Journal of Clinical and Nursing Research, 2026, Volume 10, Issue 4
http://ojs.bbwpublisher.com/index.php/JCNR
Online ISSN: 2208-3693
Print ISSN: 2208-3685

Application of an Integrated Medical-Nursing Fast-Track Surgery Program in Patients After Oral Cancer Surgery

Li Wang, Li Zhang

Department of Stomatology, Taihe Hospital, Hubei University of Medicine, Shiyan 442000, Hubei, China

Abstract: *Objective*: To investigate the efficacy of an integrated medical-nursing fast-track surgery (FTS) program in patients undergoing oral cancer surgery. *Methods*: A total of 80 patients with oral cancer who underwent surgical treatment at our hospital from January 2024 to October 2025 were enrolled and randomly divided into an observation group (n = 40) and a control group (n = 40) using simple random sampling. The control group received conventional perioperative care, while the observation group was managed with the integrated medical-nursing FTS program. Postoperative recovery time, complication rate, flap survival rate, pain intensity, negative emotions, and quality of life were compared between the two groups. *Results*: The time to drain removal, first oral intake, bed rest, infusion, and hospital stay were significantly shorter in the observation group than in the control group ($p < 0.05$). The overall complication rate was lower (15.00% vs. 32.50%) and the flap survival rate was higher (98.75% vs. 90.00%) in the observation group ($p < 0.05$). At 7 days postoperatively, the VAS, SAS, and SDS scores were significantly lower in the observation group ($p < 0.05$). One month after surgery, the observation group had higher scores in most items of the EORTC QLQ-H&N35 scale except for illness perception, social relations, and weight change ($p < 0.05$). *Conclusion*: The integrated medical-nursing FTS program effectively accelerates physical recovery, improves flap survival, reduces complication risks, and significantly ameliorates psychological status and long-term quality of life in patients after oral cancer surgery.

Keywords: Oral cancer; Integrated medical-nursing care; Fast-track surgery; Flap survival; Quality of life

Online publication: Apr 30, 2026

1. Introduction

Oral cancer is a common malignant tumor of the head and neck, accounting for 2.4–20.3% of all head and neck malignancies [1]. At present, comprehensive treatment consisting mainly of surgical resection combined with flap repair is a crucial approach to improving the prognosis of patients with oral cancer. However, the complex anatomical structure of the oral and maxillofacial region, extensive surgical scope, and substantial

tissue trauma often lead to postoperative dysphagia, restricted oral function, and maxillofacial deformity. In addition, prolonged fasting, bed rest, and indwelling catheters after surgery readily induce complications such as pulmonary infection and pressure injury, imposing severe physical and psychological stress on patients [2,3].

Fast-track surgery (FTS), an evidence-based perioperative optimization concept, has been proven to effectively alleviate surgical stress and accelerate patient recovery [4]. Meanwhile, the integrated medical-nursing model breaks the traditional "doctor's order-execution" barrier and emphasizes collaborative decision-making and information sharing within the medical team [5]. Although FTS and integrated medical-nursing care have been widely applied in fields such as colorectal surgery, dedicated studies focusing on patients undergoing flap repair for oral cancer remain relatively scarce. Postoperative oral cancer patients present unique challenges including difficult airway management, high requirements for flap monitoring, and restricted early oral intake and mobilization, which conventional nursing often fails to address comprehensively. Accordingly, based on the clinical characteristics of oral and maxillofacial surgery, this study deeply integrates the integrated medical-nursing model with FTS principles to develop a tailored care program covering multidisciplinary collaboration, refined flap protection, and stepped early mobilization.

This study aims to evaluate the effectiveness of this program in postoperative oral cancer patients and provide a scientific basis for optimizing clinical pathways of enhanced recovery in oral and maxillofacial surgery.

2. Subjects and methods

2.1. Study subjects

A prospective controlled trial was conducted. Eighty patients with oral cancer who underwent surgical treatment at our hospital from January 2024 to October 2025 were enrolled.

