



口腔颌面部肿瘤患者围手术期营养诊疗管理中国专家共识

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摘要 口腔颌面部肿瘤易毁损患者咀嚼和吞咽功能, 营养不良风险高, 其围手术期营养管理尚缺乏规范的专家共识和指南, 妨碍口腔肿瘤营养领域临床实践的规范开展. 本共识基于循证医学, 应用德尔菲法并综合多学科专家意见, 通过专家函询和专家会议制定, 旨在建立循证、规范的围手术期营养诊断与营养治疗策略. 为从营养角度, 进一步改善口腔颌面部肿瘤患者手术安全性、治疗耐受性、生存质量及预后提供支持.

关键词 口腔颌面部, 口腔癌, 围手术期, 营养筛查, 营养评估, 营养诊断, 营养治疗, 德尔菲法, 共识

口腔颌面部肿瘤的解剖位置处于消化道的始端, 肿瘤直接影响患者咀嚼和吞咽功能, 易出现疼痛、出血等伴随症状, 因认知不足、毁容担忧等导致的精神心理压力, 也可造成患者焦虑抑郁和厌食. 同时, 因肿瘤进展的代谢消耗及治疗创伤等综合因素, 导致口腔颌面部肿瘤围手术期营养不良发生率高达40%, 位居所有肿瘤前列^[1-5]. 营养不良可导致患者麻醉耐受性下降和失血量增多, 增加术中风险及术后感染和延迟愈合等并发症率, 延缓康复速度, 加重经济负担^[6,7]. 此外, 术后牙颌系统功能破坏, 进一步加重营养不良, 导致治疗耐受性降低, 如术后放、化疗中断或退出等, 直接影响患者的临床结局, 降低远期生存率^[8].

口腔颌面部肿瘤患者围手术期的营养不良具有其专科特点. 肿瘤侵犯与广泛切除, 直接影响经口摄食能力, 且手术创伤应激使机体蛋白质分解代谢、氮丢失增加, 营养需求动态变化快^[9]. 然而, 口腔颌面部肿瘤围手术期营养管理的临床实践在国内并未广泛开展, 营养状况的筛查、评估与治疗尚未形成统一规范共识, 主要体现为术前未常规进行营养风险筛查、营养不良诊断标准不一、营养治疗不及时或不充分、术后营养治疗缺乏标准化路径. 建立循证、规范的营养管理路径, 提升临床医师对营养干预的重视度, 可以为改善口腔颌面部肿瘤患者手术安全性、治疗耐受性、生存质量及预后提供支持.

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1 共识制订方法

1.1 共识制定工作组及流程

本文按照国际实践指南注册与透明化平台流程方案(注册号: PREPARE-2025CN2060)制定口腔颌面部肿瘤患者围手术期营养诊疗策略中国专家共识, 基于国内外重要文献证据, 汇集口腔颌面外科、临床营养科、外科等多学科临床实践, 应用德尔菲法并综合专家意见, 通过2轮专家函询和专家会议充分讨论形成。

1.2 目标人群

经临床诊断为口腔颌面部良、恶性肿瘤或类肿瘤病变(含巨大颌骨囊性病变、上皮源性癌、肉瘤、唾液腺肿瘤等), 拟行外科手术治疗(良性肿瘤切除、恶性肿瘤根治性手术、颈淋巴清扫术和/或组织瓣修复重建等)的患者。

1.3 适用范围

本共识为围手术期营养管理共识, 在时间范畴上包括围手术期全链条管理节点, 即从术前5~7天的营养筛查与评估开始、术中代谢支持策略(如复杂手术)和术后康复期结束(至出院后1~3个月), 涵盖营养不良三级诊断、术前营养干预、术中代谢支持及外科预防策略、术后恢复期营养管理、辅助放化(靶向/免疫)治疗衔接期营养支持, 形成连续性营养管理闭环。

2 营养诊断

营养诊断是肿瘤营养治疗的前提。对于口腔颌面部肿瘤患者, 营养诊断应遵循临床营养诊断的一般原则, 即营养三级诊断: 营养筛查(nutritional screening)、营养评估(nutritional assessment)和综合评价(comprehensive investigation)^[10]。

2.1 营养筛查

口腔颌面部肿瘤的营养筛查具有必要性与特殊性。首先, 口腔或口咽肿瘤可直接导致咀嚼及吞咽障碍, 尤其是局部晚期患者存在更严重的摄入不足; 其次, 接受口腔软硬组织根治性切除和(或)组织瓣修复重建的患者, 需在手术后的恢复期接受长期流质饮食, 均会增加营养不良风险, 对能量及蛋白质需求激增。研

究证实存在营养不良风险的患者接受营养治疗可提高手术耐受性、减少并发症、缩短住院时间及降低医疗费用等, 术前的营养风险筛查有助于营养不良的预防和早期干预^[11~13]。

