Gestione nutrizionale delle complicanze e delle carenze micronutrizionali

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Preparation of the patient

AACE/TOS/ASMBS/OMA/ASA 2019 Guidelines

Obesity

Clinical Practice Guidelines for the Perioperative Nutrition, Metabolic, and Nonsurgical Support of Patients Undergoing Bariatric Procedures – 2019 Update: Cosponsored by American Association of Clinical Endocrinologists/American College of Endocrinology, The Obesity Society, American Society for Metabolic and Bariatric Surgery, Obesity Medicine Association, and American Society of Anesthesiologists

R8. (2008). The evaluation must include a comprehensive medical history, psychosocial history, physical examination, and appropriate laboratory testing to assess surgical risk (see preoperative checklist in Table 9) **(Grade A; BEL 1).**

Mechanick JI et al. Surg Obes Relat Dis. 2020;16:175

TABLE 9 Preprocedure checklist (including lifestyle medicine)[a]

- ✓ Complete history and physical (obesity-related comorbidities, causes of obesity, weight, BMI, weight-loss history, commitment, and exclusions related to surgical risk)
- ✓ Routine labs (including fasting blood glucose and lipid panel, kidney function, liver profile, lipid profile, urine analysis, prothrombin time/INR, blood type, and CBC)
- ✓ Nutrient screening with iron studies, B_{12} and folic acid (RBC folate, homocysteine, methylmalonic acid optional), and 25-vitamin D (vitamins A and E optional); consider more extensive testing in patients undergoing malabsorptive procedures based on symptoms and risks
- ✓ Cardiopulmonary evaluation with sleep apnea screening (ECG, CSR, and echocardiography if cardiac disease or pulmonary hypertension suspected; deep vein thrombosis evaluation, if clinically indicated)
- ✓ GI evaluation (*H. pylori* screening in areas of high prevalence; gallbladder evaluation and upper endoscopy, if clinically indicated)
- ✓ Endocrine evaluation (A1C with suspected or diagnosed prediabetes or diabetes; TSH with symptoms or increased risk of thyroid disease; androgens with PCOS suspicion [total/bioavailable testosterone, DHEAS, Δ_4-androstenedione]); screening for Cushing syndrome if clinically suspected (1-mg overnight dexamethasone test, 24-hour urinary free cortisol, 11 pm salivary cortisol)
- ✓ Lifestyle medicine evaluation: healthy eating index; cardiovascular fitness; strength training; sleep hygiene (duration and quality); mood and happiness; alcohol use; substance abuse; community engagement
- ✓ Clinical nutrition evaluation by RD
- ✓ Psychosocial-behavioral evaluation
- ✓ Assess for individual psychological support/counseling
- ✓ Document medical necessity for bariatric surgery
- ✓ Informed consent
- ✓ Provide relevant financial information
- ✓ Continue efforts for preoperative weight loss
- ✓ Optimize glycemic control
- ✓ Pregnancy counseling
- ✓ Smoking-cessation counseling

Perioperative nutritional management plays a crucial role in MBS. The main goal of nutritional management is to improve the nutritional status of patients to:

- reduce the degree of malnutrition
- improve the patient tolerance to surgical trauma
- reduce the incidence of postoperative complications.

Li and Zhang et al., 2025

Nutritional Status

- What situation in the obese population?

OBES SURG (2014) 24:1639–1646
DOI 10.1007/s11695-014-1225-y

ORIGINAL CONTRIBUTIONS

Nutrient Deficiencies Before and After Sleeve Gastrectomy

P. W. J. van Rutte · E. O. Aarts · J. F. Smulders · S. W. Nienhuijs

OBES SURG (2016) 26:833–838
DOI 10.1007/s11695-015-1844-y

ORIGINAL CONTRIBUTIONS

Malnutrition in Bariatric Surgery Candidates: Multiple Micronutrient Deficiencies Prior to Surgery

Leigh A. Peterson[1] · Lawrence J. Cheskin[2,3,4] · Margaret Furtado[5] · Konstantinos Papas[6] · Michael A. Schweitzer[1] · Thomas H. Magnuson[1] · Kimberley E. Steele[1]

