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## SHORT COMMUNICATION

### **Persistent overcorrection after incorrect lipofilling treatment – A case report**

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#### **ABSTRACT**

Lipofilling (lipotransfer) is a method of autogenous (own) fat tissue graft, used in aesthetic medicine and plastic surgery to correct face, breasts, hands, buttocks. It is a treatment with a relatively high safety profile, distinguished by low invasiveness and low risk of complications. Its greatest advantage is the use of its own fat tissue, which minimises the occurrence of allergic reactions and the possibility of biofilm formation. White adipose tissue can be easily obtained and contains a relatively large amount of mesenchymal stem cells, what significantly affects the results obtained in this procedure - skin more tense, moisturised, looking younger. An important disadvantage of the procedure is the inability to precisely predict the final effect of the procedure, the overcorrection, the occurrence of fat cysts. The presented case shows persistent overcorrection of adipose tissue in the nasolabial folds of a 52-year-old patient as a complication after improper lipofilling.

**Keywords:** lipofilling, white adipose tissue, mesenchymal stem cells

## **1. INTRODUCTION**

The occurrence of obesity according to the World Health Organisation has tripled over the last 40 years. This contributed to the growing demand for liposuction and surgical operations that contour the body. At the same time, the views and understanding of fat tissue have changed, which from waste tissue has become an important and potential source of cells for reconstructive medicine [1]. White adipose tissue for many years was considered to be an energy storage of the body, consisting of a constant number of cells. It is now known that it is metabolically active, and the cells constituting its main mass - adipocytes produce many cytokines, such as leptin, adiponectin, resistin, visfatin, tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), interleukin-6 (IL-6) [2].

The white adipose tissue consists of mature adipocytes, stromal cells (SVF-Stromal Vascular Fraction), blood vessels, lymph vessels, nerves. The SVF fractions are mesenchymal adipose stem cells (ASCs), pre-adipocytes, endothelial cells, pericytes, macrophages and fibroblasts. The ASC phenotype was defined as CD34<sup>+</sup> CD45<sup>-</sup> CD31<sup>-</sup> CD273a<sup>-</sup> CD73<sup>+</sup> CD13<sup>+</sup> and presented in 2013 in the conjoint statement of the International Federation for Adipose Therapeutics (IFATS) and the International Society for Cellular Therapy (ISCT) [3]. ASCs are probably located in the immediate vicinity of blood vessels. Adipose tissue is richly vascularised and it is thought that each adipocyte is close to the capillary, what allows for quick replacement of metabolic products. The increase in adipose tissue requires the formation of new blood vessels. ASCs can release Vascular Endothelial Growth Factor (VEGF), thus affecting the process of angiogenesis [4].

White adipose tissue occurs in the subcutaneous tissue and in the environment of internal organs, performing a protective function, among others for the heart and kidneys. Subcutaneous fat tissue can be easily obtained in a minimally invasive liposuction procedure. This method is well tolerated, safe and inexpensive. The advantage of the adipose tissue obtained this way is also a relatively large number of stem cells compared, e.g., to the bone marrow. The number of stem cells in the adipose cells can be from 1 to 10% [5, 6].

## **2. LIPOFILLING**

Lipofilling (lipostransfer) is a method of autogenous (own) adipose tissue transplantation. This procedure was first described 100 years ago by Lexer [7]. Since the 1980s, thanks to the development of liposuction, autologous fat grafts have become a popular procedure used in the correction of the face, breast, hand or buttocks [8]. In 2001 Coleman developed a standardised procedure for fat grafts that improved the survival of implants [8]. The lipofilling treatment is performed under local infiltration anesthesia using specially designed cannulas. The extracted adipose tissue is then centrifuged or sedimented [9, 10].

Currently, devices are used to prepare high quality material derived from liposuction. Thanks to the use of appropriate filters, the material is free of old and damaged adipose cells, and the obtained fraction contains the youngest adipose cells and ASC. It is also important to limit the exposure of the acquired tissue to the air, which minimises the risk of contamination or mechanical damage. Such prepared material increases the effectiveness of the treatment and durability of the effects without the need to use the material in excess.

About 60-70% of the volume of the transplanted adipose tissue is incorporated into the application site, giving a lasting fill effect [11, 12].

Lipofilling is a treatment with a relatively high safety profile, distinguished by low invasiveness and low risk of complications. Its greatest advantage is the use of autologous tissue, i.e. the lack of use of extraneous implants such as hyaluronic acid or calcium hydroxyapatite for the body. Autologous material does not create any risk of allergic reactions and can be used anywhere. Significant procedural disadvantages include the inability to precisely predict the final effect of surgery, due to the death of non-vascular tissue, the occurrence of fat cysts, overcorrection, inequalities and greater risk of bacterial complications compared to standard factory implants [13, 14]. Most likely, due to the greater invasiveness of the procedure, a larger percentage of vascular complications was also described. Convalescence after lipofilling takes about 2 weeks. Bruises and edema are more severe and last longer than using procedures with factory-made implants for injection [7, 13, 15].

Indications for the procedure are: cheek volume defects, loss of facial contours, nasolabial folds, tears trough, atrophic scars (e. g. acne scars), postoperative scars, skin laxity. Lipofilling can also be used to reconstruct breasts after mastectomy or to enlarge them, as well as to model buttocks. The effects of the treatment are visible immediately after the surgery, however, due to the need for overcorrection, the final effect appears after a few weeks. The skin is more tense and moisturised, it looks younger, the body becomes naturally modelled [7, 13].

Contraindications to the procedure are: autoimmune diseases, blood coagulation disorders, breast diseases requiring histopathological verification, chronic infections, hypersensitivity to anesthetics, chronic kidney and liver diseases [7, 13, 15].

