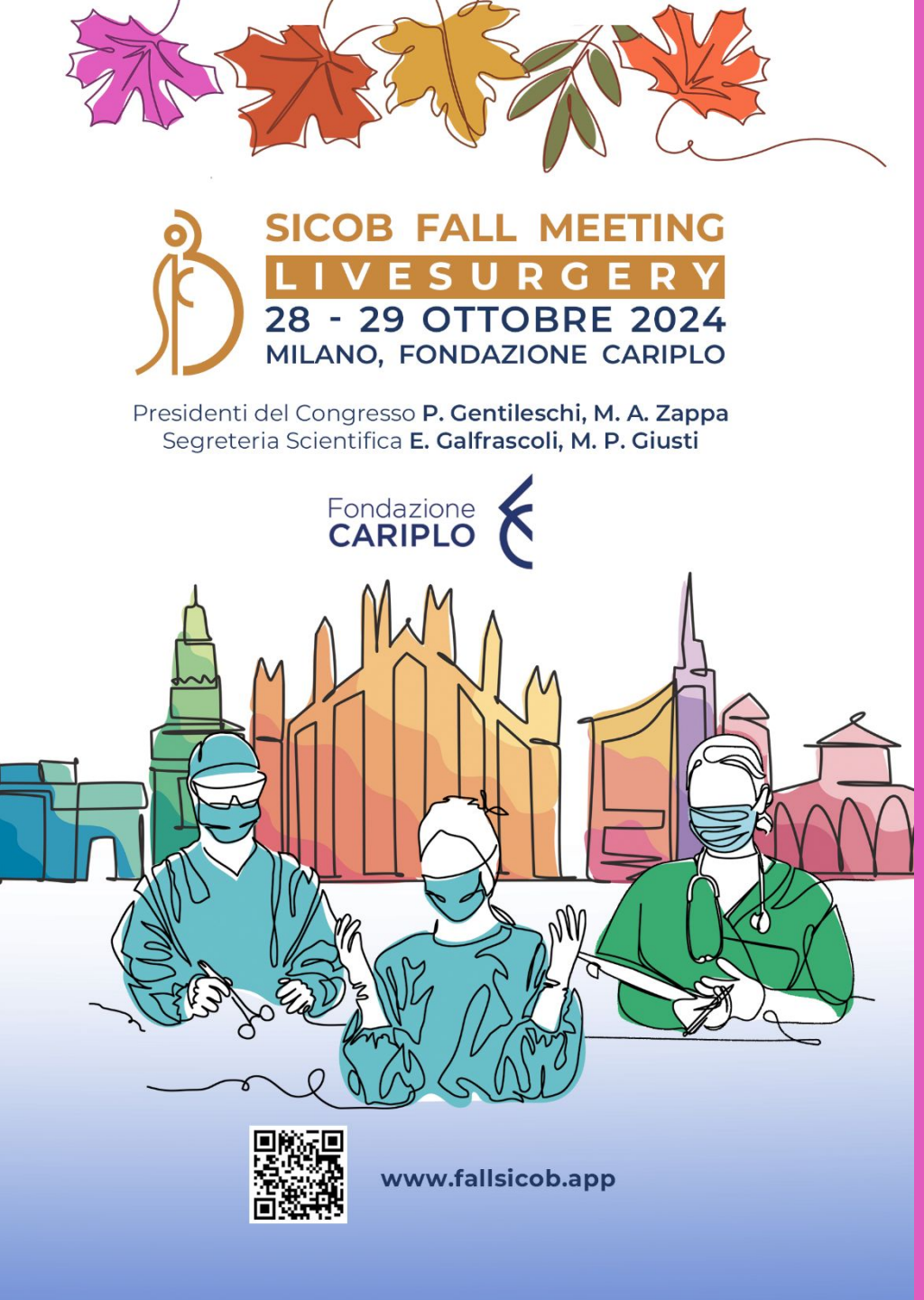


…IO SENZA CAPELLI… Terapia Nutrizionale

DOTT.SSA DIETISTA

MARIKA VISENTIN

Servizio di Dietologia e Nutrizione Clinica
ISTITUTO PIO ALBERGO TRIVULZIO (MI) – BRAIN&CARE (MI)

Centro Integrato di Neuroscienze - CIN (RM) - GRUPPO MONTANARI (RM)

Pre-intervention

DOI: 10.7759/cureus.14617

Bariatric Surgery-Induced Telogen Effluvium (Bar SITE): Case Report and a Review of Hair Loss Following Weight Loss Surgery

Rena A. Cohen-Kurzrock [1], Philip R. Cohen [2]