Micronutrient	ASMBS 2008 Nutrition Guidelines[19]	Summary of 9 Reviewed Studies[a]
Vitamin B1 (thiamin)	15%–29%	0%–6% (n = 4)
Vitamin B12 (cobalamin)	10%–13%	4%–13% (n = 7); 0% in 1 study (receiving supplementation)[21]
Folate (folic acid)	Uncommon	0%–32% (n = 8)
Iron	9%–16% adult women in general population	13%–47% (n = 7); 6% in 1 study (receiving supplementation)[21]
Ferritin		6%–24% (n = 5); 1% in 1 study (receiving supplementation)[21]
Vitamin A	Uncommon, up to 7% in some studies	2%–17% (n = 3); 1 study: 72% elevated[28]
Vitamin D	60%–70% (<20)	22%–71% (<20), 65%–93% (<30; n = 7); 99% (<32) in 1 study[27]; 39% with elevated parathyroid hormone in 1 study (vitamin D not measured)[26]
Vitamin E	Uncommon	0%–5% (n = 2)
Vitamin K	Uncommon	Not measured in studies reviewed
Zinc	Uncommon but increased risk of low levels associated with obesity	0%–15% (n = 4)
Copper	Not assessed	0% (n = 1)
Selenium	Not assessed	3%–15% (n = 2)

ASMBS, American Society for Metabolic and Bariatric Surgery.
[a]Chart based on findings in Peterson et al.,[22] Sanchez et al,[20] Dagan et al,[21] van Rutte et al,[28] Lefebvre et al,[23] Damms-Machado et al,[25] Ben-Porat et al,[27] Schiavo et al,[24] and Schweiger et al.[26] According to Dagan et al, patients received vitamin and mineral supplementation before baseline testing; therefore, this study was not used as the lowest range for prevalence of deficiency, but results are included.[21]

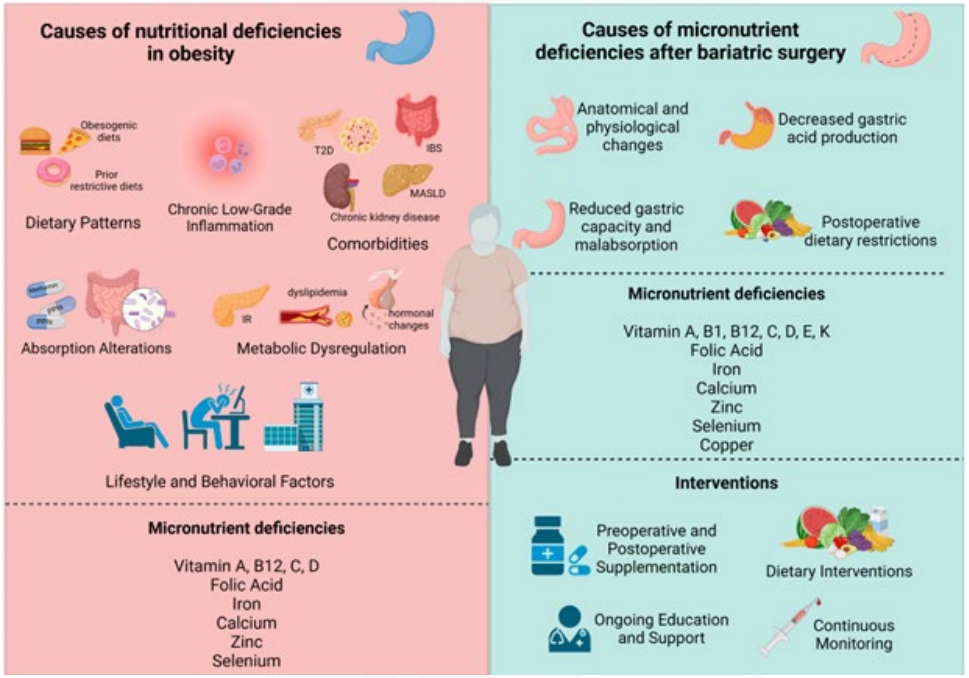
80% had > 1 nutrition deficiencies

40% of 58 patients had multiple deficiencies

Review

Preventing and Managing Pre- and Postoperative Micronutrient Deficiencies: A Vital Component of Long-Term Success in Bariatric Surgery