2.1.1. Inclusion criteria

(1) Histopathologically confirmed oral cancer and scheduled for surgical resection;
(2) No history of preoperative radiotherapy, chemotherapy, or other adjuvant therapies;
(3) Clear consciousness, intact cognitive and communication abilities, and signed informed consent.

2.1.2. Exclusion criteria

(1) Concurrent other malignant tumors;
(2) Severe psychological disorders or mental illness;
(3) Severe underlying diseases of the heart, lung, liver, kidney, or other vital organs.

2.1.3. Study groups

Patients were randomly assigned to the observation group (n = 40) and the control group (n = 40) using simple random sampling. Baseline characteristics including age, gender, body mass index (BMI), clinical stage, and tumor location were comparable between the two groups ($p > 0.05$).

2.2. Interventions

2.2.1. Control group

The control group received conventional perioperative care for oral cancer.

(1) Preoperative

Routine health education; fasting for 6 hours, water restriction for 2 hours before surgery; oral administration of 50 mL of 12.5% sugar solution under anesthesiologist guidance.

(2) Intraoperative

Warming pads for non-surgical areas; infusion fluids heated to 38 ℃.

(3) Postoperative

Routine gastrointestinal decompression and scheduled enteral nutrition via nasogastric tube; tracheal extubation at 5–7 days postoperatively; drain removal at 3–5 days for donor sites and 5–7 days for maxillofacial and cervical sites; oral water intake at 5 days and liquid diet at 7 days in patients with satisfactory recovery.

2.2.2. Observation group

The observation group received the integrated medical-nursing FTS program based on conventional care.

(1) Integrated medical-nursing collaborative management

Attending physicians and primary nurses jointly conducted history taking and needs assessment postoperatively, and developed individualized treatment and rehabilitation strategies according to patients' psychological status, educational level, and compliance. A WeChat group involving physicians, nurses, and patients was established: physicians provided disease and surgical information and shared surgical outcomes to enhance confidence; nurses delivered guidance on diet, daily routine, and rehabilitation training. Nurses proactively communicated with surgeons and anesthesiologists to fully grasp intraoperative blood loss, flap protection strategies, and drainage status, recorded daily physiological indicators, and accurately reported to physicians for dynamic adjustment of medical orders. Daily joint medical-nursing ward rounds were performed, and consultations with nutritionists, rehabilitation therapists, and psychologists were arranged to formulate systematic rehabilitation plans.

(2) Stepped FTS early mobilization training

First, position management. Head of bed elevated to 15–30° within 2 days postoperatively to facilitate airway secretion clearance and venous return. Secondly, bed exercises: Active/passive knee and muscle strength training 1–4 days postoperatively, 2–3 sessions daily, 15 minutes per session; toe and ankle exercises 10 times daily, 10 minutes per session; progressive hip-lifting exercises, 20 sets per session, 6 sessions daily. Then, early ambulation. Assisted sitting up at 3 days postoperatively with back-slapping and sputum clearance training by nurses and family members. Differentiated plans were formulated based on flap donor sites: upper extremity flap repair patients received fist-clenching, elbow flexion, and lifting exercises, with bedside and out-of-bed activities at 3 days; lower extremity flap repair patients added foot-hooking, leg flexion-extension, and ankle pump exercises, ambulated with walkers for protection, 15–30 minutes per session, 4–5 sessions daily. Lower limb elevation was performed after each session to prevent swelling and deep vein thrombosis.

2.3. Outcome measures

(1) Postoperative recovery time

Time to drain removal, first oral intake, bed rest, infusion, and hospital stay.

(2) Complications and flap survival

Incidence of hoarseness, pulmonary infection, gastrointestinal reactions, pressure injury, and other

complications; flap survival rate.

(3) Pain and negative emotions

Visual Analogue Scale (VAS, 0–10, higher score = worse pain), Self-Rating Anxiety Scale (SAS), and Self-Rating Depression Scale (SDS) at 1 and 7 days postoperatively.