(1) 筛查时机: 一般为患者入院后24 h内。如无营养风险, 一周后重复筛查; 如存在营养风险, 继续后续的营养评估。

(2) 筛查工具: 首选经过验证的普适性工具NRS2002(Nutritional Risk Screening 2002)。其他工具有AIWW(Age, Intake, Weight and Walking tool), MUST (Malnutrition Universal Screening Tool)和MST(Malnutrition Screening Tool)^[11,14,15]。无论采用何种工具, 必须包含体重变化、进食量变化(尤其经口能力评估)和疾病严重程度的核心要素。多项研究表明, NRS2002在肿瘤患者临床应用中相较于MUST特异性及敏感性更高, 且在预后预测方面表现更优^[16~19]。AIWW操作更加简便、患者本人可以使用^[15]。

(3) 筛查实施人员: 门诊患者应由接诊医务人员如外科医师、护师等实施筛查, 住院患者在入院后24 h内由管床医师、护师实施筛查。实施筛查医务人员应经过基础的营养筛查培训以确保筛查质量, 具备条件的综合医院可由临床营养科营养师实施筛查。

推荐意见:

(1) 推荐NRS2002用于口腔颌面部肿瘤患者营养筛查, NRS2002 ≥ 3 分者为营养筛查阳性, 进行后续的营养评估(证据等级: A, 推荐强度: 强)。

(2) 除不影响咀嚼和吞咽的良性和早期恶性肿瘤外, 所有口腔颌面部肿瘤患者均被定义为存在营养风险, 需进行后续营养评估/诊断(证据等级: A, 推荐强度: 强)。

2.2 营养评估

患者主观整体评估(patient-generated subjective global assessment, PG-SGA)量表由患者主观测评部分及专业人员测评部分组成, 其内容包括: 体重变化(时间、幅度)、饮食摄入变化(质、量与时长)、胃肠道症状(吞咽困难、疼痛、恶心、呕吐、早饱感、无食欲、口腔溃疡、口干、腹泻、便秘等)、功能状态(活动能力)、疾病相关因素(肿瘤诊断、分期、应激状态), 以及体格检查(肌肉消耗、皮下脂肪减少、水肿)^[20,21]。PG-SGA是目前评估口腔颌面部肿瘤患者营养状态以

及预测患者预后理想的工具, 但因其内容相对复杂, 使用该量表评估需要经专业营养人员(培训合格医师、营养师或营养专科护士)进行. 中国学者利用中国肿瘤营养数据库研究显示, 改良版本mPG-SGA不仅降低了操作难度, 而且节约了时间, 敏感性及特异性均升高^[22].

目前最新的营养不良诊断标准为全球领导人营养不良倡议(Global Leadership Initiative on Malnutrition, GLIM)标准, 其包括3个表型指标(非自主体重丢失、低BMI及肌肉减少)和2个病因指标(摄食减少或消化吸收障碍, 炎症或疾病负担), 具备1个表型指标和1个病因指标即可诊断营养不良^[23]. 目前其在多数实体瘤营养评估及预后预测中已具备广泛的应用价值, 在包含口腔颌面部肿瘤在内的头颈部肿瘤营养诊断中也逐渐得到临床应用. 研究表明, GLIM标准诊断的口腔癌术前营养不良的发病率为26.5%, GLIM标准可视为在PG-SGA全面评估基础上的标准化诊断工具, 其与PG-SGA相比具有良好的诊断一致性, 且基于体重下降的GLIM标准对口腔癌有良好的预后预测能力, 因操作简便更易在临床推广使用^[1,24]. 具体如下:

(1) 表型指标(至少符合1项): 非自愿体重丢失>5%(6个月内)或>10%(6个月以上); 低BMI: <20 kg/m² (<70岁), <22 kg/m² (≥70岁); 肌肉量减少(临床评估或仪器测量).

(2) 病因指标(至少符合1项): 疾病负担/炎症(如肿瘤本身、术后炎症反应).

(3) 严重程度分级: 基于表型标准的中度/重度分级.

量化GLIM比GLIM更易操作、预测能力更高^[25].

2.3 综合评价

2.3.1 人体学测量

人体学测量指标是营养不良诊断的重要组成部分, 主要包括体重变化、BMI、围度测量等. 这些指标简便易行, 适用于临床常规筛查与动态监测^[26].

体重变化是患者营养状态, 以及预测肿瘤预后的重要指标^[1,27]. 目前通常将体重下降率作为营养不良程度评估的重要依据, 这是一个动态的、与发生时间范围相关联的评分体系^[26], 肿瘤患者体重丢失≥5.76%是死亡风险的切点值, 该切点值随BMI增加而升高^[28].

体重下降往往与肿瘤恶病质、治疗耐受性下降等相关, 在头颈部肿瘤中也发现体重下降是重要的预后预测因素.

体质指数(body mass index, BMI)的计算公式为: BMI=体重(kg)/[身高(m)]². 有研究指出BMI可以独立预测口腔癌预后, 肥胖患者预后差, 但其结果受到体成分差异的影响, 没有体重变化敏感, 需进一步结合体成分及年龄分析, 肥胖患者可能并存肌肉减少症(肌少性肥胖)^[29-32]. 口腔颌面部肿瘤围手术期中应动态监测BMI, 指导围手术期管理^[26,33,34](表1).

围度测量是评估肌肉和脂肪储备的简便方法. 亚洲肌肉减少症工作小组(Asian Working Group for Sarcopenia, AWGS)推荐使用小腿围作为肌肉减少症的筛查工具^[36], 适用于口腔颌面部肿瘤患者的快速评估.