Claudia Reytor-González [1,†], Evelyn Frias-Toral [2,3,†], Cristina Nuñez-Vásquez [1], Juan Marcos Parise-Vasco [1], Raynier Zambrano-Villacres [4], Daniel Simancas-Racines [1,*,‡] and Luigi Schiavo [5,*,‡]



51% of patient before VSG were deficient at least 1 of the micronutrients

Frame –Peterson et al Nutr.Clin Pract 2017

Nutritional status

OBES SURG
DOI 10.1007/s11695-015-1700-0

ORIGINAL PAPER

Short-Term Changes in Body Composition and Response to Micronutrient Supplementation After Laparoscopic Sleeve Gastrectomy

A. Belfiore[1] · M. Cataldi[2] · L. Minichini[1] · M. L. Aiello[1] · R. Trio[1] · G Rossetti[3] · B. Guida[1]

Patients who received a preoperative MDs correction did not develop new MDs in the first year after BS, whereas all patients who did not received MDs correction before BS continued to be deficient in one or more micronutrient after surgery, despite systematic postoperative supplementation.

Schiavo L. et al., 2019

Zn respond poorly to multivitamin supplementation

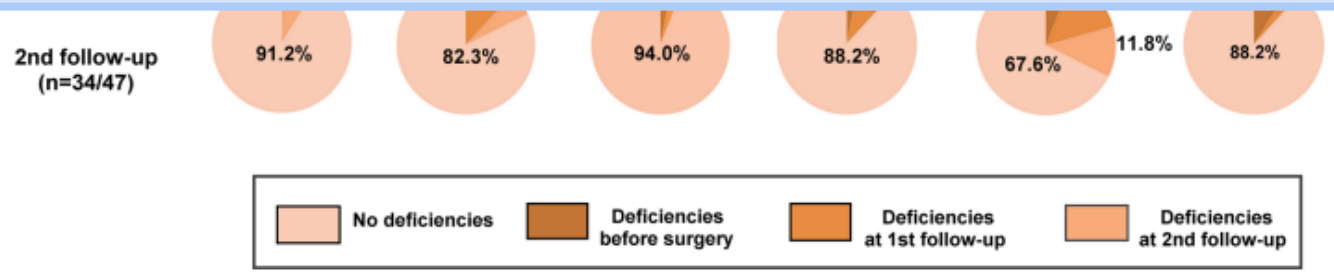


Fig. 2 Micronutrient deficiencies after laparoscopic sleeve gastrectomy (*LSG*). The percentages of patients without or with specific micronutrient deficiencies are shown. In all panels, values obtained before, 3, and 6 months after LSG are reported. *=$p<0.05$ vs the corresponding group before LSG

Nutritional Status

- How much should I supplement?

Table 6: Nutrient Supplementation for Patients with WLS and Without WLS

Nutrients	Non-WLS		WLS Preventative Supplements			
	Dietary Reference Intake (DRI)	Tolerable Upper Intake Level (UL) Daily Value (DV)	AGB	LSG	RYGB	BPD/DS
Vit B 1	1.2 mg/d 14 yrs+ M 1.1 mg/d 19 yrs+ F	**UL:** none set; no reports of adverse effects from >50 mg B1/d from food or supplements **DV: 1.5**	At least 12 mg/d At risk patients: at least 50 -100mg/d			
Vit B 12	2.4 ug/d 14 yrs+ M,F	**UL:** none set; due to its low potential for toxicity **DV: 6 ug**	350-500 mcg/day PO or As directed – nasal or 1000 mcg/mo IM			
Folate	400 ug/d 19 yrs+ M,F	**UL:** 1000 mcg all ages & pregnancy **DV: 400 ug**	400-800 mcg oral 800-1000 mcg F childbearing ages			