1. Health Administration, Louisiana State University of Shreveport, Shreveport, USA 2. Dermatology, San Diego Family Dermatology, National City, USA

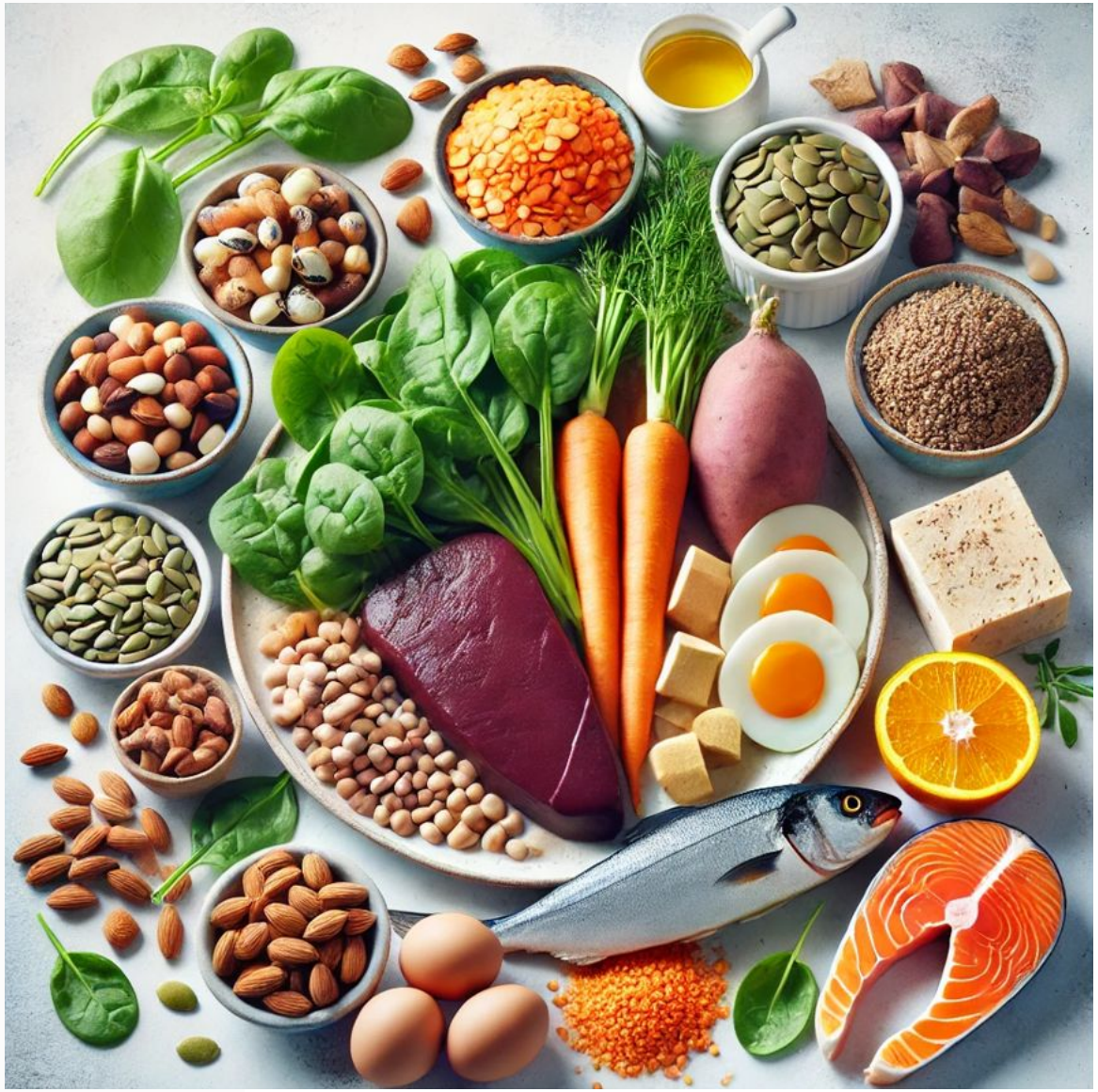
Corresponding author: Rena A. Cohen-Kurzrock, rena.cohen.kurzrock@gmail.com

Acute-onset alopecia following bariatric surgery is usually caused by telogen effluvium; similar to telogen effluvium caused by other etiologies, the management of bariatric surgery-induced telogen effluvium includes clinical monitoring of subsequent hair growth. In contrast, hair loss that is chronic in onset following weight loss surgery is often associated with a nutritional deficiency; preliminary laboratory studies to evaluate for nutrition deficiency includes calcium, ferritin, folate, iron, and vitamins (A, B1, B6, B12, and D 25-hydroxy). However, hair loss in bariatric patients can be multifactorial and caused by more than one etiology [1-4,9-15].

