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NutrUgraft - preoperative supplementation in ultra HD liposuction with ultrasound-guided rectus abdominis fat transfer: a prospective longitudinal cohort clinical study

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Abstract

Liposuction triggers an inflammatory response as a result of surgical trauma. Preoperative dietary supplementation has been implemented to enhance recovery. The purpose of this study was to evaluate patients' perceptions of the use of preoperative dietary supplementation through a questionnaire. We conducted a prospective study of 80 healthy patients, 2 men, and 78 women, with a mean age of 34.8 years. Thirty days before surgery, all patients have prescribed the NutrUgraft protocol: CoQ10 200 mg, Dimpless 40 mg, Biointestil 300 mg, and IBS Care 100 mg. The Impact® dietary supplement was also prescribed, 1 unit daily for 7 days. On postoperative day 30, patients answered 5 objective questions: (1) How do you rate your healing? Good, fair, or poor; (2) Did you feel safer by receiving preoperative supplementation? Yes, no, or indifferent; (3) Postoperatively, your bowel: functioned normally, constipated, or had diarrhea; (4) Postoperatively, did you develop fibrosis? Yes, no, or I don't know; and (5) If undergoing another surgery in the future, would you like to receive preoperative supplementation again? Yes, no, or indifferent. Of 80 patients evaluated, 80% classified their healing as good, 90% reported feeling safer by receiving preoperative supplementation, 85% reported that their bowel functioned normally postoperatively, 80% reported not developing fibrosis, and 91.25% would like to receive supplementation again if undergoing another surgery. Based on the results, patients had a positive perception of all topics evaluated, thus highlighting the importance of dietary supplementation in the preoperative period of plastic surgery.

Keywords: Dietary supplementation. Preoperative care. Liposuction.

Introduction

Liposuction is one of the most common cosmetic surgical procedures performed in Brazil and worldwide **[1]**. High-definition (HD) liposuction, also known as HD abdominal etching, is a reliable procedure that provides more athletic results and has become a major trend among plastic surgeons and patients because it allows the surgeon to sculpt the abdomen and enhance muscle details **[2]**.

More natural aesthetic results are achieved using the ultrasound-guided rectus abdominis fat transfer (UGRAFT) technique **[3]**. Advantages of this technique include respecting the anatomical individuality of the muscles during preoperative ultrasound-guided marking, providing increased intraoperative safety to visualize the muscles and noble structures during intramuscular fat grafting, and obtaining increased thickness of the rectus abdominis muscle, thus simulating a hypertrophied muscle. In addition, the regenerative effect of the UGRAFT technique was demonstrated in a study that reported increased muscle and fat grafting volumes through measurements made on preoperative and postoperative magnetic resonance images **[4]**. In regenerative medicine, adipose tissue-derived mesenchymal stem cells are an emerging and rapidly growing field of research **[5]**. Adult stem cells are an option for cell therapy, based on findings that they have a certain degree of plasticity and potential for self-renewal and differentiation into specialized progenitors **[6,7]**.

As with any surgery, liposuction triggers a systemic inflammatory response as a result of surgical trauma. However, procedures supported by multimodal fast-track protocols have been shown to accelerate postoperative recovery without loss of patients' functional capacity compared with traditional care **[8]**. In Brazil, the ACERTO Project (Portuguese acronym for Acceleration of Complete Postoperative Recovery) is a program based on the European protocol referred to as Enhanced Recovery After Surgery (ERAS) that aims to accelerate postoperative recovery **[9]**. To improve postoperative recovery, the NutrUgraft (Nutrology applied to UGRAFT) preoperative dietary supplementation protocol has been implemented to reduce the organic response to trauma, in addition to favoring biological microenvironments that enable cell recognition and signaling cascades for neovascularization **[10]**.

