

MEDICAL ERRORS IN COSMETOLOGY SERVICES AND THEIR FORENSIC-MEDICAL ANALYSIS

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Abstract

In recent years, the rapid development of aesthetic medicine and cosmetology has led to a significant increase in the number of cosmetological invasive procedures. Minimally invasive procedures such as botulinum therapy, contour plastic surgery, dermal fillers, mesotherapy, biorevitalization, plasmolifting, chemical peeling, laser technologies, and thread lifting have become increasingly widespread, and the scope of their application continues to expand annually. Despite being considered relatively safe, these procedures are increasingly associated with both local and systemic complications in clinical practice. In certain cases, such complications may cause serious harm to patient health, resulting in aesthetic defects, functional disorders, psycho-emotional disturbances, and even life-threatening conditions.

This article analyzes the clinical, morphological, and functional characteristics of the major complications observed after cosmetological invasive procedures. In addition, the mechanisms of complication development, risk factors, forensic medical significance, and objective assessment criteria are discussed. Scientifically grounded approaches to solving the problems encountered in forensic medical evaluation of cosmetological complications are also presented.

Keywords: forensic medicine, cosmetology, invasive procedures, dermal fillers, botulinum therapy, aesthetic defects, tissue necrosis, medical law, forensic medical examination, cosmetological complications.

Introduction: Currently, aesthetic medicine and cosmetology represent one of the fastest-growing fields of modern medicine. The increasing interest of the population in improving physical appearance, along with the influence of social media, has significantly increased the demand for cosmetological services. In particular, minimally invasive procedures aimed at facial contour correction, rejuvenation, wrinkle reduction, and improvement of skin condition have become highly popular.

The main advantages of invasive cosmetological procedures include:

- rapid aesthetic results;
- performance without surgical intervention;
- short rehabilitation period;
- outpatient implementation.

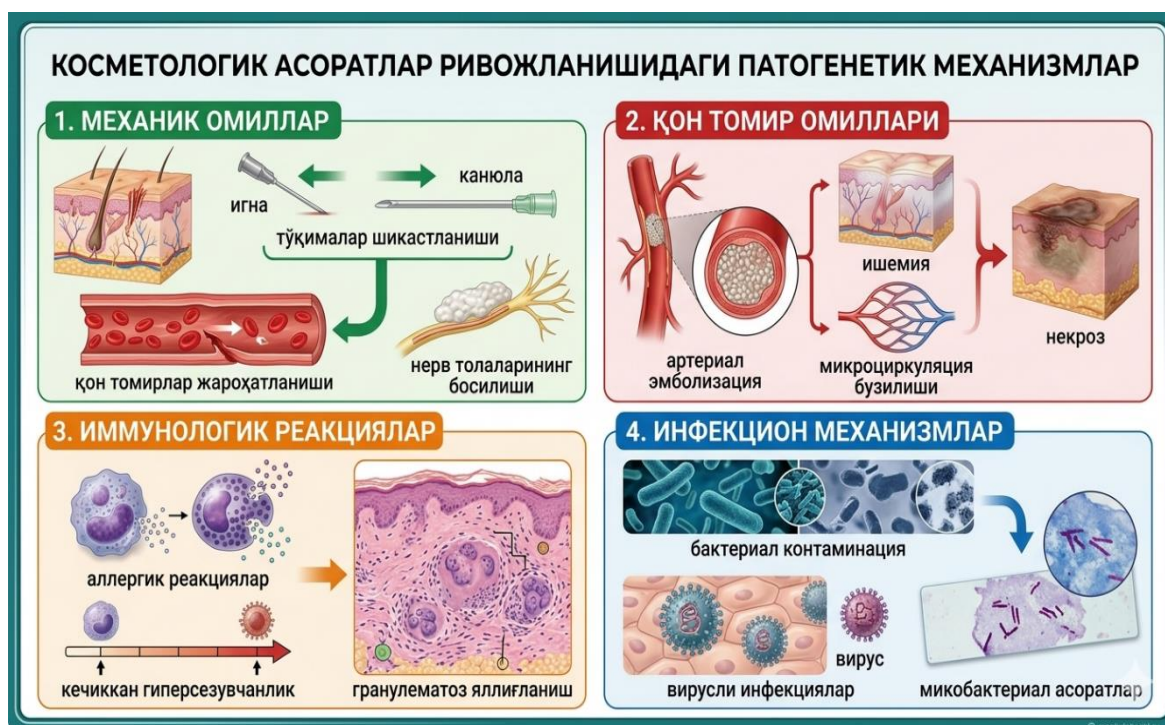
However, these procedures may also lead to various complications due to:

- mechanical tissue injury;
- vascular trauma;
- infection;
- immunological reactions;
- toxic effects of pharmaceutical agents.

In recent years, the number of medical-legal disputes and forensic investigations related to complications following cosmetological procedures has steadily increased. This situation necessitates an in-depth forensic medical study of cosmetological interventions and their consequences.

Several pathogenetic mechanisms participate in the development of cosmetological complications.

Main Complications and Their Forensic Medical Significance



Infectious Complications

Infectious complications are among the most common adverse outcomes in cosmetological practice. They usually occur due to:

- violation of aseptic and antiseptic rules;

- use of non-sterile instruments;
- application of unlicensed preparations;
- insufficient professional qualifications.

Clinically, these complications may manifest as:

- abscesses;
- phlegmon;
- lymphangitis;
- sepsis.

Forensic Medical Significance

Infectious complications are important in assessing:

- the quality of medical care;
- compliance with sanitary-hygienic standards;
- correctness of specialist actions.

Vascular Complications

Injection of dermal fillers into blood vessels may lead to severe complications.