(4) Quality of life

European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Head and Neck 35 (EORTC QLQ-H&N35) at 1 month postoperatively; higher scores indicate better quality of life.

2.4. Statistical analysis

Data were analyzed using SPSS 24.0 software. Categorical data were presented as frequencies and percentages, and compared using the chi-square test. Normally distributed continuous data were expressed as mean ± standard deviation ($\overline{x} \pm s$), and compared using independent-samples *t*-test. A *p*-value < 0.05 was considered statistically significant.

3. Results

3.1. Postoperative recovery time

The observation group had significantly shorter time to drain removal, first oral intake, bed rest, infusion, and hospital stay than the control group ($p < 0.05$) (**Table 1**).

Table 1. Comparison of postoperative recovery time between the two groups ($\overline{x} \pm s$)

Group	n	Time to drain removal (d)	First oral intake (d)	Bed rest time (d)	Infusion time (d)	Hospital stays (d)
Observation	40	3.52 ± 0.33	9.47 ± 1.12	29.26 ± 3.19	3.71 ± 0.68	12.31 ± 1.09
Control	40	3.68 ± 0.39	9.95 ± 1.34	31.05 ± 3.34	3.95 ± 0.73	13.58 ± 1.81
t value	–	2.801	2.458	3.466	2.152	2.278
p value	–	0.006	0.015	0.001	0.033	0.024

3.2. Complications and flap survival

The overall complication rate was significantly lower and the flap survival rate was significantly higher in the observation group ($p < 0.05$) (**Table 2**).

Table 2. Comparison of complication rate and flap survival rate between the two groups [n(%)]

Group	n	Hoarseness	Pulmonary infection	Gastrointestinal reaction	Pressure injury	Total complications	Flap survival
Observation	40	5 (6.25)	2 (2.50)	3 (3.75)	2 (2.50)	12 (15.00)	79 (98.75)
Control	40	8 (10.00)	5 (6.25)	7 (8.75)	6 (7.50)	26 (32.50)	72 (90.00)
χ^2 value	–	–	–	–	–	6.764	4.238
p value	–	–	–	–	–	0.009	0.040

3.3. Pain and negative emotions

At 1 day postoperatively, VAS, SAS, and SDS scores were comparable between groups ($p > 0.05$). At 7 days

postoperatively, all scores were significantly lower in the observation group ($p < 0.05$) (**Table 3**).

Table 3. Comparison of VAS, SAS, and SDS scores between the two groups ($\overline{x} \pm s$, scores)

Group	n	VAS (1 d / 7 d)	SAS (1 d / 7 d)	SDS (1 d / 7 d)
Observation	40	5.01 ± 0.78 / 2.31 ± 0.41	51.42 ± 8.43 / 40.19 ± 6.57	49.68 ± 8.52 / 38.71 ± 6.22
Control	40	4.96 ± 0.85 / 2.55 ± 0.56	52.08 ± 8.55 / 42.47 ± 6.85	49.41 ± 8.34 / 40.75 ± 6.25
t value	–	0.388 / 3.093	0.492 / 2.149	0.203 / 2.069
p value	–	0.699 / 0.002	0.624 / 0.033	0.840 / 0.040

3.4. Quality of life

One month after surgery, the observation group had significantly higher scores in pain, eating, sensation, mouth opening difficulty, coughing, and speech on the EORTC QLQ-H&N35 scale ($p < 0.05$), with no significant between-group differences in illness perception, social relations, and weight change ($p > 0.05$) (**Table 4**).

