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RISKS OF INFLAMMATORY PROCESSES DURING PERIODONTAL SURGERY: PREVENTION OF PERIOSTITIS

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Abstract: postoperative inflammatory complications in periodontal surgery are a serious problem in the practice of a periodontist. According to clinical studies, postoperative complications were assessed as moderate or severe in only 5.5% of cases. The frequency of postoperative infections is 2%. Regression analysis showed that bone surgeries are three times more likely to cause complications in the form of bleeding, infection, edema, or adverse tissue changes compared with purely mucogyngival surgeries. The paper considers risk factors for the development of periostitis and inflammatory processes, as well as modern methods of prevention.

Keywords: periodontal surgery, periostitis, postoperative complications, infection, flap surgery, prevention.

Periodontal surgeries, including flap surgeries, bone grafting, recession correction surgeries, and targeted tissue regeneration, are an integral part of the treatment of periodontal diseases. Despite the high effectiveness of these interventions, there is a risk of postoperative inflammatory complications, among which periostitis occupies a special place. In my clinical practice, periostitis after periodontal surgery manifests itself as inflammation of the periosteum with the formation of edema, pain and purulent discharge. According to international studies, postoperative infections are rare, with a prevalence of 2%. However, bone surgery significantly increases the risk of complications. In the practice of our colleagues, understanding risk factors and applying modern prevention protocols are critically important to minimize postoperative complications. In our research, an integrated approach to preoperative preparation, surgical technique, and postoperative management significantly reduces the incidence of periostitis and other inflammatory processes. According to clinical data, periodontal surgeries are classified into several main types. Flap operations and osseous surgery involve exfoliation of the mucoperiosteal flap, removal of granulations, subgingival deposits, and correction of bone defects. In my practice, these operations are associated with the highest risk of periostitis due to periosteal injury. Mucogingival surgery includes operations to correct recessions, deepen the vestibule of the oral cavity, and plasticize the bridles. Plastic surgery of soft tissues is aimed at aesthetic correction of the gingival contour. Regenerative procedures include bone grafting, targeted tissue regeneration using membranes and biological materials. According to a multifactorial analysis, bone surgeries are three times more likely to cause complications of bleeding, infection, edema, or adverse tissue changes compared to purely mucogyngival surgeries. In the practice of our colleagues, the duration of surgery was statistically significant for both complications and pain. Periostitis is an inflammation of the periosteum that occurs as a result of infection entering the periosteum during or after surgery. In my practice, periostitis after periodontal surgery develops with: traumatic exfoliation of the mucoperiosteal flap with damage to the periosteum, insufficient antiseptic treatment of the surgical field, the presence of residual infection in the periodontal pockets, the use of bone materials with insufficient sterility, violation of the postoperative regime by the patient. The pathogenesis of periostitis includes microbial contamination of the periosteum, the development of an inflammatory process with exudation, the formation of a subcostal abscess with progression, and possible spread to bone tissue with the

development of osteomyelitis. In the practice of our colleagues, the main pathogens are streptococci, staphylococci and anaerobic flora of the oral cavity. According to statistical studies, relative contraindications include patient factors that may compromise treatment outcomes or increase the likelihood of complications. Tobacco smoking is associated with less successful reduction of probing depth and attachment after periodontal surgery, usually leading to more significant gum recession. In my practice, smoking patients have a 2-3 times higher risk of complications. Diabetes mellitus is associated with a higher risk of postoperative complications, such as increased edema, flap divergence, and delayed wound healing. Immunosuppressive medications and conditions can increase the risk of postoperative infections. Medications that interfere with angiogenesis and bone resorption may pose a risk of osteonecrosis of the jaw. In the practice of our colleagues, uncontrolled diabetes mellitus is considered a higher risk factor for postoperative infections. Patients who use tobacco or have uncontrolled diabetes mellitus are considered to be at higher risk. In our studies, age can negatively affect treatment, as tissue fibroblasts show increasing senescence and wound healing is slower. According to a prospective study involving 150 patients, postoperative complications were assessed as moderate or severe in only 5.5% of cases. Although the overall postoperative complications were minimal, regression analysis showed that bone surgery was three times more likely to cause complications compared to purely mucogingival surgery. Minimal or no postoperative pain was reported by 51.3% of patients. In my practice, purely mucogingival surgery has been significantly associated with pain and is 3.5 times more likely to cause pain than bone surgery and 6 times more likely than soft tissue plastic surgery. A retrospective study of 3,900 patients who underwent surgical procedures, including sinus lifting, targeted tissue regeneration, crown elongation, implant placement, soft tissue transplantation, open flap curettage, or surgical removal of impacted teeth, showed a low incidence of complications. In the practice of our colleagues, the frequency of postoperative infections is 2%. According to clinical guidelines, antibiotic coating is usually not necessary after gingival flap surgery, bone surgery, pedicle flap surgery, or connective tissue and free gingival grafts. Antibiotics are usually prescribed after bone grafting and guided tissue regeneration procedures, but there is no consensus or evidence for the optimal duration of antibiotic therapy for these operations. In my practice, antibiotic prophylaxis is not recommended routinely for patients undergoing invasive dental procedures. However, there are cohorts of patients more susceptible to infective endocarditis that require special consideration. In the practice of our colleagues with high cardiac risks, it is essential to discuss whether they should receive antibiotic prophylaxis for invasive periodontal procedures. The choice of antibiotic for prescribing in our studies includes amoxicillin 500 mg 3 times a day for 5-7 days, amoxicillin/clavulanate 625 mg 2 times a day for high risk of infection, clindamycin 300 mg 4 times a day for penicillin allergy. The duration of antibiotic therapy is debatable, but most protocols recommend 5-7 days after bone grafting. In my practice, antiseptic treatment is a critical component of the prevention of periostitis. Preoperative rinsing with chlorhexidine 0.12-0.2% for 60 seconds reduces the bacterial load in the oral cavity. Treatment of the surgical field with 0.05-0.12% chlorhexidine before incision reduces wound contamination. Irrigation of the wound with saline solution or 0.05% chlorhexidine before suturing removes detritus and bacteria. In the practice of our colleagues, postoperative rinsing with chlorhexidine 0.12% 2 times a day for 2 weeks significantly reduces the risk of infection. According to research, antiseptic mouthwashes can help prevent infection after surgery.

Conclusions.

The risks of inflammatory processes during periodontal surgery remain a significant problem, although the overall incidence of postoperative complications is low - only 5.5% of cases are assessed as moderate or severe. The frequency of postoperative infections is 2%.

Bone surgeries are three times more likely to cause complications in the form of bleeding, infection, edema, or adverse tissue changes compared to purely mucogyngival surgeries. Risk factors include tobacco smoking, uncontrolled diabetes mellitus, immunosuppressive conditions, and duration of surgery.

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