CARENZA	MANIFESTAZIONI CLINICHE - MALATTIE
Vitamine	
Vitamina B12	Perdita di coordinazione corporea, intorpidimento, complicazioni neurologiche, compromissione della memoria, anemia macrocitica, leucopenia, infertilità
Vitamina B1	Sindrome di Wernicke-Korsakoff, stitichezza, nausea, stanchezza, anoressia, intorpidimento, debolezza
Vitamina A	Insonnia, acne, ipercheratosi, cecità notturna, affaticamento, compromissione immunitaria, **capelli secchi**
Vitamina K	Disturbi della coagulazione del sangue, osteoporosi
Vitamina C	Stanchezza, ritardo nella guarigione delle ferite, depressione, scorbuto
Minerali	
Ferro	Anemia, immunodeficienza, affaticamento, debolezza, pallore, mal di testa, vertigini, palpitazioni cardiache, mancanza di respiro, estremità fredde, **perdita di capelli**, disturbi gastrointestinali
Calcio	Osteoporosi, carie, depressione, problemi cardiaci, unghie deboli, dermatite, ipertensione, spasmi muscolari, insonnia
Zinco	Guarigione lenta, **perdita di capelli**, acrodermatite, ansia, depressione, disturbi ormonali, scarsa concentrazione, disfunzione immunitaria
Rame	Stanchezza, debolezza, pallore, dolori articolari, dolori muscolari, intorpidimento, formicolio, osteoporosi, anemia, malattie frequenti, infiammazione della pelle, sensibilità al freddo
Selenio	Disfunzione del sistema immunitario, vulnerabilità alle infezioni, affaticamento, **perdita di capelli**, disfunzione epatica, disfunzione tiroidea, disturbi riproduttivi

Foods

Nutriente	Alimenti Ricchi
Vitamina A	- Fegato (pollo, manzo) - Carote - Spinaci - Patate dolci - Uova
Ferro	- Fegato - Spinaci - Lenticchie - Fagioli - Carne rossa - Tofu
Zinco	- Semi di zucca - Fegato - Manzo - Ceci - Mandorle
Selenio	- Noci brasiliane - Pesce (tonno, salmone) - Uova - Pollo



Pre-intervention

Lifestyle and Diet - Food History

medicina

MDPI

Review

Association of Obesity and Bariatric Surgery on Hair Health

Katarzyna Smolarczyk [1,*], Blazej Meczekalski [2], Ewa Rudnicka [3], Katarzyna Suchta [3] and Anna Szeliga [2]

1 Department of Dermatology, Medical University of Warsaw, 02-008 Warsaw, Poland
2 Department of Gynecological Endocrinology, Poznan University of Medical Sciences, 60-535 Poznan, Poland; blazejmeczekalski@yahoo.com (B.M.); annamaria.szeliga@gmail.com (A.S.)
3 Department of Gynecological Endocrinology, Warsaw Medical University, 00-315 Warsaw, Poland;

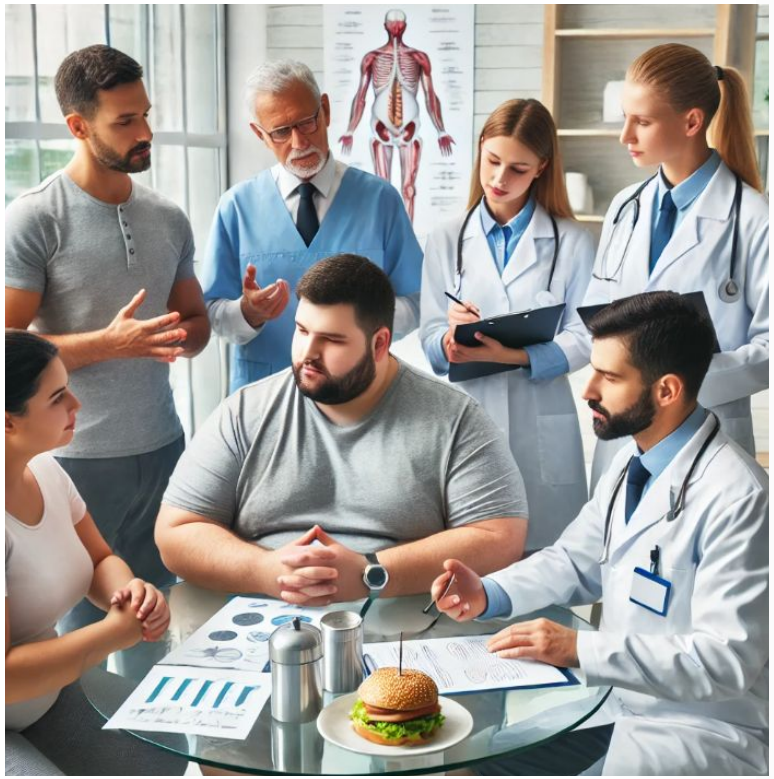
Among people with obesity, a lower serum concentration of vitamin D is widely observed [36–38], and it is known that vitamin D plays a role in immunomodulation and has an anti-inflammatory effect [39]. Almohanna et al. [19] suggest that vitamin D modulates the g
vitamin D recep
Excessive ir
factor that can n
skin inflammati
intake of omega-
eases by elevatio
B4 and prostagl
Among pe
observed. Almo
in immunomod
the growth and
receptor and inf
Obesity is
hormonal, and
priate diet that
observed among
comorbidities such as sleep disturbances, but also metabolic consequences, have a negative impact on skin appendages [39].