Parrott J et al ASMBS Guidelines SOARD 2017

ASMBS Nutrition Guidelines: Micronutrients

Nutrients	Non-WLS		WLS Preventative Supplements			
	Dietary Reference Intake (DRI)	Tolerable Upper Intake Level (UL) Daily Value (DV)	AGB	LSG	RYGB	BPD/DS
Calcium	1000 mg/d 19-50 yrs M,F 200 mg/d 51 yrs+ F	**UL:** 2000-3000 mg /d **DV:** 1000 mg	1200-1500 mg/d			1800-2400 mg/d
Vit A	900 ug/d 14 yrs+ M; 700 ug/d 14 yrs+ F	**UL:** 10,000 IU/d (3000 mcg RAE/d)* retinol **DV:** 5000 IU	5000 IU/d		5000-10,000 IU/d	10,000 IU/d
Vit E	15 mg/d 14 yrs+ M,F	**UL:** 1000 mg/d (1500 IU/d) **DV:** 30 mg	15 mg/d			
Vit K	120 ug/d 19 yrs+ M 90 ug/d 19 yrs+ F	**UL:** No UL established due to its low potential for toxicity. **DV:** 80 ug	90-120 ug/d			300 ug/d
Vit D	600 IU/d (15 ug/d) 14 yrs+ M,F	**UL:** 4000 IU/d (100 ug/d) **DV:** 400 IU	At least 3000 IU/d to maintain D,25(OH) levels > 30 ng/mL			
Iron	8 mg/d 19 yrs+ M 8 mg/d 51 yrs+ F 18 mg/d 19-50 yrs F	**UL:** 45 mg/d **DV:** 18 mg	At least 18 mg/d from multivitamin		At least 45-60 mg/d (from all sources) in F with menses	
Zinc	11 mg/d 19 yrs+ M 8 mg/d 19 yrs+ F	**UL:** 40 mg/d **DV:** 15mg	8-11 mg/d		8-11 mg/d to 16-22 mg/d	16-22 mg/d
Copper	900 ug/d 19 yrs+ M,F	**UL:** No UL established; toxicity reported with grams of ingested copper **DV:** 2 mg	1 mg/d		1-2 mg/d	2 mg

Supplementation for non-WLS patients: Dietary Reference Intake (DRI), Daily Value (DV), Tolerable Upper Intake Level (UL) Supplementation for WLS patients: Actual dose for nutrients by type of WL

Mechanisms of nutritional complications:

- Reduced intake
- Intestinal malabsorption
- Hormonal and microbiota variations
- Vomiting, dumping, diarrhea