2.3.2 人体成分分析

人体成分分析通过仪器测量身体组成, 可更精确评估肌肉量、脂肪量及水分分布, 为营养不良诊断提供客观依据.

四肢骨骼肌质量是诊断肌肉减少症的重要诊断指标, 主要通过人体成分分析获得. 常用的肌肉量评估方法包括: 计算机断层扫描(computed tomography, CT), 常用于头颈部肌肉(如咬肌、颞肌)的评估; 生物电阻抗法(bioelectrical impedance analysis, BIA), 简便无创, 适用于临床常规评估骨骼肌含量; 双能X射线吸收法(dual energy X-ray absorptiometry, DXA), 可精确区分肌肉、脂肪和骨量. AWGS 2019推荐使用DXA或多频BIA测量骨骼肌质量. 口腔颌面部肿瘤患者临床上较难获得四肢肌肉的影像学资料, 但头颈部肌肉的资料较易获得, 研究证实, 咬肌和颞肌等头颈部肌肉与营养不良有关^[37,38]. 用BIA技术检测头颈部肿瘤患者骨骼肌量, 并用AWGS2019标准诊断肌少症, 发现17.2% (115/667)的患者有肌肉减少症^[39]. 且通过BIA法确定的体成分数据可以更加准确地识别头颈肿瘤患者营养不良^[40].

对于机体肌肉的质量即肌肉力量的评估, 最简便易行的方法为握力测定. 身体不同部位肌肉力量存在一定关联性, 研究表明, 男性的握力与上肢和下肢的肌肉质量显著相关, 女性的握力与上肢肌肉质量相关^[41]. 头颈部恶性肿瘤患者握力降低可能提示肌肉减少症或营养不良风险, 与BIA结合可初步评估头颈肿

表 1 不同BMI定义下营养状态及临床干预的分类推荐意见

Table 1 Classification recommendations of nutritional status and clinical intervention under different BMI criteria

BMI(kg/m ²)	营养状态	临床干预推荐意见
<18.5(年龄<70岁) <20(年龄≥70岁)	重度营养不良	延迟手术, 术前营养支持≥2周 ^[35]
18.5~19.9(年龄<70岁) 20~21.9(年龄≥70岁)	中度营养不良	术前营养支持1~2周, 饮食指导+口服营养补充 ^[35]
20~23.9(年龄<70岁) 22.0~23.9(年龄≥70岁)	正常范围	营养教育+饮食指导
≥24.0	超重/肥胖	优化饮食结构, 增肌减重 ^[35]

瘤患者营养状态^[42,43]。握力水平是实体肿瘤患者预后的重要预测指标, 但在营养良好的口腔癌患者中预后预测价值有限, 需综合评价^[44~46]。

2.3.3 实验室指标

营养不良会导致蛋白质水平下降, 蛋白质缺乏会降低机体对于炎症的抵抗能力, 加剧炎症反应状态, 进一步增加营养物质消耗^[47]。营养不良状态与蛋白质水平指标、炎症指标密切相关。血清白蛋白、前白蛋白、转铁蛋白、淋巴细胞计数、C-反应蛋白等是反映蛋白质储备、免疫状态和炎症负荷的常用指标, 与白蛋白相比, 前白蛋白更加敏感, 高敏C-反应蛋白可以反映慢性炎症。不建议单独依据某一指标诊断营养不良, 而需结合临床表现动态监测^[48,49]。多个炎症-营养指标组合指数, 如预后营养指数(prognostic nutritional index, PNI)、中性粒细胞/淋巴细胞比值(neutrophil to lymphocyte ratio, NLR)等均可有效预测口腔癌预后, 高炎症负荷者预后更差^[50~52]。

推荐意见:

(1) 口腔颌面部肿瘤围手术期应每周动态监测体重, 尤其掌握患者体重变化, 指导围手术期营养管理(证据等级: A, 推荐等级: 强)。

(2) 口腔颌面部肿瘤术前肌肉评估中, 推荐以BIA测量骨骼肌含量为主, 握力测定等其他手段为辅(证据等级: B, 推荐等级: 强)。

(3) 围手术期应综合监测蛋白水平、免疫及炎症指标, 为个体化营养方案(如高蛋白、抗炎饮食等)提供依据(证据等级: A, 推荐等级: 强)。

(4) 口腔颌面部肿瘤患者营养评估的理想工具推荐采用PG-SGA或GLIM标准(证据等级: A, 推荐等级: 强)。

3 围手术期营养治疗策略

3.1 总体原则

根据口腔颌面部肿瘤围手术期诊疗特点、《临床营养学》(人民卫生出版社, 2024)^[53]推荐, 口腔颌面部肿瘤患者的营养治疗总体应遵循五阶梯治疗原则^[54], 根据病情进展、手术情况、口腔功能恢复等情况, 适时升阶或降阶治疗, 如当前阶梯不能满足60%目标能量需求3~5天时, 应该选择上一阶梯。具体如下:

第1阶梯: 膳食+营养教育

(1) 适用对象: 术前营养状况良好(NRS2002评分<3分)、术后可经口进食者(口腔颌面部良性肿瘤、早期恶性肿瘤切除术后创口已严密缝合者)。

(2) 干预重点: 膳食优化为高蛋白(目标需要量: 1.2~2.0 g/kg d)、高能量密度(目标需要量: 30~35 kcal/kg d)、易吞咽食物(如肉泥、果蔬泥)。并避免辛辣、过热、坚硬食物及含酒精漱口水, 以减少黏膜刺激。

第2阶梯: 膳食+口服营养补充(oral nutritional supplements, ONS)

(1) 适用对象: 经口摄入不足目标量60%持续3~5天者(如术后疼痛、早期吞咽障碍), 一般出现在软硬组织巨大病变影响咀嚼功能、肿瘤合并牙齿缺失等患者的术前阶段; 晚期肿瘤根治术、游离皮瓣修复术后的远期恢复阶段。

(2) 干预重点: 用于口服营养补充的营养剂特指特殊医学用途配方食品(food for special medical purpose, FSMP)。制剂选择高脂肪供能比配方(脂肪占比30%~40%), 提升能量密度; 可添加免疫营养素(如ω-3脂肪酸、谷氨酰胺等)^[55,56]。

第3阶梯: 全肠内营养(total enteral nutrition, TEN)

(1) 适用对象: 无法经口进食、胃肠道功能正常

者,一般出现在口腔颌面部恶性肿瘤晚期合并严重吞咽障碍、严重张口受限患者的术前阶段及肿瘤大手术后的中后期营养恢复阶段(术后6~14天)。

(2) 干预重点: 配方推荐整蛋白型肠内营养剂, 蛋白质目标需要量为1.2~1.5 g/kg d^[57]。

短期途径(<4周): 选择鼻胃管/鼻肠管, 注意避免误吸风险, 适用于绝大多数口腔颌面部恶性肿瘤根治术后患者, 根据口腔功能恢复情况于术后2~4周拔除鼻胃管/鼻肠管。

长期途径(>4周): 选择经皮胃造瘘(percutaneous endoscopic gastrostomy, PEG), 用于吞咽功能严重障碍短期无法恢复的患者。

第4阶梯: 部分肠内营养+部分肠外营养(partial parenteral nutrition, PPN)

(1) 适用对象: 肠内营养补充不足者, 一般出现在口腔颌面部肿瘤大手术(如肿瘤根治术及组织瓣移植)术后早中期, 肠内营养预计3~5天不能达到目标量60%者, 根据卧床、伤口恢复及口腔功能变化向TEN及ONS过渡^[58]。

(2) 干预重点: 能量分配建议肠内营养(enteral nutrition, EN)一般提供基础需求($\geq 50\%$), 肠外营养(par-enteral nutrition, PN)补充剩余缺口, PN配方建议低糖脂比, 预防电解质紊乱^[59]。

第5阶梯: 全肠外营养(total parenteral nutrition, TPN)

(1) 适用对象: 重症营养不良者, 一般出现在口腔颌面部肿瘤大手术后, 当循环和脏器功能稳定时(24 h后), EN不耐受或不可行时; 部分肠内+部分肠外营养预计3~5天不能达到目标量60%者。

(2) 干预重点: 建议均由中心静脉输注, 能量目标需要量为20~25 kcal/kg d, 非蛋白热卡与氮比值(热氮比)为100:1~150:1^[60]。要注意代谢监测, 如血糖控制, 预防高渗性昏迷。

3.2 术前营养干预(preoperative nutritional intervention)

目标: (i) 定性目标. 改善术前营养状态, 降低手术风险, 促进术后恢复; (ii) 定量目标. 纠正负氮平衡, 血清前白蛋白目标值 ≥ 180 mg/L, 白蛋白目标值 ≥ 35 g/L, 因口腔肿瘤存在吞咽、咀嚼障碍及高代谢特点, 建议增加能量基础需求的10%~15%; 保障口腔

黏膜创口及组织瓣愈合。

适应证: (i) 符合PG-SGA, GLIM标准的中重度营养不良(满足至少1项表型标准+1项病因标准)^[61]; (ii) 预计术后经口进食障碍时间>7天(如接受咀嚼或吞咽器官的根治性手术切除, 组织瓣修复重建)^[23,58]。

干预时机: 确定诊断营养不良后即刻启动, 建议至少持续5~7天至手术; 若限期手术(≤ 72 h), 仍应给予高能量密度ONS分次摄入或短期代谢调节。

干预方式:

(1) 膳食与营养教育. (i) 进食途径及食物性状改造. 根据口腔颌面部肿瘤部位制定个性化进食路径及食物性状(如颌面部肿瘤可正常经口进食, 局部晚期舌癌患者给予高蛋白泥糊食以增加稠度, 牙龈及颌骨肿瘤患者咀嚼困难可进软食). (ii) 食欲改善. 少食多餐, 经常调整烹饪方式及色、香、味变化以增加食欲, 餐前适当活动或食用少量开胃食物. (iii) 改善“口干”. 涎腺肿瘤及口腔癌累及腺体可导致口干, 可食用果冻、鸡蛋羹等润滑形态食物, 饮用柠檬汁、淡茶水或高热量饮料, 常漱口, 必要时使用人工唾液^[62]. (iv) 高蛋白膳食+ONS. 推荐口腔颌面部肿瘤患者在围手术期采取高蛋白质膳食, 在正餐中多摄入蛋、瘦肉、奶、鱼肉、豆制品等优质蛋白质来源的食物, 餐间可补充全营养配方食品, 每日 ≥ 400 kcal^[63-66]。