3.1.3. Lifestyle and Diet Influencing Hair Loss

It is widely known that most cases of obesity are caused by or linked to inappropriate diet and personal difficulties in calorie intake restriction [28,29], and that it can also be associated with specific lifestyle patterns [30–34]. A recent review by Minokawa [35] discussed the role of lifestyle factors that may play a role in a poorer hair condition. For example, smokers have a higher risk of developing alopecia areata in comparison to non-smokers, and it is worth noticing that cigarette smoke increases the secretion of inflammatory cytokines, as well as decreases the secretion of anti-inflammatory cytokines. Moreover, sleep disorders may be involved in a higher risk of alopecia, such as insomnia or a sleep apnea syndrome, which is more frequent among people with obesity. In relation

Medicina 2024, 60, 325. https://doi.org/10.3390/medicina60020325

Pre-intervention



medicina

MDPI

Review

Association of Obesity and Bariatric Surgery on Hair Health

Katarzyna Smolarczyk [1,*], Blazej Meczekalski [2], Ewa Rudnicka [3], Katarzyna Suchta [3] and Anna Szeliga [2]

1 Department of Dermatology, Medical University of Warsaw, 02-008 Warsaw, Poland
2 Department of Gynecological Endocrinology, Poznan University of Medical Sciences, 60-535 Poznan, Poland; blazejmeczekalski@yahoo.com (B.M.); annamaria.szeliga@gmail.com (A.S.)
3 Department of Gynecological Endocrinology, Warsaw Medical University, 00-315 Warsaw, Poland; ewa.rudnicka@poczta.onet.pl (E.R.); suchta.katarzyna@gmail.com (K.S.)
* Correspondence: ksmolarczyk@gmail.com; Tel.: +48-22-502-13-24

Laboratory

Laboratory findings are of use while making the diagnosis, including complete blood count with differential, ferritin, iron, TSH (thyroid-stimulating hormone), aTg, (thyroglobulin antibodies), aTPO, (thyroid peroxidase antibodies), CRP (C-reactive protein), prolactin, fasting glucose, total protein, and progesterone [57]. Other blood tests may be indicated, depending on the patient's history.

Medicina 2024, 60, 325. https://doi.org/10.3390/medicina60020325

Pre-intervention

Metabolic Syndrome - Food Education

medicina

MDPI

Review

Association of Obesity and Bariatric Surgery on Hair Health

Katarzyna Smolarczyk [1,*], Blazej Meczekalski [2], Ewa Rudnicka [3], Katarzyna Suchta [3] and Anna Szeliga [2]

1 Department of Dermatology, Medical University of Warsaw, 02-008 Warsaw, Poland
2 Department of Gynecological Endocrinology, Poznan University of Medical Sciences, 60-535 Poznan, Poland; blazejmeczekalski@yahoo.com (B.M.); annamaria.szeliga@gmail.com (A.S.)
3 Department of Gynecological Endocrinology, Warsaw Medical University, 00-315 Warsaw, Poland; gmail.com (K.S.)
-502-13-24

3.2.1. Diabetes Mellitus and Hair Loss

Diabetes mellitus is a metabolic disorder that is associated with abnormally high blood glucose levels (hyperglycemia) that adversely affects many organs, leading to various complications, including retinopathy, nephropathy, and neuropathy [40,41], through the modulation of the Wnt/ß-catenin signaling pathway [40,41]. In a recent study by Wang M et al., it was shown that diabetes can inhibit hair regrowth by inhibiting Wnt/ß-catenin signaling [42]. The activation of Wnt/ß-catenin promotes the growth, morphogenesis, and regeneration of hair follicles, but when the cells are not stimulated by Wnt ligands, ß-catenin is phosphorylated by the destruction complex and subsequently ubiquitinated and degraded [42]. An animal model showed that the depilation-induced anagen phase was delayed in db/db mice, high-fat diet (HFD), and streptozotocin (STZ)-induced diabetic mice [43]. But in diabetic mice, hair regrowth and wound-induced hair follicle neogenesis (WIHN) were reduced because of the suppression of Wnt/ß-catenin signaling and decreased proliferation of hair follicle cells [43].