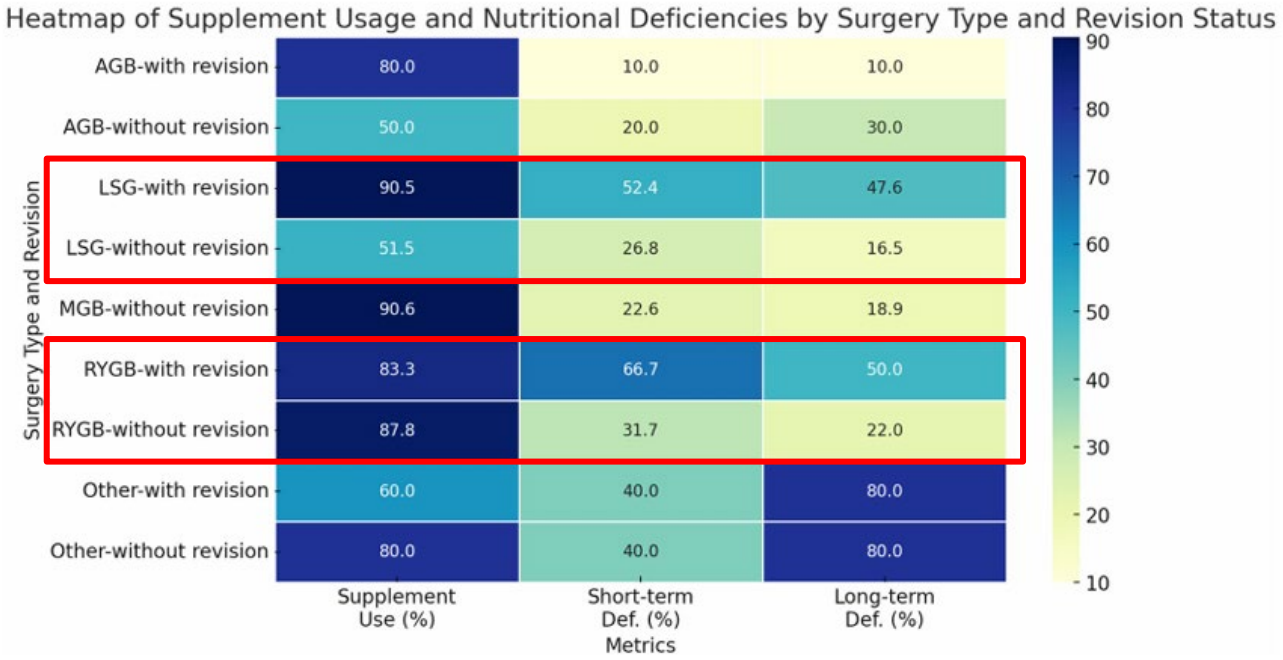
ANNUAL REVIEWS

Annual Review of Nutrition

2024

Nutritional Challenges and Treatment After Bariatric Surgery

Violeta Moize,[1,2] Blandine Laferrère,[3] and Sue Shapses[4,5]



Gorini *et al. Journal of Translational Medicine* (2025) 23:216

Comparison of surgery

Type of Surgery	Micronutritional deficiencies	Main complications
LSG	**Vitamin B12** **Iron** **Folic acid** The most recent guidelines recommend daily intake of a **multivitamin preparation and trace elements** containing adequate doses of iron, folic acid, thiamine, calcium citrate and vitamin D	**MRGE** **Stenosis** **Fistula**
RYGB	**Iron malabsorption** Vitamin B12	**Dumping syndrome, early** (15-30' post-ingestion) or **late** (1-3h post-ingestion) **Intestinal obstruction** **Gallstones**
BPD	Macronutrient malabsorption (**up to 25% protein** and **72% fat**) **Vitamin D, A, E, K** **Zinc iron** **Calcium** **Vitamin B12** **Folic acid**	**Diarrhea** **Steatorrhea** **Lactose intolerance** **Abdominal pain** **Protein-energy malnutrition**

ANNUAL REVIEWS

Annual Review of Nutrition

2024

Nutritional Challenges and Treatment After Bariatric Surgery

Violeta Moize,[1,2] Blandine Laferrère,[3] and Sue Shapses[4,5]

1 Nutritional conditions after bariatric surgery and management

Disease/Condition	Symptoms	Management
Beriberi	Wet beriberi: tachycardia, shortness of breath, hypertension Dry and cerebral beriberi: mental confusion, loss of sensation in the limbs, pain or tingling	Thiamin (B_1) supplementation The dietary recommended intake for thiamin in multivitamins should be adequate
Anemia	Iron, B_{12}, and folate deficiency	Additional supplementation may be needed above a daily multivitamin for folate and B_{12}; take iron with vitamin C to enhance absorption
Dumping syndrome	Early: postprandial hypoglycemia Late: nausea, diarrhea, loss of consciousness	Early: limit simple carbohydrate intake; consider acarbose or other alpha-glucosidase inhibitors Late: treat for diarrhea (e.g., increase fluids, reduce fats, avoid lactose, consider Lomotil)
Bowel obstruction	Nausea, vomiting, abdominal pain	Surgical intervention + Fasting
Gastric ulceration	Abdominal pain, bleeding	Proton pump inhibitors, sucralfate therapy, surgical intervention
Bone loss	Reduced bone mineral density and increased fractures	Vitamin D and calcium supplementation (plus weight-bearing physical activity) Consume dietary and supplemental calcium to a total of 1–1.5 g/day (avoid >2 g/day) Treat vitamin D deficiency with standard recommendations

Conditions with the most evidence include the following: Roux-en-Y gastric bypass, adjustable gastric band, vertical sleeve gastrectomy, and biliopancreatic diversion/duodenal switch. Table adapted from Shapses et al. (119) with permission from Springer Nature.

ANNUAL REVIEWS

Annual Review of Nutrition

2024

Nutritional Challenges and Treatment After Bariatric Surgery

Violeta Moize,[1,2] Blandine Laferrère,[3] and Sue Shapses[4,5]

Table 2 Dietary management of gastrointestinal symptoms

Symptom	Management
Dysphagia causing coughing or choking	Eat slowly, avoid dry or hard foods (such as crackers or meat) Add more semisoft foods and avoid acidic or spicy foods, as needed
Vomiting	Eat small bites and chew slowly Separate fluids when consuming a meal Eat small, regular meals (every 2–4 h) and rehydrate Monitor electrolytes
Dehydration	Consume 1.5 L/day or more of water, especially after exercise and when exposed to hot weather or conditions Greater fluid intake can also be achieved with adding flavors (lemon, herbs) to water
Constipation	Increase fluids and fiber; consider medications