(2) 肠内营养(EN). (i) 当连续3~5天经口摄入<60%目标需求(能量<20 kcal/kg d或蛋白质<0.8 g/kg d), 即可启动EN; (ii) 对于口腔颌面部恶性肿瘤晚期合并吞咽障碍及严重张口受限者, 可考虑术前鼻胃管(nasogastric tube, NGT)通路^[67]; (iii) 配方选择: 胃肠功能正常者以标准整蛋白型肠内营养制剂为主, 口服与管饲均可, 如合并腹泻, 可使用预消化短肽等特殊配方^[68]; 对于口腔颌面部晚期肿瘤根治术、游离组织瓣修复或合并高感染风险的大手术, 可采用免疫增强型配方(富含精氨酸+ ω -3脂肪酸), 可满足应激状态下的特殊营养需要^[69-71]; 糖尿病患者使用糖尿病专用型配方^[72]。

(3) 肠外营养(PN). (i) 适应证(三种情况满足其一): 完全性上消化道梗阻, 如晚期舌根/口底癌侵犯咽部等; EN不耐受或禁忌, 如72 h内呕吐 ≥ 3 次或腹泻>500 mL/d; EN无法满足需求^[58,73,74]. (ii) 避免过量输注脂肪乳(≤ 1.5 g/kg d), 防止网状内皮系统功能抑制影响组织瓣存活; 深静脉置管者优先选择中心静脉置管, 避免深静脉血栓, 减少导管感染风险^[58,75,76]。

(4) 能量与蛋白质目标.

能量计算: 目标热量=25~30 kcal/kg d×理想体重(kg)(肥胖者按调整体重*)^[63,77].

*调整体重=IBW+(0.25~0.5)×(实际体重(kg)-IBW)(IBW: 理想体重(kg))^[61].

蛋白质需求分级: (i) 轻度营养不良者. 为维持正氮平衡, 蛋白质目标为1.2~1.5 g/kg d; (ii) 中重度营养不良者. 为补偿高代谢需求, 蛋白质目标为1.5~2.0 g/kg d; (iii) 肝肾功能不全者. 为避免代谢负担, 蛋白质目标为≤1.0 g/kg d^[78~81].

特殊营养素应用证据: (i) 全营养素优先原则. 首选整蛋白配方/全合一肠内营养剂满足宏量及微量营养素需求, 特殊添加成分仅作为补充; (ii) 精氨酸. 术前5天适当添加10~15 g/d(降低皮瓣坏死率), 活动性脓毒症禁用精氨酸^[47,71]; (iii) ω-3多不饱和脂肪酸. EN配方中添加EPA(二十碳五烯酸)+DHA(二十二碳六烯酸)≥2.0 g/d, 可减少术后炎症因子IL-6释放^[82,83].

(5)术前禁食管理: (i) 禁食时间. 术前6~8 h禁食固体食物; 术前2~3 h禁食清流质(含碳水化合物饮品)^[84,85]; (ii) 禁食期前给予高蛋白、易消化食物(如蛋羹、蔬菜泥等), 避免辛辣、过酸、坚硬食物; (iii) 专科特殊情况. 吞咽障碍患者将固体食物禁食提前至术前12 h, 避免食物滞留^[86].

推荐意见:

(1) 口腔颌面部肿瘤的围手术期营养干预总体遵循“五阶梯”治疗规范(证据等级: A, 推荐等级: 强).

(2) 接受EN患者, 如胃肠功能正常, 首选标准整蛋白配方; 如合并腹泻, 可使用预消化短肽配方等; 口腔颌面部晚期肿瘤大手术或合并高感染风险的手术, 可

采用免疫增强型配方(富含精氨酸+ω-3脂肪酸)(证据强度: A, 推荐等级: 强).

(3) 接受PN的患者优先选择中心静脉置管途径, 按照能量目标需求计算补充(证据强度: A, 推荐等级: 强).

(4) 接受术前营养干预的患者应在干预后5~7天再行营养评估, 据评估结果调整干预措施或开展手术(证据等级: A, 推荐等级: 强).

3.3 术中营养相关策略(intraoperative strategies to prevent nutritional deterioration)

目标: (i) 代谢稳定. 维持水电解质平衡、血糖和核心体温(表2); (ii) 功能保护. 通过精准外科操作保留吞咽及咀嚼功能, 减少术后营养通路障碍; (iii) 预防并发症. 进食功能障碍、降低乳糜漏、口内-外瘘发生率.