Medicina 2024, 60, 325. https://doi.org/10.3390/medicina60020325

Pre-intervention

medicina

MDPI

Review

Association of Obesity and Bariatric Surgery on Hair Health

Katarzyna Smolarczyk [1,*], Blazej Meczekalski [2], Ewa Rudnicka [3], Katarzyna Suchta [3] and Anna Szeliga [2]

1 Department of Dermatology, Medical University of Warsaw, 02-008 Warsaw, Poland
2 Department of Gynecological Endocrinology, Poznan University of Medical Sciences, 60-535 Poznan, Poland; blazejmeczekalski@yahoo.com (B.M.); annamaria.szeliga@gmail.com (A.S.)
3 Department of Gynecological Endocrinology, Warsaw Medical University, 00-315 Warsaw, Poland; ewa.rudnicka@poczta.onet.pl (E.R.); suchta.katarzyna@gmail.com (K.S.)
* Correspondence: ksmolarczyk@gmail.com; Tel.: +48-22-502-13-24

3.2.2. Hypertension and Hair Loss

The association between alopecia and coronary heart disease and hypertension has also been investigated for over 70 years [50]. Although some studies have found no relationship, most of them supported the dependence [51].

Specifically, studies have shown that coronary heart disease is more likely to occur in individuals with alopecia compared to non-bald individuals, and in the group with alopecia, higher cholesterol levels and higher blood pressure were found [51]. In a study

Medicina 2024, 60, 325. https://doi.org/10.3390/medicina60020325

Pre-intervention

medicina

MDPI

Review

Association of Obesity and Bariatric Surgery on Hair Health

Katarzyna Smolarczyk [1,*], Blazej Meczekalski [2], Ewa Rudnicka [3], Katarzyna Suchta [3] and Anna Szeliga [2]

[1] Department of Dermatology, Medical University of Warsaw, 02-008 Warsaw, Poland
[2] Department of Gynecological Endocrinology, Poznan University of Medical Sciences, 60-535 Poznan, Poland; blazejmeczekalski@yahoo.com (B.M.); annamaria.szeliga@gmail.com (A.S.)
[3] Department of Gynecological Endocrinology, Warsaw Medical University, 00-315 Warsaw, Poland; ewa.rudnicka@poczta.onet.pl (E.R.); suchta.katarzyna@gmail.com (K.S.)
* Correspondence: ksmolarczyk@gmail.com; Tel.: +48-22-502-13-24

3.2.3. Lipid Profile and Hair Loss

One of the components of the metabolic syndrome is dyslipidemia. Many studies have been published examining the relationship between AA and dyslipidemia [52–54]. A meta-analysis by Kim et al. analyzed 19 studies related to dyslipidemia and AA and concluded that serum total of cholesterol, triglyceride, and low-density lipoprotein cholesterol levels in the AA group were higher, and high-density lipoprotein cholesterol values were lower compared to the control group [54]. The results are explained by an increased sensitivity to androgens in AA patients, with an underlying relationship between AA, dyslipidemia, and chronic microinflammation. Similar results were previously obtained [44,53,55], indicating that proinflammatory cytokines lead to disturbances in the serum lipid profile through changes in cholesterol transport and apolipoproteins [54]. A meta-analysis regarding alopecia and its association with coronary heart disease and cardiovascular risk factors also found a positive correlation between alopecia and an elevated serum concentration of cholesterol and triglyceride [51].

In conclusion, alopecia shows a well-established relationship with cardiovascular risks, including insulin resistance, hyperlipidemia, and hypertension, which establishes a strong correlation of hair cell loss with metabolic syndrome.