General nutritional strategies:

- Complete vitamin supplementation (multivitamins)
- Meal splitting
- Adequate protein intake
- Avoid simple sugars (dumping)

nutrients 2025 MDPI

Review

Preventing and Managing Pre- and Postoperative Micronutrient Deficiencies: A Vital Component of Long-Term Success in Bariatric Surgery

Claudia Reytor-González [1,†], Evelyn Frias-Toral [2,3,†], Cristina Nuñez-Vásquez [1], Juan Marcos Parise-Vasco [1], Raynier Zambrano-Villacres [4], Daniel Simancas-Racines [1,*,‡] and Luigi Schiavo [5,*,‡]

Nutrient	Recommended Dosage	Special Considerations
Thiamine [46,67]	12 mg/day via multivitamins; increase to 200–300 mg/day in critical cases (e.g., Wernicke's encephalopathy).	Vital for preventing neurological complications.
Iron [37,46,67]	200 mg/day ferrous sulfate (or equivalent); menstruating women may require double this dose.	Separate iron and calcium supplements for at least two hours to avoid absorption interference. Vitamin C enhances absorption.
Zinc [46,67]	15 mg/day for all patients; increase to 30 mg/day for BPD/DS patients.	Maintain appropriate zinc-to-copper ratio (15 mg zinc to 2 mg copper).
Copper [46]	2 mg/day	Included in multivitamin formulations; important for enzymatic functions.
Vitamin D [46,63,118]	2000–4000 IU/day	Adjust doses upward for BPD/DS patients to maintain serum levels > 75 nmol/L.
Calcium [46,67]	1200–1500 mg/day for SG and RYGB; 2400 mg/day for BPD/DS.	Use calcium citrate for better absorption; avoid concurrent iron supplementation.
Vitamin B12 [46,67]	Intramuscular injections of 1 mg every 3 months; increase frequency if neurological symptoms develop.	Critical for neurological and hematological health.
Vitamin A [45,46]	10,000 IU/day; increase to 50,000 IU/day for BPD/DS patients if necessary.	Adjust doses based on clinical monitoring.
Vitamin E [115]	60 IU/day	Important antioxidant; more monitoring needed for BPD/DS patients.
Vitamin K [115]	300 µg/day for BPD/DS patients.	Use water-miscible formulations for better absorption in hypoabsorptive surgeries.
Selenium [45,117]	Adjust based on deficiency detection through regular monitoring.	Universally recommended for all bariatric surgery patients.

Several authors, including O'Kane et al., and Parrott et al., emphasize that comprehensive multivitamin and mineral supplementation should be **initiated immediately and customized to the particular type of BS**

Both O'Kane et al. and Parrott et al. stress the importance of **separating iron and calcium supplementation by at least two hours to avoid absorption interference**

Changes in fat-free mass during significant weight loss: a systematic review

Table 4 Summary of the effects of surgical weight loss interventions on the %FFML

Author	Year	Intervention	Study type	FFM loss (%Weight loss)	Weight loss (kg)	Duration (wks)	n	Sex	Initial BMI	Method
Vettor *et al.*[42]	2003	BPD	Obs	17.5	43.5	78	10		49.8	TBW
Tacchino *et al.*[43]	2003	BPD	Obs	19.2	31.7	26	101	F	45.5	DEXA
Gniuli *et al.*[44]	2005	BPD	Obs	20.0	47.6	104	10		45.3	TBW
Tacchino *et al.*[43]	2003	BPD	Obs	20.1	43.3	52	101	F	45.5	DEXA
Tacchino *et al.*[43]										
Mingrone *et al.*[45]										
Fabris *et al.*[46]										
Mingrone *et al.*[45]										
Valera-Mora *et al.*[47]										
Benedetti *et al.*[48]										
Greco *et al.*[49]										
Valera-Mora *et al.*[47]										
Das *et al.*[50]										
Carey *et al.*[51]										
Carey *et al.*[51]										
Carey *et al.*[51]										
Coupaye *et al.*[52]										
Pugnale *et al.*[53]										
Sergi *et al.*[54]										
Gasteyger *et al.*[55]										
Giusti *et al.*[56]										
Giusti *et al.*[57]										
Gasteyger *et al.*[55]										
Pugnale *et al.*[53]										
Giusti *et al.*[56]										
Giusti *et al.*[57]										
Giusti *et al.*[56]	2005	LAGB	Obs	19.3	19.2	26	37	F	43.7	DEXA
Gasteyger *et al.*[55]	2006	LAGB	Obs	19.7	19.3	26	36	F	43.8	DEXA
Garrapa *et al.*[58]	2005	LAGB	Obs	23.6	23.3	26	15		42.2	DEXA