### **3. CASE REPORT**

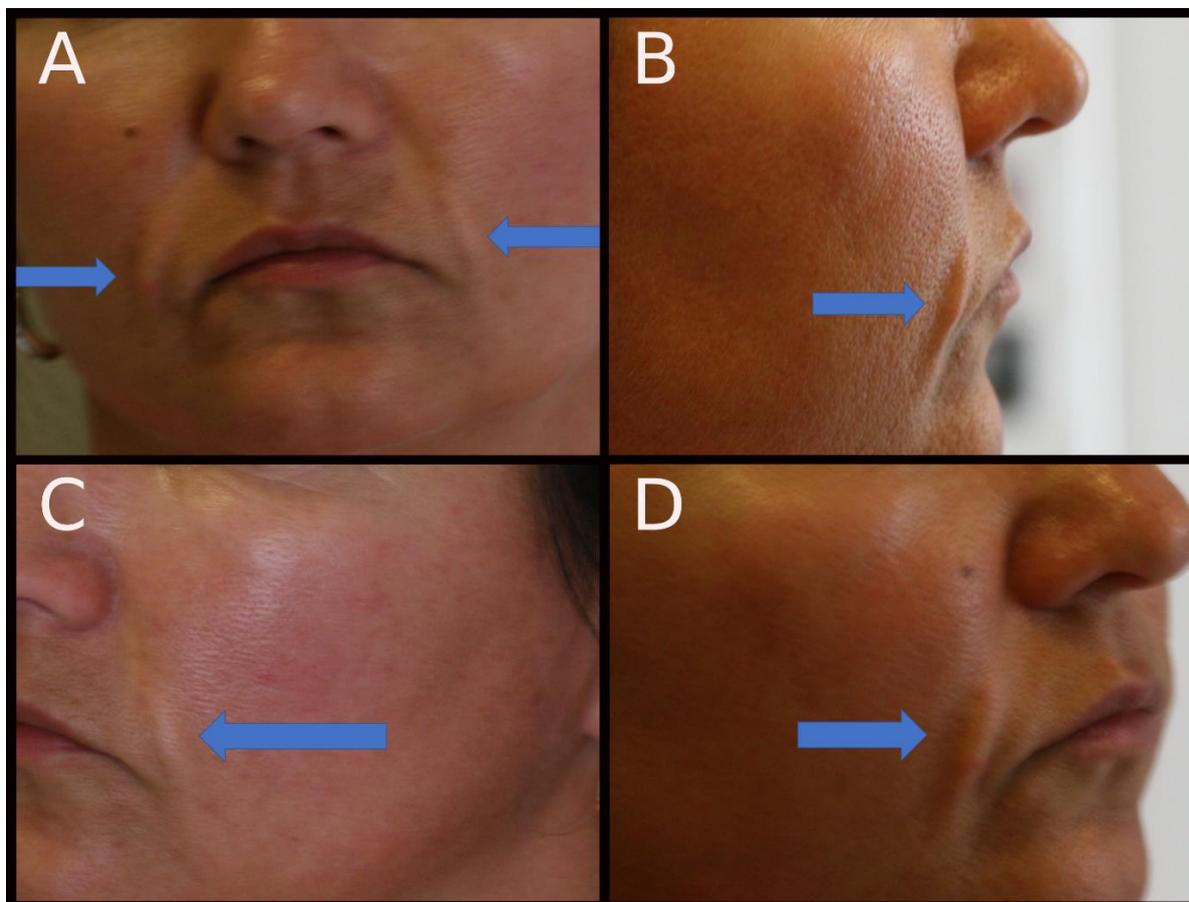
A 52-year-old patient, without a significant past history, reported to the Dermamed Medical Center about 12 months after lipofilling of the nasolabial folds. She did not provide documentation regarding the procedure carried out.

Physical examination revealed a significant excess of applied material in the nasolabial folds on both sides. The clinical status is illustrated by Figure 1.

Since the patient did not provide any documentation, it can not be said which method was used. If a device for separating the removed adipose tissue was used, the procedure should have been performed avoiding a visible overcorrection during the administration of the material due to the relatively small resorption of the graft implanted. With the possible lack of satisfaction of the patient, the treatment could be repeated after 2-3 months.

It should also be asked whether to correct the nasolabial folds in this case the lipofilling method was appropriate? Relatively shallow folds of a mimic, not gravitational nature, pose a high risk of overcorrection when the material used is adipose tissue. It seems that in this case the use of another material would be less risky and possibly easier to correct, in case of a potential complication.

Due to the location of the overcorrection, no treatment was undertaken to remove excess adipose tissue. The risk of developing disfiguring scars and high risk of damage to the motor nerves in this area were the reasons for the resignation from surgery.



**Figure 1.** **A:** *en face* projection – visible overcorrection in the nasolabial folds; larger deposit on the right side; **B** and **D:** right profile in two projections – visible overcorrection; **C:** left profile – overcorrection in the left nasolabial fold. The arrows indicate the places of overcorrection.

#### 4. CONCLUSIONS

Lipofilling is an excellent and minimally invasive method used in aesthetic medicine and plastic surgery. Our own fat is one of the best filling and modelling materials for the body, primarily due to the immunological safety and the lack of biofilm. Along with adipose tissue, mesenchymal stem cells of adipose tissue are transplanted, which results in the firming and rejuvenating effect of the skin. However, it is important to remember the general rules for the use of fillers in certain areas and the specificity of adipose tissue used for lipofilling, so as not to cause adverse effects to the patient.

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