Medicina 2024, 60, 325. https://doi.org/10.3390/medicina60020325

Post-intervention

DOI: 10.7759/cureus.14617

Bariatric Surgery-Induced Telogen Effluvium (Bar SITE): Case Report and a Review of Hair Loss Following Weight Loss Surgery

Rena A. Cohen-Kurzrock [1], Philip R. Cohen [2]

1. Health Administration, Louisiana State University of Shreveport, Shreveport, USA 2. Dermatology, San Diego Family Dermatology, National City, USA

Corresponding author: Rena A. Cohen-Kurzrock, rena.cohen.kurzrock@gmail.com

Nutritional deficiencies, some of which are associated with dermatoses, occur in about half of the bariatric surgery patients. They can result from decreased levels of copper, essential fatty acid, iron, protein, selenium, vitamins (A, B1, B12, C, E, folate, and K), and zinc (acquired acrodermatitis enteropathica). They occur more frequently after malabsorptive surgical procedures (biliopancreatic diversion with duodenal switch, malabsorptive surgery, and Roux-en-Y gastric bypass) than restrictive operations (adjustable gastric band and laparoscopic sleeve gastrectomy). Life-long vitamin supplementation after surgery should include calcium, multivitamin with minerals, vitamin B12, and vitamin D. Additionally, other vitamins and trace elements for supplementation may include elemental iron, folic acid, selenium, vitamin A, and zinc [2,4].

2021 Cohen-Kurzrock et al. Cureus 13(4): e14617. DOI 10.7759/cureus.14617

Post-intervention

medicina MDPI

Review

Association of Obesity and Bariatric Surgery on Hair Health

Katarzyna Smolarczyk [1,*], Blazej Meczekalski [2], Ewa Rudnicka [3], Katarzyna Suchta [3] and Anna Szeliga [2]

[1] Department of Dermatology, Medical University of Warsaw, 02-008 Warsaw, Poland
[2] Department of Gynecological Endocrinology, Poznan University of Medical Sciences, 60-535 Poznan, Poland; blazejmeczekalski@yahoo.com (B.M.); annamaria.szeliga@gmail.com (A.S.)
[3] Department of Gynecological Endocrinology, Warsaw Medical University, 00-315 Warsaw, Poland; ewa.rudnicka@poczta.onet.pl (E.R.); suchta.katarzyna@gmail.com (K.S.)
* Correspondence: ksmolarczyk@gmail.com; Tel.: +48-22-502-13-24

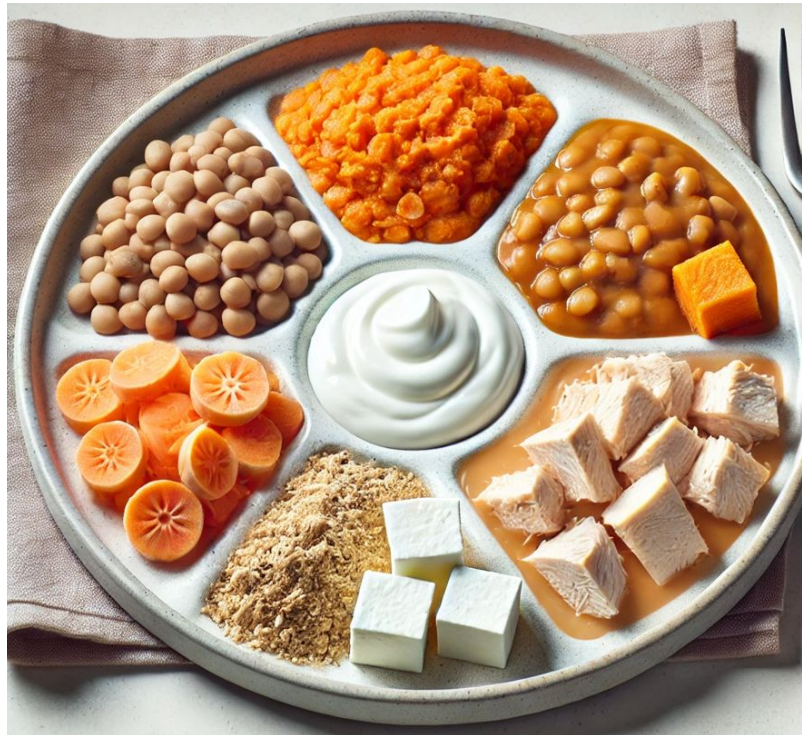
Katsogridaki et al. evaluated the prevalence of hair loss after laparoscopic sleeve gastrectomy (LSG) [11]. The authors evaluated serum parameters such as iron, zinc, folic acid, vitamin B12, total protein, and albumin before bariatric surgery and 6 months after surgery. The prevalence of hair loss was 56% after LSG, while hair loss was related to a decrease in serum zinc, iron, and vitamin B12. According to this study, preoperative monitoring and counseling of these macronutrients may be a preventive and therapeutic measure.

