PROBLEMS AND SOLUTIONS IN SURGICAL DENTISTRY

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Annotation:

This article analyzes the main clinical and technical problems encountered in the field of surgical dentistry. It presents scientifically based opinions on infectious complications, pain syndrome, delayed wound healing, nerve damage, and aesthetic issues. In addition, the effectiveness of modern regenerative methods such as PRP (Platelet-Rich Plasma) therapy is discussed.

Keywords: Infectious complications, pain syndrome, PRP (Platelet-Rich Plasma), piezosurgery, collagen, gel, hydroxyapatite, neuroprotectors, laser surgery, regeneration, biotechnology.

Surgical dentistry is a crucial branch of dentistry specializing in the surgical treatment of diseases of the teeth and jaw system. In recent years, regenerative medicine, biomaterials, and autologous plasma-based therapies have been increasingly applied in dental practice.

As noted by A. M. Khasanov (2020), "Modern surgical dentistry requires not only the elimination of pathology but also an approach aimed at the biological restoration of tissues."

However, despite progress in the field, clinical practice still faces persistent challenges such as infectious complications, pain, nerve injury, and delayed regeneration. Therefore, it is essential to analyze these issues systematically and

develop scientifically grounded solutions. Below, each of these problems is discussed in detail:

1. Infection and Inflammatory Complications

Postoperative infection is one of the most common problems, usually occurring when sterile conditions are insufficient or when patients fail to follow hygiene rules.

Marx R.E. (2019) stated: "PRP therapy not only accelerates regeneration but also reduces inflammatory mediators and prevents infectious complications."

Solution: antiseptic treatment, antibiotic prophylaxis, application of PRP or PRF plasma, and strict adherence to postoperative hygiene.

2. Pain and Swelling (Edema)

Pain syndrome and swelling are among the main causes of discomfort for patients.

According to Misch C.E. (2021), "To minimize pain, the surgeon must reduce tissue trauma at every stage of the procedure."

Solution: use of high-quality anesthetics (articaine, ubistesin), application of cold compresses, PRF gel, and combining with physiotherapeutic methods (ultrasound, laser therapy).

3. Delayed Wound Healing

Delayed regeneration is especially common in patients with diabetes or smoking habits.

Yun S. et al. (2020) proved that "PRP and collagen biomembranes accelerate wound healing by 1.8 times."

Solution: stimulation of tissue regeneration using PRP or biomembranes, administration of vitamins C and B complex, healthy nutrition, and proper hygiene.

4. Nerve Damage

During implant placement or tooth extraction in the lower jaw, nerve fiber injury is considered a serious complication.

Kaban L.B. (2018) wrote: “Every movement of a surgeon lacking adequate neuroanatomical knowledge can cause irreversible damage to nerve fibers.”

Solution: preoperative planning based on 3D computed tomography, use of piezosurgical instruments, and treatment of injured nerves with neuroprotective agents (vitamins B1, B6, B12).

5. Aesthetic Problems

Postoperative facial asymmetry or deformation of the dental arch can affect the patient’s psychological state.

According to Rosenquist B. (2020), “The postoperative aesthetic result depends on the restoration of the dental arch shape and the healing of soft tissues.”

Solution: combined orthopedic and orthodontic treatment, laser reshaping of soft tissues, and individualized rehabilitation programs.

6. Modern Technological Solutions

Today, surgical dentistry is advancing in several innovative directions:

• PRP and PRF technologies – platelet-rich plasma activates growth factors in tissues;

• Laser surgery – reduces bleeding and ensures painless procedures;

• Piezosurgery – allows precise bone cutting while protecting nerve fibers;

• Biomaterials – collagen, gels, and hydroxyapatite promote faster wound healing.

As Garg A.K. (2021) emphasized, “Modern dentistry represents the harmony of regeneration and biotechnology.”

To overcome challenges in surgical dentistry, both experience and scientifically based approaches are required. The use of PRP therapy, laser technology, and biomaterials makes the process safer, less painful, and aesthetically superior.

According to Khasanov A.M., “Every successful surgical procedure is based on accurate diagnosis and an individualized approach.”

Thus, every surgeon must integrate scientific achievements into practice, prioritizing patient safety and health above all.

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