



IMMUNOLOGICAL FACTORS AS PREDICTORS OF COMPLICATIONS AFTER LIPOFILLING

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Introduction: Autologous fat grafting (lipofilling) is widely used in reconstructive and aesthetic surgery; however, variability in clinical outcomes remains a significant challenge. Recent evidence suggests that, beyond surgical technique, the success of fat graft engraftment is largely influenced by the patient's immunological status and the presence of subclinical inflammation.

Aim: To evaluate the role of systemic and cellular immune parameters as predictors of adverse outcomes following lipofilling procedures.

Materials and Methods: A clinical and immunological study was conducted in patients undergoing lipofilling in different anatomical regions. Preoperative assessment included analysis of cellular immunity (CD3⁺, CD4⁺, CD8⁺, NK cells) and serum inflammatory markers (IL-6, TNF- α , TGF- β 1, IL-10, CRP). Clinical outcomes were analyzed and correlated with immunological parameters.

Results: Patients with unfavorable outcomes demonstrated signs of pre-existing subclinical immune imbalance. These included elevated levels of proinflammatory cytokines (IL-6, TNF- α), increased TGF- β 1 concentrations, and higher CRP levels. Additionally, an imbalance in cellular immunity was observed, characterized by increased CD4⁺ lymphocytes and reduced CD8⁺ and NK cell counts, resulting in an elevated CD4⁺/CD8⁺ ratio. The highest rate of complications was associated with lipofilling of the mammary glands, which



corresponded to more pronounced immunological alterations. In contrast, facial lipofilling showed relatively favorable outcomes with lower complication rates.

Conclusion: Preoperative immune status plays a critical role in determining the outcome of lipofilling procedures. Identification of immunological risk factors may improve patient selection, allow for individualized perioperative management, and contribute to the development of predictive models for complication prevention.

Literature

1. Bozhok A. A., Korableva N. P., Lebedeva Yu. V., et al. Lipofilling in plastic and reconstructive surgery of the mammary gland: A tutorial. – Saint Petersburg: Saint Petersburg State Pediatric Medical University, Ministry of Health of the Russian Federation, 2023. – 52 p. – (Pediatric University Library). ISBN: 978-5-907649-50-7.
2. Galitskaya Yu. I., Dundarov Z. A., Evseenko D. A., Adamovich D. M. Analysis of the possibilities and prospects of the lipofilling method in patients with atrophic cicatricial changes in the skin: a literature review // *Surgery. Eastern Europe*. – 2023. – Vol. 12, No. 2. – P. 176–185. DOI: 10.34883/PI.2023.12.2.020.
3. De Oliveira G., Taha M., Da Silva M. et al. Chronic inflammation as a barrier to adipose tissue regeneration: role of macrophages and cytokines // *Front Immunol*. 2020;11:576234. DOI: 10.3389/fimmu.2020.576234.
4. Moak T.N., Ebersole T.G., Tandon D. et al. Assessing clinical outcomes in autologous fat grafting: a current literature review // *Aesthetic Surgery Journal*. – 2021. – Vol. 41, Suppl. 1. – P. S50–S60. DOI: 10.1093/asj/sjab148.
5. Park J.H., Lee S.Y., Choi H.G. et al. Anatomic considerations and complication patterns in gluteal and breast lipofilling: A systematic review // *Aesthetic Plast Surg*. 2021;45(2):482–490. DOI: 10.1007/s00266-020-01967-0.