Abbreviations: BPD, biliopancreatic diversion; CCT, clinical controlled trial; DEXA, dual energy X-ray absorptiometry; LAGB, laparoscopic adjustable gastric banding; Obs, observational; RCT, randomized controlled trial; RYGB, roux en Y gastric bypass; TBW, total body water.

"Post-bariatric surgery patients face the dual challenge of preventing nutritional deficiencies while preserving lean body mass, particularly given the risk of sarcopenic obesity, which may be exacerbated by inadequate protein intake and suboptimal micronutrient status."

Gorini et al., 2025

PREDICTIVE FACTORS OF FAT-FREE MASS LOSS AFTER BARIATRIC SURGERY

- Rapidity of weight loss
- Low FFM before bariatric surgery (Guida et al., 2018)
- Malabsorption of macronutrients and micronutrients
- Malnutrition
- Neuro-hormonal changes

Chaston TB et al.Int J Obes 2007

Practical Recommendations of the Obesity Management Task Force of the European Association for the Study of Obesity for the Post-Bariatric Surgery Medical Management

Obesity Facts
The European Journal of Obesity
Obes Facts 2017;10:597–632

Luca Busetto[a] Dror Dicker[b] Carmil Azran[c] Rachel L. Batterham[d, e, f]
Nathalie Farpour-Lambert[g] Martin Fried[h] Jøran Hjelmesæth[i] Johann Kinzl[j]
Deborah R. Leitner[k] Janine M. Makaronidis[d, f] Karin Schindler[l]

Table 2. List of graded clinical practical recommendations for post-bariatric nutritional management

Recommendations	Level of evidence	Grade of recommendation*
Bariatric patients should receive periodic counselling by a registered dietician about long-term dietary modifications. The focus of dietary counselling should be the adaptation of patients eating behaviour to the surgical procedure and the general qualitative aspects of a healthy nutrient-dense diet.	1	A
Regular physical activity should be encouraged after bariatric surgery, starting since after the recovery from surgery. Patients should be advised to incorporate moderate aerobic physical activity to include a minimum of 150 min/week and goal of 300 min/week, including strength training 2–3 times per week.	1	A
Nutritional counselling should address the problem of protein intake, particularly in the first months after surgery. A minimal protein intake of 60 g/day and up to 1.5 g/kg ideal body weight per day should be targeted. The use of liquid protein supplements (30 g/day) can facilitate adequate protein intake in the first period after surgery.	4	D
Nutritional manipulation should be the first line treatment for the control of dumping syndrome. Medical therapy with octreotide should be considered in patients who fail to be controlled with dietary modifications.	1	A

*For the grading system refers to table 1.

AACE/TOS/ASMBS/OMA/ASA 2019 Guidelines

Obesity

Clinical Practice Guidelines for the Perioperative Nutrition, Metabolic, and Nonsurgical Support of Patients Undergoing Bariatric Procedures – 2019 Update: Cosponsored by American Association of Clinical Endocrinologists/American College of Endocrinology, The Obesity Society, American Society for Metabolic and Bariatric Surgery, Obesity Medicine Association, and American Society of Anesthesiologists

Mechanick JI et al. Surg Obes Relat Dis. 2020;16:175

Particular attention in the first month after bariatric surgery

nutrients 2024 MDPI

Article

Adding Branched-Chain Amino Acids and Vitamin D to Whey Protein Is More Effective than Protein Alone in Preserving Fat Free Mass and Muscle Strength in the First Month after Sleeve Gastrectomy

Luigi Schiavo [1,2,*], Biagio Santella [1,2], Barbara Paolini [3,†], Farnaz Rahimi [4,†], Emmanuele Giglio [5,†], Barbara Martinelli [3], Stefano Boschetti [4], Lilia Bertolani [5], Katia Gennai [3], Simone Arolfo [6], Maria Paola Bertani [5] and Vincenzo Pilone [7]

Table 1. Post-operative characteristics of the study groups.