The purpose of this study was to evaluate patients' perception of the NutrUgraft preoperative dietary supplementation through a questionnaire covering the following topics: healing, development of fibrosis, bowel function, perceived safety, and willingness to use preoperative supplementation again if undergoing another surgery

Methods

Study Design

It was conducted a prospective longitudinal cohort clinical study from January to December 2019 including 80 healthy patients, 2 men, and 78 women, with a mean age of 34.8 years (range, 24 to 51 years) and a mean body mass index (BMI) of 23.83 kg m-2 . All patients underwent HD liposuction with UGRAFT and were prescribed the NutrUgraft protocol to be started 30 days before the surgery: CoQ10 100 mg 1 capsule in the morning and 1 capsule in the evening, Dimpless 40 mg (Galena) 1 capsule in the evening, Biointestil 300 mg (Infinity Pharma) 1 capsule at lunch, IBS Care 100 mg (Lemma) 1 capsule in the evening. The Impact® dietary supplement (Nestle) was also prescribed, 1 unit daily for 7 days. On postoperative day 30, patients answered a questionnaire containing 5 objective questions: (1) How do you rate your healing? Good, fair, or poor; (2) Did you feel safer by receiving preoperative supplementation? Yes, no, or indifferent; (3) Postoperatively, your bowel: functioned normally, constipated, or had diarrhea; (4) Postoperatively, did you develop fibrosis? Yes, no, or I don't know; and (5) If undergoing another surgery in the future, would you like to receive preoperative supplementation again? Yes, no, or indifferent.

Ethical Approval

The study project was approved by the Research Ethics Committee of Unimed General Hospital in Santa Maria, southern Brazil (approval number 31970/8).

Results

Of the 80 patients evaluated in this study, 64 rated their healing as good (80%), 16 as fair (20%), and none classified it as poor. In the second question, 72 patients reported feeling safer by receiving preoperative dietary supplementation (90%), 8 patients answered that it was indifferent (10%), and none answered that they did not feel safer.

In the third question, 68 patients reported that their bowel functioned normally postoperatively (85%), 12 patients answered that they had constipation (15%), and none reported diarrhea. In the fourth question, 64 patients reported not developing fibrosis (80%), 8 patients answered that they did not know if they had developed it or not (10%), and 8 reported that they had fibrosis in the abdominal region (10%).

In the fifth question, 73 patients answered that they would like to receive supplementation again if undergoing another surgery (91.25%), 7 patients answered that it would be indifferent (8.75%), and none answered that they would not like to receive preoperative dietary supplementation.

Discussion

Nutritional status directly influences perioperative outcomes in surgical patients and is associated with delayed wound healing and increased infection, morbidity, and mortality rates **[11]**. According to the ACERTO protocol **[9]**, practices such as preoperative and postoperative fasts conventionally required for surgery can worsen the organic response to trauma and nutritional status, predisposing patients to a decrease in the immune response **[12]**. Although widely used in clinical practice, BMI underestimates the diagnosis of malnutrition in surgical patients **[12]**. For this reason, a more complete and reliable preoperative assessment of body composition is required using methods such as bioelectrical impedance analysis (BIA) and/or dual-energy X-ray absorptiometry (DXA).

Surgical patients should receive an adequate amount of calories and proteins to achieve the goal of immunomodulation **[12]**. Adequate nutrition favors healing and reduces postoperative metabolic impact and complications **[12-14]**. A nutrition care plan before surgery, with adequate intake of micronutrients, macronutrients, and dietary supplements, should be a routine practice in patient care **[8,9]**.

The preoperative use of NutrUgraft dietary supplementation associated with ultra HD liposuction with UGRAFT showed a significant improvement in the perception of the inflammatory pattern, bowel function, healing, and the sense of well-being. A probable explanation for the improved results is the preoperative identification of inflammatory factors with adequate dietary supplementation and nutritional approach to minimize the responses triggered by surgical trauma **[14]**.

Conclusion

NutrUgraft preoperative supplementation provided considerable postoperative benefits to patients undergoing ultra HD liposuction with UGRAFT. Based on the results of the questionnaire applied in this study, the established protocol produced a positive perception of all topics evaluated, thus highlighting the importance of nutritional support in the preoperative period of plastic surgery.

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Ethical Approval

The study project was approved by the Research Ethics Committee of Unimed General Hospital in Santa Maria, southern Brazil (approval number 31970/8).

Informed consent

Not applicable.

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Data sharing statement

No additional data are available.

Conflict of interest

The authors declare no conflict of interest.