Ruis-Tovar et al. studied 42 obese patients before and after laparoscopic sleeve gastrectomy (LSG) and monitored the incidence of hair loss, while micronutrients were evaluated before surgery and 3, 6, and 12 months after surgery [59]. A significant association was observed between hair loss and zinc and iron levels, eventually leading to the conclusion that zinc and iron can be a good predictor of hair loss [41]. Rojas P et al. evaluated the nutritional status of zinc, iron, cooper, selenium, and visceral protein in women with different degrees of hair loss after gastric bypass or tubular gastrectomy from which it was concluded that a higher zinc and iron intake has a protective effect on hair loss at six months after surgery [60].

Medicina 2024, 60, 325. https://doi.org/10.3390/medicina60020325

Foods

Nutriente	Alimenti Ricchi (adatti post-chirurgia bariatrica)
Vitamina B12	Carne di pollo o tacchino macinata (ben cotta e sminuzzata), pesce bianco morbido (merluzzo, sogliola), yogurt greco senza zucchero, uova strapazzate, formaggi a basso contenuto di grassi (ben tollerati), integratori di B12 (se raccomandati dal medico)
Zinco	Purè di legumi (ceci, lenticchie, fagioli neri), yogurt greco senza grassi, pollo sminuzzato, tofu morbido, semi di zucca (macinati in piccole quantità), avena arricchita
Rame	Semi di girasole macinati, purè di patate dolci, lenticchie, anacardi (in piccole quantità e ben masticati o tritati), crostacei morbidi (gamberetti ben cotti e tritati), tofu morbido



Supplements

Itthipanichpong *et al. BMC Dermatology* (2020) 20:21
https://doi.org/10.1186/s12895-020-00120-z

BMC Dermatology

RESEARCH ARTICLE Open Access

Skin manifestations after bariatric surgery

Yada Itthipanichpong[1], Wilawan Damkerngsuntorn[1], Natsinee Tangkijngamvong[1], Suthep Udomsawaengsup[2], Patchaya Boonchayaanant[3], Chanat Kumtornrut[1], Stephen J. Kerr[4], Pravit Asawanonda[1] and Pawinee Rerknimitr[1*]

Conclusions

Weight loss after bariatric surgery provides an improvement in metabolic profiles. Furthermore, less patients with successful weight loss had certain skin findings. Importantly, nutritional supplement is necessary for post bariatric surgery individuals, since some skin signs might be late presentations indicating a greater degree of severity.

All patients included in this study were routinely prescribed with nutritional supplements after the surgery

- Multivitamins 1–2 tablets every day,
- Calcium 1000 – 2000 mg every day,
- Vitamin D 40,000 units every week,
- Vitamin B12 1000 mcg injection every 3 months.

Alimento a Fini Medici Speciali

autorizzato dal Ministero *"per il trattamento dietetico in soggetti post-chirurgia bariatrica"*[4]

Informazioni nutrizionali	100 grammi	Bustina (3,5 g)
Energia	1.003 KJ 236 kcal	30 KJ 7 kcal
Grassi	<0,5 g	<0,5 g
Di cui acidi grassi saturi	0,2 g	0,005 g
Carboidrati	53 g	2 g
Di cui zuccheri	4,5 g	0,1 g
Fibre	0 g	0 g
Proteine	1,4 g	0,04 g
Sale	0,06 g	0,002 g
Magnesio	13.333,3 mg	400 mg
Ferro	2166,7 mg	65 mg
Zinco	333,3 mg	10 mg
Rame	33,3 mg	1 mg
Selenio	1.833,3 mcg	55 mcg
Vitamina C	4.000 mg	120 mg
Vitamina E	3.333,3 mg	100 mg
Tiamina	333,3 mg	10 mg
Riboflavina	43,3 mg	1,3 mg
Vitamina B6	50 mg	1,5 mg
Acido pantotenico	333,3 mg	10 mg
Niacina	333,3 mg	10 mg
Vitamina A	40.000 mcg	1.200 mcg
Acido folico	13.333,3 mcg	400 mcg
Biotina	1.666,7 mcg	50 mcg
Vitamina B12	16.666,7 mcg	500 mcg
Vitamina D	5.833,3 mcg	175 mcg
Vitamina K	5.000 mcg	150 mcg

COMPLETO EQUILIBRATO DIGERIBILE

Vitamina D
175 mcg. (7000 U.I.)

Vitamina B12
500 mcg.

Ferro
65mg

Nelle bustine
il Magnesio è 400mg
anzichè 56,3mg

S.I.C.OB.

Società Italiana di Chirurgia dell'OBesità e delle malattie metaboliche

Miscibile in:
acqua, yogurt, succhi di frutta, frutta stemperata.