The most dangerous conditions include:

- central retinal artery embolism;
- occlusion of facial arteries;
- tissue ischemia;
- skin necrosis.

Morphological Changes

The following pathological changes may be observed:

- coagulative necrosis;
- microangiopathy;
- endothelial damage;
- hemorrhagic infiltration.

Forensic Medical Significance

In such cases, the following factors play a central role in expert evaluation:

- injection technique;
- depth of filler administration;
- level of anatomical knowledge of the specialist.

Conclusion: Complications arising after cosmetological invasive procedures represent one of the most relevant and rapidly developing areas of modern forensic medical expertise. The significant increase in minimally invasive procedures in aesthetic medicine has resulted not only in the expansion of cosmetological services but also in the

emergence of new medical-legal disputes, patient safety concerns, and challenges related to forensic medical assessment.

The study results demonstrated that mechanical, vascular, immunological, and infectious factors are closely interconnected in the development of complications following cosmetological invasive procedures. It was established that the development of these complications largely depends on the technique of procedure performance, specialist qualifications, compliance with sanitary-hygienic standards, quality of preparations used, and individual characteristics of the patient's body.

Future research aimed at studying the molecular-morphological mechanisms of complications after cosmetological invasive procedures, as well as the application of digital visualization technologies and artificial intelligence-based diagnostic systems, appears highly promising for expanding the possibilities of forensic medical evaluation.

References

1. Алимов Х.А., Юлдашев Б.Т. Суд тиббиёти асослари. — Тошкент: Ўзбекистон миллий энциклопедияси, 2018. — 456 б.
2. Попов В.Л. Судебная медицина. — Санкт-Петербург: Питер, 2019. — 608 с.
3. Томилин В.В. Судебно-медицинская экспертиза врачебных ошибок. — Москва: Медицина, 2017. — 384 с.
4. Пиголкин Ю.И., Дубровин И.А. Судебно-медицинская оценка дефектов оказания медицинской помощи. — Москва: ГЭОТАР-Медиа, 2020. — 312 с.
5. DiMaio V.J.M., DiMaio D. Forensic Pathology. — 3rd ed. — Boca Raton: CRC Press, 2021. — 680 p.
6. Saukko P., Knight B. Knight's Forensic Pathology. — 4th ed. — London: CRC Press, 2016. — 768 p.
7. Coleman S.R., Grover R. The Anatomy of the Aging Face: Volume Loss and Changes in 3-Dimensional Topography // Aesthetic Surgery Journal. — 2006. — Vol. 26, №1. — P. 4–9.
8. Beleznav K., Carruthers J.D.A., Humphrey S., Jones D. Avoiding and Treating Blindness From Fillers: A Review of the World Literature // Dermatologic Surgery. — 2015. — Vol. 41, №10. — P. 1097–1117.
9. Kim J.E., Sykes J.M. Hyaluronic Acid Fillers: History and Overview // Facial Plastic Surgery. — 2011. — Vol. 27, №6. — P. 523–528.
10. Signorini M., Liew S., Sundaram H. et al. Global Aesthetics Consensus: Avoidance and Management of Complications from Hyaluronic Acid Fillers // Plastic and Reconstructive Surgery. — 2016. — Vol. 137, №6. — P. 961e–971e.
11. Beer K. Complications in Cosmetic Dermatology. — Berlin: Springer, 2014. — 420 p.

12. Hanke C.W., Bernstein G., Bullock S. Safety of Soft Tissue Fillers // *Dermatologic Surgery*. — 2015. — Vol. 41. — P. S373–S388.
13. Hexsel D., Hexsel C. *Botulinum Toxin in Clinical Dermatology*. — New York: CRC Press, 2018. — 512 p.
14. Urdiales-Gálvez F., Delgado N.E., Figueiredo V. et al. Treatment of Soft Tissue Filler Complications: Expert Consensus Recommendations // *Aesthetic Plastic Surgery*. — 2018. — Vol. 42, №2. — P. 498–510.
15. World Health Organization. *Patient Safety: Global Action on Patient Safety Report*. — Geneva: WHO, 2021. — 156 p.
16. American Society for Dermatologic Surgery. *Guidelines for Soft-Tissue Augmentation and Cosmetic Procedures*. — Chicago, 2020.
17. Gold M.H., Biron J.A. Lasers and Energy Devices for Skin Rejuvenation and Complications // *Journal of Cosmetic Dermatology*. — 2019. — Vol. 18, №4. — P. 1023–1032.
18. Rzany B., DeLorenzi C. Understanding, Avoiding, and Managing Severe Filler Complications // *Plastic and Reconstructive Surgery*. — 2015. — Vol. 136, №5S. — P. 196S–203S.
19. Cotofana S., Schenck T.L., Trevidic P. Anatomy of the Facial Danger Zones in Aesthetic Medicine // *Plastic and Reconstructive Surgery*. — 2017. — Vol. 139, №1. — P. 50e–58e.
20. Lazzeri D., Agostini T., Figus M. et al. Blindness Following Cosmetic Injections of the Face // *Plastic and Reconstructive Surgery*. — 2012. — Vol. 129, №4. — P. 995–1012.
21. Goodman G.J., Clague M.D. A Review of Tissue Necrosis Following Hyaluronic Acid Injection // *Journal of Cosmetic and Laser Therapy*. — 2018. — Vol. 20, №4. — P. 204–215.
22. Landau M., Fagien S. Science of Hyaluronic Acid Beyond Filling: Fibroblasts and Their Response to the Extracellular Matrix // *Plastic and Reconstructive Surgery*. — 2015. — Vol. 136, №5S. — P. 188S–195S.