Similarity check

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References

1. International Society of Aesthetic Plastic Surgery (ISAPS). ISAPS Global Statistics [Internet]. 2020. Available from: https://www.isaps.org/wp-content/uploads/2022/01/ISAPSGlobal-Survey_2020.pdf
2. Viaro MSS, Danilla S, Cansanção AL, Viaro PS. Abdominal definition liposuction. Brazilian Journal of Plastic Surgery. Original Article - Year2019 - Volume34 - Issue 3. http://www.dx.doi.org/10.5935/2177-1235.2019RBCP0205
3. Viaro MSS, Danilla S, Cansanção AL, Viaro PS. Ultra HD Liposuction: Enhancing Abdominal Etching Using Ultrasound-Guided Rectus Abdominis Fat Transfer (UGRAFT). Plast Reconstr Surg Glob Open. 2020 May 26;8(5): e2818. DOI: 10.1097/GOX.0000000000002818. PMID: 33133894; PMCID: PMC7572093. https://journals.lww.com/prsgo/Fulltext/2020/05000/Ultra_HD_Liposuction__Enhancing_Abdominal_Etching.39.aspx
4. Viaro MS. Rectus abdominis fat transfer: a change in abdominal surgery concept. ISAPS World Congress, 2022, Istanbul.
5. Zotarelli Filho IJ. Investigation of the potential use in cell therapy of mesenchymal stem cells cultured in chitosan-collagenogenipin matrices, in petakas and after cryopreservation. Sao Jose do Rio Preto. 2018. 129f. Thesis (Doctorate in Molecular Biophysics) - Institute of Biosciences, Letters and Exact Sciences of the São Paulo State University "Júlio de Mesquita Filho", Campus of São José do Rio Preto. https://repositorio.unesp.br/bitstream/handle/11449/180311/zotarellifilho_ij_dr_sjrp.pdf?sequence=3&isAllowed=y
6. Baksh D, Song L, Tuan RS. Adult mesenchymal stem cells: characterization, differentiation, and application in cell and gene therapy. J. Cell. mol. Med., 2004, 8, 3: 301-316. https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1582-4934.2004.tb00320.x
7. Chiono V, Pulieri E, Vozzi G, Ciardelli G, Ahluwalia A, Giusti P. Genipin-crosslinked chitosan/gelatin blends for biomedical applications. J Mater Sci Mater Med; 2008, 19: 889– 898.
8. Kehlet H. Fast-track colorectal surgery. Lancet. 2008 Mar 8;371(9615):791-3. doi: 10.1016/S0140-6736(08)60357-8. PMID: 18328911. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(08)60357-8/fulltext

9. CORRECT of perioperative nutritional interventions in elective general surgery. Magazine of the Brazilian College of Surgeons. 2017; 44(6): 633-648. https://www.scielo.br/j/rcbc/a/QrQS3Xxq5ztxp5RtCwr3JNz/?lang=pt&format=pdf
10. Boccafoschi F, Habermehl J, Vesentini, S.; Mantovani, D. Biological performances of collagen-based scaffolds for vascular tissue engineering. Biomatrices; 2005, 26(35): 7410-7417. https://www.sciencedirect.com/science/article/abs/pii/S0142961205004643?via=ihub
11. Wind J, Polle SW, Fung Kon Jin PH, Dejong CH, von Meyenfeldt MF, Ubbink DT, Gouma DJ, Bemelman WA; Laparoscopy and/or Fast Track Multimodal Management Versus Standard Care (LAFA) Study Group; Enhanced Recovery after Surgery (ERAS) Group. Systematic review of enhanced recovery programs in colonic surgery. Br J Surg. 2006 Jul;93(7):800-9. doi: 10.1002/bjs.5384. PMID: 16775831.
12. Evans DC, Martindale RG, Kiraly LN, Jones CM. Nutrition optimization prior to surgery. Nutri Clin Pract. 2014 Feb;29(1):10-21. doi: 10.1177/0884533613517006. Epub 2013 Dec 17. PMID: 24347529. https://aspenjournals.onlinelibrary.wiley.com/doi/abs/10.1177/0884533613517006
13. Correia MITD, Caiaffa WT, Waitzberg DL. Brazilian Survey on Hospital Nutritional Assessment (IBRANUTRI): Methodology of a multicentric study. Rev. bras. nourish. clin; 1998, 13(1): 30-40, Jan.-Mar.
14. Dock-Nascimento DB, Aguilar-Nascimento JE, Balster MMS. Body mass index and theoretical weight underestimate the diagnosis of malnutrition in surgical patients. Rev. bras. nourish. clin; 2005, 20(4): 251-254, oct.-dic.