3.3.1 进食功能障碍的外科防治策略

提倡牙颌系统功能性修复理念, 如颌骨缺损首选骨肌皮瓣修复, 应用二期或同期牙种植, 恢复咀嚼功能^[88]; 在肿瘤根治前提下, 贯彻保存性功能外科理念, 如舌下神经保护可维持舌体推送食团能力, 咀嚼肌群保留可保存咀嚼力量; 重视降级治疗理念的应用, 如肿瘤侵犯或邻近会厌, 采取术前诱导化疗后保会厌结构的切除手术, 显著提高生存质量^[89].

3.3.2 乳糜漏的管理

颈清扫术损伤胸导管可能引起乳糜漏, 大量乳糜液外溢可致水电解质平衡紊乱、低蛋白血症和感染

表2 术中代谢支持核心措施的推荐意见^{a)}

Table 2 Recommendations on core measures of intraoperative metabolic support^{a)}

干预维度	实施规范	专科强化要点
液体管理	GDFT标准: 以SVV≤13%, PPV≤12%为目标 基础补液: 晶体液3~5 mL/kg h 出血替代: 输注晶体:胶体(1:1)	避免过度扩容致皮瓣水肿(CVP维持≤8 cm H ₂ O) ^[35,87]
体温管理	主动保温: 充气加温毯(38~40℃)+液体加温输注 术野冲洗: 温生理盐水(37℃)	低温增加皮瓣痉挛血栓风险(目标核心体温≥36.5℃)
血糖控制	术中每60 min血糖监测; 必要时胰岛素控制血糖稳定	高血糖(>10 mmol/L)使感染风险增高
麻醉药物	避免长效阿片类: 改用瑞芬太尼(半衰期3 min) 胃肠保护: 术毕前30 min静注5-HT ₃ 拮抗剂	减少术后肠麻痹 ^[35]

a) GDFT: goal-directed fluid therapy, 目标导向液体治疗; SVV: stroke volume variation, 每搏量变异度; PPV: pulse pressure variation, 脉压变异度; CVP: central venous pressure, 中心静脉压; 5-HT₃: 5-hydroxytryptamine type 3, 5-羟色胺3

等, 严重时可引起乳糜胸, 甚至死亡. 提倡cN0患者接受肩胛舌骨肌上颈清扫术, 避免损伤胸导管及分支^[90,91]. 确诊乳糜漏后第一天可启动中链甘油三酯 (medium-chain triglyceride, MCT)饮食/低脂饮食, 根据乳糜漏引流量动态调整营养方案. 乳糜漏引流量≥500 mL/d时, 可禁食, 采取TPN, 推荐全合一(all-in-one, AIO)营养液配制法, 以满足患者能量和氨基酸需要, 禁食期间可酌情补充水及电解质, 避免肠道长时间空置^[92-94].

3.3.3 感染及口内-外瘘的外科防治策略

局部晚期肿瘤切除术后的复合组织缺损, 易发生感染和口内外瘘, 创口延迟愈合会推迟口服时间, 是营养不良的高危因素^[95]. 选择容积恰当的组织瓣修复至关重要, 如大型软组织缺损选择股前外侧肌皮瓣、背阔肌皮瓣等大容积组织瓣, 有利于严密封闭, 促进一期愈合.

3.4 术后恢复期营养管理(postoperative nutritional management for recovery)

(1) 目标与实施原则: 实现早期EN, 尽快恢复经口进食, 满足营养需求, 促进伤口愈合, 防止体重丢失, 加速口腔功能康复.

(2) 基本策略: 恢复期营养支持应在术后早期开始, 口腔颌面部肿瘤患者多数胃肠功能正常, 但因游离皮瓣修复患者往往需头部制动卧床3~5天, 因此主张由术后早期(1~5天)EN为主、SPN为辅, 向术后远期(6~10天)EN动态过渡的营养支持策略^[96-99].

(3) 早期经口进食与吞咽功能管理: 遵循ERAS原则, 在同时满足如下3个条件的基础上启动经口进食,

即气道保护反射存在(咽反射、呕吐反射、咳嗽反射正常)、洼田饮水试验≤2级(30 mL温水无呛咳)、伤口无活动性出血. 对于全舌切除或喉返神经损伤的高危患者, 在条件允许前提下推荐首次经口进食前行吞咽造影检查, 并根据容积黏度吞咽测试结果选择最佳一口量及适宜稠度的食物, 以减少误吸风险. 术后的吞咽功能评估与康复训练鼓励医生、营养师、语言治疗师的多学科协作^[100,101].

(4) 术后营养支持路径: 如口腔颌面肿瘤术后缺损较小、满足经口进食条件者, 首选早期膳食+口服营养补充^[102]. 如口内创口较大、存在经口进食障碍者, 应选择NGT为主的支持路径^[103]; 鼻肠管(nasointestinal tube, NET)适用于胃排空障碍或高误吸风险者(如迷走神经损伤)^[104]; 术后EN需求>4周或需要术后同步放化疗者, 也可行PEG^[101](表3).

3.4.1 能量、蛋白质及微量营养素目标

(1) 能量: 25~30 kcal/kg d(术后应激期可略高, 但避免过度喂养).

(2) 蛋白质: 术后高蛋白需求有利于促进合成代谢和伤口愈合. 其中, 单纯软组织瓣修复重建者的蛋白质需要量为1.5 g/kg d; 骨组织瓣重建者的需要量为1.8~2.0 g/kg d^[58,73,80,105]. 此外, 微量营养素的补充对术后恢复有积极意义^[106-109](表4).