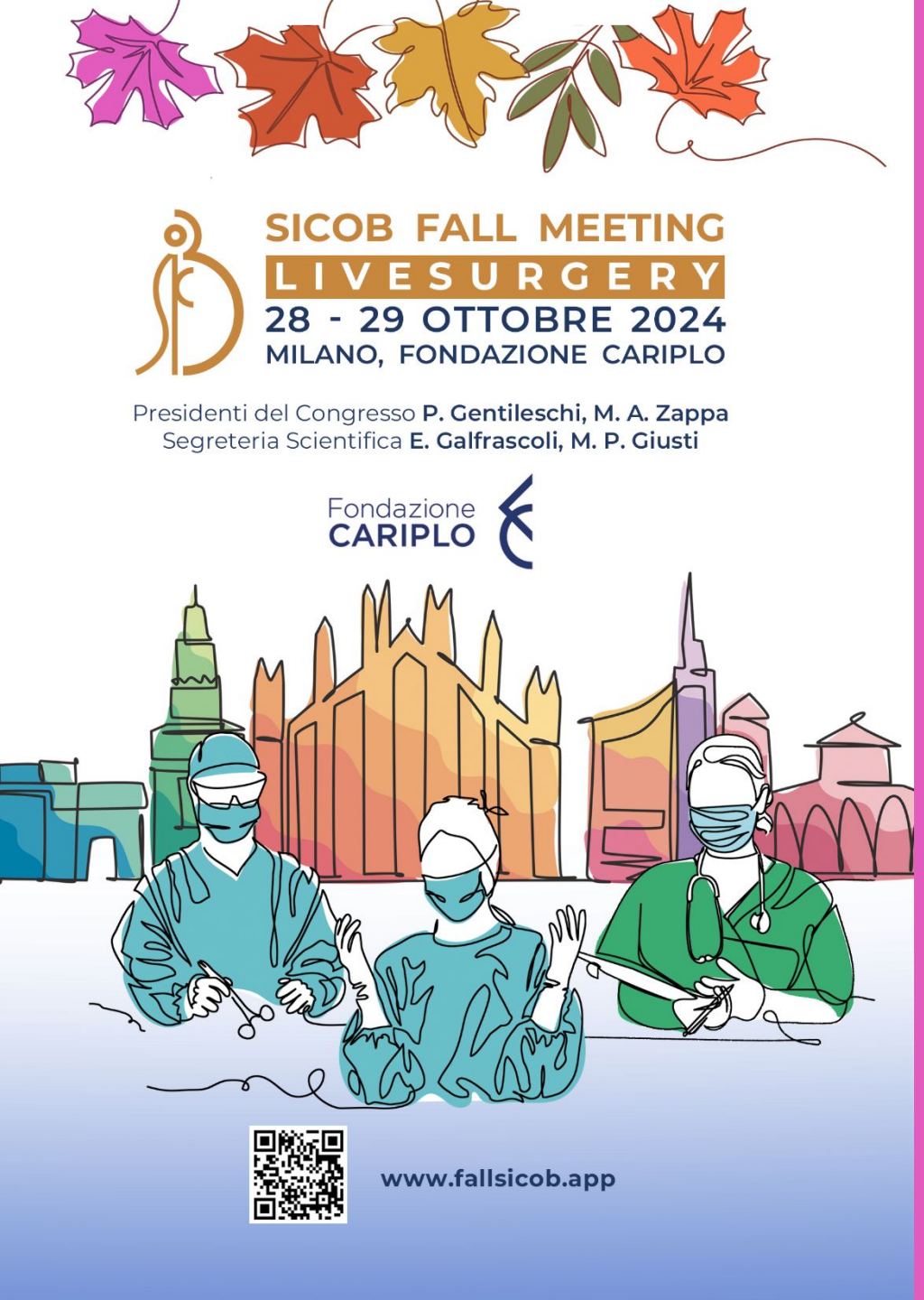
TAKE HOME MESSAGE:

Pre-intervention: preliminary laboratory (calcium, ferritin, folate, iron, vitamins A, B1, B6, B12, D 25-hydroxy) + TSH aTg, aTPO, CRP, prolactin, fasting glucose, total protein, progesterone

Pre-intervention: Lifestyle and Diet, Metabolic Syndrome (Diabete Mellitus, Hypertension, Lipid Profile)

Post-intervention: Foods + Nutritional supplements

- Multivitamins 1–2 tablets every day,
- Calcium 1000 – 2000 mg every day,
- Vitamin D 40,000 units every week,
- Vitamin B12 1000 mcg injection every 3 months



Il mio obiettivo non è aumentare la **durata** della vita, bensì la **qualità** per vivere meglio domani,

partendo da oggi stesso.

Marika Visentin
DIETISTA

Grazie per l'attenzione!