Parameter	Group	Baseline	4-Weeks Follow-Up	*p* Value *	*p* Value **
Total body weight (kg)	P+BCAA+Vit.D	116.1 ± 22.5	103.6 ± 20.6	0.026	0.994
	Protein alone	118.4 ± 22.7	105.9 ± 20.1	0.040	
BMI (kg/m^2)	P+BCAA+Vit.D	42.8 ± 5.98	38.3 ± 5.93	0.004	0.401
	Protein alone	43.3 ± 7.00	39.2 ± 5.82	0.027	
Fat Mass (kg)	P+BCAA+Vit.D	53.7 ± 11.1	43.8 ± 10.3	<0.001	0.023
	Protein alone	55.6 ± 12.4	48.2 ± 11.4	0.030	
Fat-Free Mass (kg)	P+BCAA+Vit.D	57.1 ± 13.6	54.7 ± 12.8	0.485	<0.001
	Protein alone	57.7 ± 12.2	51.1 ± 10.4	0.041	
Muscle Strenght (kg)	P+BCAA+Vit.D	39.1 ± 14.3	37.6 ± 13.4	0.675	<0.001
	Protein alone	38.6 ± 13.4	31.3 ± 12.4	0.047	

BMI = body mass index; The values are expressed as mean ± standard deviation (SD); * = 4 weeks follow-up vs. baseline; ** = 4 weeks follow-up P+BCAAs+Vit.D vs. protein alone.

Artificial nutrition post bariatric surgery

Main indications

- Surgical complications preventing safe oral feeding. fistula/losing anastomosis, persistent intestinal obstruction, prolonged ileus
- Severe malabsorption (e.g., extensive bowel resection, short bowel syndrome) with insufficient nutrient absorption and progressive weight loss

Practical guidelines

- Prefer enteral nutrition (EN) if functional gastrointestinal tract, NG, NJ, or post-pyloric accesses (PEJ) depending on anatomy
- Start EN as soon as possible if feasible; adapt high protein formula and fractionate volumes
- If EN is not possible or contraindicated → complete or supplementary parenterral nutrition (PN), with metabolic monitoring

Key management points

- Focus on adequate protein intake, electrolyte correction, vitamin and nineral supplementation (iron, B_{12}, vit. D, calcium, folate, etc)

ESPEN Guideline: Practical guideline on obesity care in patients with GI and liver diseases, Joint ESPEN/UEG, 2022–2025 updates.
Boullata JI et al., ASPEN Safe Practices for Enteral Nutrition Therapy. JPEN. 2017.
SICOB Linee Guida 2023 - Società Italiana di Chirurgia dell'Obesità e Malattie Metaboliche.
Mechanick JI et al., Clinical Practice Guidelines for Perioperative Nutrition in Bariatric Procedures (AACE/ASMBS), 2019.

TAKE HOME MESSAGES

Importanza della valutazione dello stato nutrizionale perioperatorio:
Il management nutrizionale pre e post chirurgico riduce complicanze e migliora la tolleranza chirurgica.
Correggere precocemente i deficit micronutrizionali limita nuove carenze post-operatorie.

Prevenzione e trattamento delle complicanze nutrizionali:
Garantire apporto proteico adeguato e supplementazione personalizzata.
Corretto inquadramento diagnostico e trattamento nutrizionale

Conservare la massa magra post-bariatrica:
Prevenire sarcopenic obesity con proteine di qualità, BCAA e correzione dei deficit.

Nutrizione artificiale post-chirurgica:
Preferire nutrizione enterale precoce; NP solo se necessaria.

Screening dei micronutrienti:
Ogni 3 mesi per il primo anno: ferro, folati, B12, vit. D. **Annuale dopo BPG e DBP** : Vit. A, zinco, rame.
Tiamina nei gruppi ad alto rischio.

Criticità e prospettive:
Migliorare aderenza, protocolli univoci.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Grazie