dynamic adjustment enables individualized recovery goals [74].

[**Recommendation**] Post-discharge risk-stratified nutrition management is essential. High-risk patients require continued high-protein ONS for one month (3$\times$250-300 mL/day) with remote dietary monitoring and glucose tracking. All patients should undergo nutritional indicator reassessment at 2 weeks post-discharge with dynamic plan adjustment to reduce readmission risk.

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3. Multidisciplinary Collaboration Model

3.1 Team Composition and Role Definition

The multidisciplinary team for perioperative nutrition management in liver cancer typically comprises clinical dietitians, hepatobiliary surgeons, specialized nurses, rehabilitation therapists, and anesthesiologists with clearly defined roles.

Clinical dietitian: Leads comprehensive nutrition management, including preoperative risk assessment using screening tools, intraoperative guidance for nutritional access establishment, postoperative design of staged nutrition protocols, and collaboration with rehabilitation therapists to adjust exercise and protein intake [32,124].

Hepatobiliary surgeon: As the core decision-maker, oversees the entire perioperative treatment plan, assesses surgical feasibility, formulates intraoperative fluid management strategies, and collaborates with anesthesiologists to maintain intraoperative glycemic stability. Central venous pressure control reduces intraoperative bleeding and postoperative complications [125-126].

Specialized nurse: Executes nutrition support operations, including adjusting PN/EN and supplement dosages; monitors complications (abdominal distension, diarrhea, ascites, glucose fluctuations); implements ERAS nutrition protocols; and guides patients in dietary recording to ensure precise execution [12,127-128].

Rehabilitation therapist: Designs and implements pre- and postoperative exercise rehabilitation plans to accelerate recovery [129-130].

Anesthesiologist: Implements goal-directed fluid management and warming measures intraoperatively to reduce postoperative hypothermia incidence [102,131].

[**Recommendation**] A multidisciplinary collaboration system should be established with hepatobiliary surgeons as leaders, dietitians as coordinators, and specialized nurses as core implementers: surgeons coordinate surgical plans and fluid management; dietitians direct nutrition regulation throughout the entire cycle; nurses precisely execute nutrition support and complication prevention; rehabilitation therapists customize exercise protocols; anesthesiologists maintain intraoperative physiological stability. This complementary role structure significantly reduces postoperative complications and accelerates recovery.

3.2 Collaboration Processes and Standardized Nutrition Management Pathway

Preoperative phase: (1) Dietitians and surgeons jointly screen high-risk patients and develop pre-habilitation nutrition plans; (2) Nurses and dietitians collaborate on health education about perioperative nutrition support; (3) Rehabilitation therapists and surgeons develop preoperative exercise plans, with nurses assisting in implementation [32,93,132,133].

Intraoperative phase: Anesthesiologists and surgeons jointly control intraoperative blood glucose, implement fluid management, and maintain warming measures [102].

Postoperative phase: (1) Rehabilitation therapists develop postoperative exercise plans with nurse assistance; (2) Dietitians adjust nutrition support protocols based on assessment, executed jointly with nurses [12,124,130].

Post-discharge phase: Nurses and dietitians conduct telephone or online follow-up, providing professional guidance on home diet and supplement use [74,133].

[**Recommendation**] A closed-loop multidisciplinary collaboration pathway should be constructed spanning preoperative, intraoperative, postoperative, and post-discharge home phases. Preoperative joint screening and pre-habilitation by dietitians and surgeons with nurse-led education; intraoperative glucose control, fluid restriction, and warming by anesthesiologists and surgeons with nutritional access establishment; postoperative stepwise exercise plans by rehabilitation therapists and dynamic nutrition adjustment by dietitians with nurse execution; post-discharge remote monitoring by nurses and dietitians.

Conclusion

This consensus addresses the high malnutrition risk and incidence in liver cancer patients by establishing an ERAS-based perioperative nutrition management framework that significantly improves postoperative nutritional status, reduces complications, and shortens hospital stays. Its core value lies in establishing dynamic monitoring and intervention systems, employing different assessment tools at various perioperative time points, and implementing full-cycle nutrition interventions covering preoperative, intraoperative, postoperative, and post-discharge phases. Through a multidisciplinary framework led by surgeons, coordinated by dietitians, executed by nurses, guided by rehabilitation therapists, and stabilized by anesthesiologists, a standardized closed-loop pathway is formed. In summary, this consensus, developed through evidence integration and multiple rounds of validation by 33 national experts, provides a scientifically grounded framework for standardized perioperative nutrition management in liver cancer patients, offering a basis for improving outcomes. This consensus will promote standardized ERAS-based nutrition management in clinical practice and maintain evidence-based currency through continuous updates.

Conflict of interest: None declared.

Expert Panel for "Expert Consensus on Perioperative Nutritional Management for Liver Cancer Based on the Enhanced Recovery After Surgery Concept (2025 Edition)"

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