Table 4. Comparison of EORTC QLQ-H&N35 scores between the two groups ($\overline{x} \pm s$, scores)

Group	n	Time	Pain	Eating	Dental problems	Dry mouth	Illness perception	Weight change	Sensation	Mouth opening difficulty	Coughing	Speech	Social relations
Observation	40	1 d	6.41 ± 0.78	11.32 ± 2.41	2.24 ± 0.38	3.25 ± 0.44	1.76 ± 0.24	1.35 ± 0.24	2.87 ± 0.54	1.66 ± 0.35	1.89 ± 0.18	1.78 ± 0.19	12.42 ± 1.34
		1 month	12.24 ± 1.98	15.65 ± 3.26	2.69 ± 0.49	5.26 ± 0.78	1.73 ± 0.49	1.39 ± 0.25	5.42 ± 0.79	2.78 ± 0.49	2.46 ± 0.35	2.57 ± 0.37	12.37 ± 4.71
Control	40	1 d	6.49 ± 0.84	11.38 ± 2.36	2.26 ± 0.31	3.31 ± 0.47	1.77 ± 0.21	1.37 ± 0.22	2.92 ± 0.49	1.70 ± 0.34	1.92 ± 0.15	1.82 ± 0.22	12.66 ± 1.59
		1 month	10.29 ± 1.85	14.41 ± 2.74	2.51 ± 0.37	4.75 ± 0.66	1.71 ± 0.42	1.31 ± 0.28	4.78 ± 0.63	2.52 ± 0.42	2.24 ± 0.24	2.24 ± 0.35	12.85 ± 4.36
t value	–	1 d	0.624	0.159	0.365	0.834	0.280	0.549	0.613	0.733	1.145	1.231	1.032
	–	1 month	6.436	2.604	2.622	4.464	3.049	2.608	5.665	3.603	4.637	23.077	3.512
p value	–	1 d	0.533	0.874	0.716	0.406	0.779	0.583	0.541	0.465	0.254	0.220	0.303
	–	1 month	< 0.001	0.010	0.010	< 0.001	0.094	0.319	< 0.001	< 0.001	< 0.001	< 0.001	0.081

4. Discussion

4.1. Integrated medical-nursing fts accelerates physical recovery after oral cancer surgery

Oral cancer surgery often involves free flap transplantation. Traditional protocols require strict bed rest to avoid flap vascular crisis, which frequently leads to delayed extubation, delayed gastric emptying, and muscle atrophy. The present study showed that time to drain removal, first oral intake, and hospital stay were significantly shorter in the observation group ($p < 0.05$), consistent with findings by Mörk et al. on

FTS in head and neck cancer [6]. The underlying mechanism involves: the integrated model eliminates delays in conventional care; through joint ward rounds, nurses promptly obtain professional assessments of flap perfusion and drainage from surgeons, enabling safe early drain removal. Meanwhile, FTS-guided shortened fasting and early enteral nutrition maintain intestinal mucosal barrier function, promote gastrointestinal hormone secretion, and thereby accelerate oral intake and reduce intravenous fluid infusion [7].

4.2. Multidisciplinary collaboration and stepped mobilization reduce complications and improve flap survival

Free flap transplantation is critical for oral cancer reconstruction, and its survival directly determines surgical success. The flap survival rate in the observation group reached 98.75%, significantly higher than 90.00% in the control group, and the overall complication rate decreased to 15.00%. These results confirm the advantages of integrated medical-nursing care in refined management. In conventional care, nurses often lack knowledge of intraoperative vascular anastomosis details; in this program, nurses participate in preoperative discussions and postoperative reviews to achieve precise flap monitoring. Furthermore, stepped early mobilization is key to complication reduction. Elevating the head of bed to 15–30° postoperatively conforms to oral and maxillofacial anatomy, facilitates gravitational drainage of airway secretions, and markedly lowers pulmonary infection rate (2.50% vs. 6.25%) [8]. Differentiated progressive exercises for upper or lower extremity donor sites avoid excessive traction and vascular spasm, while ankle pumps and lower limb elevation promote venous return and effectively prevent deep vein thrombosis and donor-site swelling [9].

4.3. Homogeneous medical-nursing communication improves psychological status and quality of life

Postoperative oral cancer patients commonly experience facial deformity, dysphagia, and speech disorders, which easily trigger severe anxiety and depression [10]. In this study, SAS and SDS scores at 7 days postoperatively were significantly lower in the observation group, and multiple EORTC QLQ-H&N35 scores at 1 month were significantly improved. Reasons include:

(1) The integrated WeChat platform ensures homogeneous information delivery, eliminating patient distrust and insecurity caused by inconsistent explanations from physicians and nurses.