3.4.2 监测、评估与方案调整

(1) 每日监测内容: (i) 胃潴留量、腹泻次数(Bristol评分)和呕吐等耐受性指标; (ii) 血糖(空腹及三餐后2 h)、电解质(Na⁺, K⁺, Cl⁻)等代谢指标.

(2) 每3日评估内容: 能量满足情况、体重变化、

表 3 术后营养支持的推荐意见^{a)}

Table 3 Recommendations for postoperative nutritional support^{a)}

支持方式	启动标准	专科实施规范
膳食+ONS	经口摄入未达目标量60%	餐间补充高蛋白型ONS, 400~600 kcal/d, 2~3次/日
管饲EN	口内伤口裂开或高感染风险者; 存在吞咽安全风险者; 预计经口摄入<目标量60%超过5天者	NGT: 每4 h监测胃潴留(>500 mL暂停输注) NET/PEG: 持续泵入(初始速率20 mL/h)
SPN	EN供给<目标量60%持续48 h	葡萄糖: 脂肪供能比60:40或70:30, 添加谷氨酰胺(0.3 g/kg d) ^[55]
TPN	术后当日不宜经口及管饲进食	全合一配方, 限脂肪乳≤1.5 g/kg d(保护网状内皮系统)

a) ONS: oral nutritional supplements, 口服营养补充; EN: enteral nutrition, 肠内营养; NGT: nasogastric tube, 鼻胃管; NET: nasoenteric tube, 鼻肠管; PEG: percutaneous endoscopic gastrostomy, 胃造瘘; SPN: supplemental parenteral nutrition, 补充性肠外营养; TPN: total parenteral nutrition, 全肠外营养

血清前白蛋白(目标增长2 mg/dL)、握力、伤口愈合分级(REDUCE量表).

(3) 方案调整: 如胃潴留>500 mL/次, 则EN减量, 改用NET或降速50%^[110,111]; 如腹泻>5次/天+Bristol 7级, 则停用EN, 切换短肽配方^[73,112]; 如EN供给<60%目标热量持续48 h, 则启动SPN.

(4) 营养治疗疗效评价: 营养治疗是整体治疗, 疗效需要整体评价, 包括摄食情况、营养状况、人体学测量、人体成分分析、体能与健康状况评分、心理状况和实验室检查; 建议使用实验室检查、摄食量、体能等快速反应参数^[113].

(5) 出院前营养计划与家庭过渡: 评估出院时营养状况和经口进食能力, 制定家庭营养支持计划(继续ONS, EN或门诊营养随访, 表5). 建立医院(hospital, H)-社区(community, C)-家庭(home, H)分级营养治疗模式^[114].

推荐意见:

推荐术后24 h内开始EN, 高蛋白饮食, 对于皮瓣移植修复患者可适当增加至1.5~2.0 g/kg d, 同步保证能量供应(25~30 kcal/kg d), 避免能量不足导致蛋白质被分解供能, 影响补充效果, 并适量补充微量元素(证据等级: A, 推荐强度: 强).

口腔颌面部肿瘤的营养诊断及术前、术中及术后

的营养管理策略见图1.

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表 4 微量元素补充的剂量和功能

Table 4 Dosage and functions of trace element supplementation

营养素	推荐剂量(d)	主要功能
锌	15~20 mg	促进味觉恢复, 与维生素C协同促愈合
钙	1000~1200 mg	重建上下颌骨、神经肌肉功能
铁	18~30 mg	预防贫血、支持氧运输
维生素A	8000~10000 IU	维持口腔黏膜完整性、支持上皮细胞再生
维生素C	100~500 mg	增加胶原合成, 缩短皮瓣愈合时间
维生素D	800~1000 IU	与钙协同改善骨密度, 预防下颌骨术后病理性骨折, 降低术后感染风险

表 5 家庭支持方案的推荐意见^{a)}

Table 5 Recommendations on family support program^{a)}

患者类型	营养干预方案	随访机制
经口进食达标	高蛋白ONS 400 kcal/d+饮食日记	每周电话随访×4
部分依赖管饲	推注式鼻饲或鼻饲泵持续或间断滴注+渐进经口训练	营养门诊3/7/14天复查
PEG	全量EN+每月微量营养素检测	MDT月度随访(外科+营养)

a) ONS: oral nutritional supplements, 口服营养补充; EN: enteral nutrition, 肠内营养; PEG: percutaneous endoscopic gastrostomy, 胃造瘘; MDT: multidisciplinary team, 多学科协作团队