(2) Combined surgical outcome sharing by physicians and rehabilitation guidance by nurses rebuild confidence under the bio-psycho-social medical model [11].

(3) Early ambulation and oral intake help patients perceive tangible recovery, greatly enhancing subjective initiative. The non-significant differences in social relations and illness perception may be related to long-term stigma and social withdrawal caused by the tumor, suggesting the need for long-term social support interventions in future practice [12,13].

5. Conclusion

The integrated medical-nursing fast-track surgery program deeply integrates multidisciplinary collaboration and evidence-based rehabilitation principles, yielding remarkable efficacy in postoperative oral cancer patients. It effectively improves flap survival, lowers complication risks, accelerates physical recovery, enhances psychological well-being, and elevates overall quality of life, supporting its widespread clinical application.

Disclosure statement

The authors declare no conflict of interest.

References

[1] Xu J, Zhang J, Zhu Y, et al., 2023, Evidence Summary of Dysphagia Management in Patients after Oral Cancer Surgery. Chinese Journal of Nursing Management, 23(12): 1854–1859.

[2] Yu L, Tian S, Yu X, et al., 2023, Application of Timely Discharge Preparation Service in Patients with Oral Cancer. Journal of Nursing Science, 38(22): 28–31.

[3] Zhu L, Chen T, Zhang W, et al., 2024, Effect of Fast-Track Surgery Intervention in Patients Undergoing Oral Flap Repair after Oral Cancer Surgery. Oncology Progress, 22(3): 291–294.

[4] Kehlet H, Wilmore D, 2008, Evidence-Based Surgical Care and the Evolution of Fast-Track Surgery. Annals of Surgery, 248(2): 189–198.

[5] Chen Q, Zha Q, Wang X, et al., 2023, Effect of Integrated Medical-Nursing Model in Patients with Oral Cancer. Jiangsu Health Care Management, 34(2): 203–205.

[6] Mörk A, Viberg N, Nilsson M, et al., 2020, Fast-Track Care Programs for Head and Neck Cancer Patients: A Systematic Review. Acta Oncologica, 59(1): 94–101.

[7] Chinese Society of Parenteral and Enteral Nutrition, 2018, Chinese Expert Consensus and Guideline on Pathway Management of Enhanced Recovery after Surgery (2018 Edition). Chinese Journal of Digestive Surgery, 17(10): 921–928.

[8] Yan L, Zhu Q, Zhao M, 2023, Application of Integrated Medical-Nursing Management in Perioperative Care of Oral and Maxillofacial Free Flap Transplantation. Health Care Medicine Research and Practice, 20(6): 88–92.

[9] Li H, Wang Y, Sun L, 2024, Impact of FTS-Based Comprehensive Care on Psychological Resilience and Nutritional Status in Postoperative Oral Cancer Patients. International Journal of Nursing, 43(6): 1066–1071.

[10] Zhao B, Dong Y, Wang X, et al., 2016, Effect of Pre-Induction Dezocine on Postoperative Analgesia in Oral Cancer Patients. Journal of Clinical Anesthesiology, 32(11): 1073–1075.

[11] Hang F, Peng Q, 2018, Analysis of Cluster Intervention on Improving Psychological Status and Quality of Life in Postoperative Oral Cancer Patients. Oncology Progress, 16(13): 1680–1683.

[12] Wang T, Shi X, Gong L, et al., 2022, Research Progress on Quality of Life of Patients after Oral Cancer Surgery. Journal of Nurses Training, 37(9): 813–818.

[13] Klemetti P, Suominen L, Lassus P, et al., 2021, Enhanced Recovery after Surgery (ERAS) Protocol in Free Flap Surgery for Head and Neck Cancer Patients. Journal of Plastic, Reconstructive & Aesthetic Surgery, 74(5): 1199–1206.