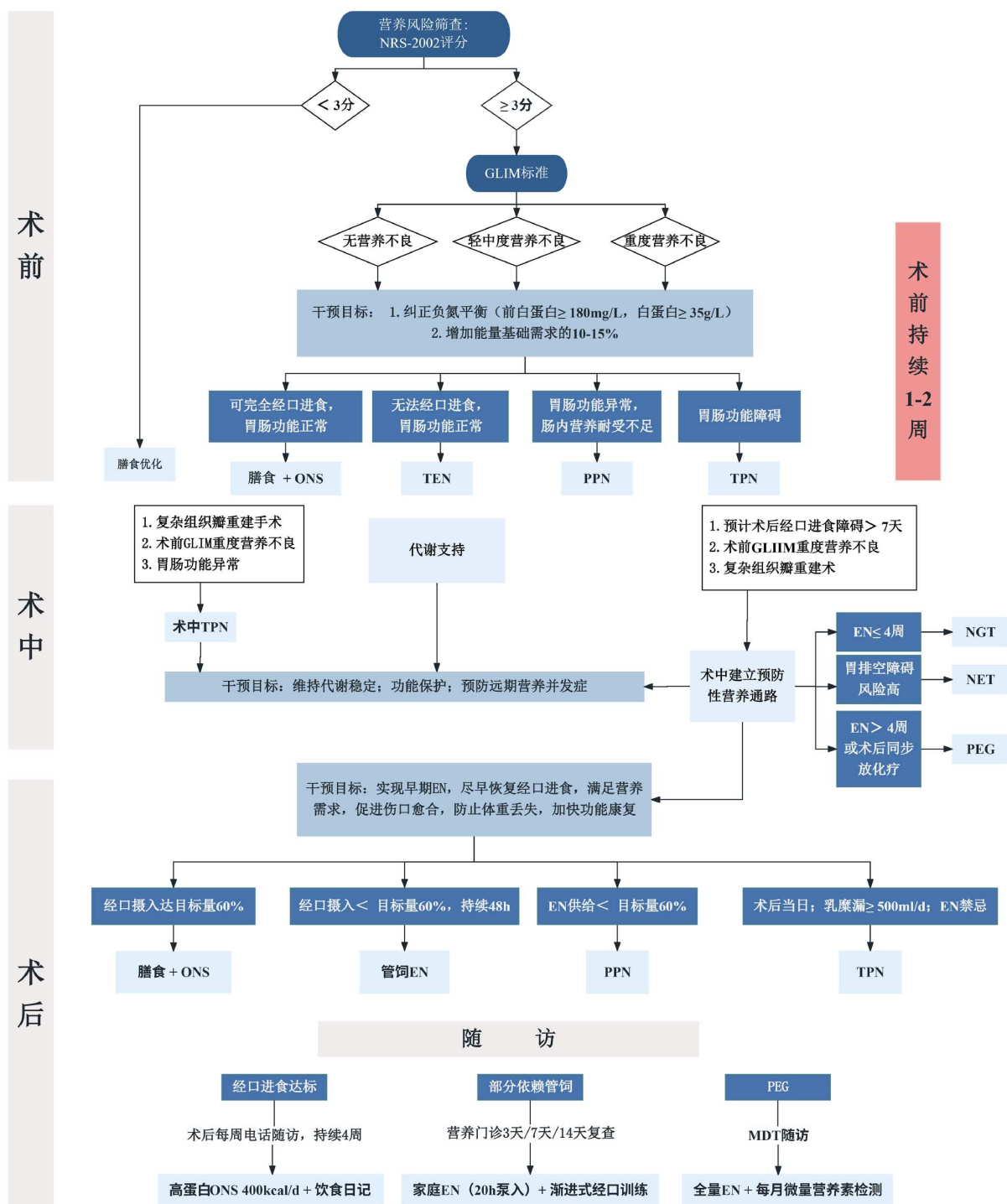


图 1 口腔颌面部肿瘤围手术期营养管理流程图。NRS2002: 营养风险筛查 2002; GLIM: 全球领导人营养不良倡议; ONS: 口服营养补充; EN: 肠内营养; NGT: 鼻胃管; NET: 鼻肠管; PEG: 胃造瘘; PPN: 部分肠外营养; TPN: 全胃肠外营养; MDT: 多学科协作团队

Figure 1 Flow chart of perioperative nutrition management for oral and maxillofacial tumors. NRS2002: Nutritional Risk Screening 2002; GLIM: Global Leadership Initiative on Malnutrition; ONS: oral nutritional supplements; EN: enteral nutrition; NGT: nasogastric tube; NET: nasoenteric tube; PEG: percutaneous endoscopic gastrostomy; PPN: partial parenteral nutrition; TPN: total parenteral nutrition; MDT: multidisciplinary team

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Chinese expert consensus on perioperative nutritional diagnosis and treatment management for oral and maxillofacial tumors

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Oral and maxillofacial tumors often compromise patients' chewing and swallowing functions, leading to a high risk of malnutrition. However, there remains a lack of effective consensus on perioperative nutritional management, which hinders the development of standardized clinical nutrition practices in the field of oral oncology. This consensus was developed using the Delphi method and synthesizes multidisciplinary expert opinions through expert consultation and panel discussions. It aims to establish evidence-based and standardized strategies for perioperative nutrition screening, assessment, and intervention. The goal is to enhance surgical safety, treatment tolerance, quality of life, and prognosis for patients with oral and maxillofacial tumors from a nutritional perspective.

oral and maxillofacial, oral cancer, perioperative, nutritional screening, nutritional assessment, nutritional diagnosis, nutritional intervention, delphi method, consensus

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