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SURGICAL TREATMENT OF WOUNDS IN VETERINARY MEDICINE: TRADITIONAL AND INNOVATIVE METHODS
(ХІРУРГІЧНЕ ЛІКУВАННЯ РАН У ВЕТЕРИНАРІЇ: ТРАДИЦІЙНІ ТА НОВІТНІ МЕТОДИ)

У статті розглядаються основні методи хірургічного лікування ран у ветеринарній практиці. Аналізуються традиційні методи первинної та вторинної хірургічної обробки, а також сучасні інноваційні методи, такі як використання біоматеріалів, регенеративної медицини та лазерної хірургії. Оцінюється ефективність кожного підходу та їх роль у прискоренні загоєння ран у тварин.

Ключові слова: хірургічне лікування, ветеринарія, рани, регенеративна медицина, лазерна хірургія, біоматеріали.

The article discusses the main methods of surgical treatment of wounds in veterinary practice. Traditional methods of primary and secondary surgical treatment are analyzed, as well as modern innovative methods, such as the use of biomaterials, regenerative medicine, and laser surgery. The effectiveness of each approach and its role in accelerating wound healing in animals are evaluated.

Keywords*:* surgical treatment, veterinary medicine, wounds, regenerative medicine, laser surgery, biomaterials.

Wounds in animals are a common problem in veterinary practice. They can result from mechanical injuries, bites, surgical interventions, or other traumas. Wound treatment is a complex process that requires a careful approach, as improper management can lead to infectious complications, delayed healing, or even loss of function of the affected area. The main objectives in wound treatment are infection prevention, stimulation of tissue regeneration, and minimization of pain syndrome. Effective treatment depends on timely diagnosis, the correct choice of surgical method, and the application of modern technologies to improve tissue healing [5].

Today, the primary principle of therapeutic measures for wounds is to improve conditions for the wound healing process and maximize tissue and overall organism protection. Treatment of all types of wounds, except for surgical ones, begins with adherence to the correct algorithm of actions for injuries. The patient is examined, an anamnesis is collected (how and when the wound occurred, complaints, and general information). If the patient is unstable, the wound is treated as much as possible, stabilization and examination of the animal are conducted. Only after these steps is a decision made regarding surgical intervention [1, 3].

Traditional methods of surgical wound treatment include primary surgical treatment and secondary wound healing. Healing by primary intention is always a priority, as it occurs in a short time with minimal scarring. This process involves mechanical wound cleaning, removal of necrotic tissues, and primary suturing.

Secondary wound healing occurs through contraction and epithelialization and is intended for contaminated and infected wounds with skin defects that cannot be closed using conventional surgical

methods. Secondary tension involves open wound management, the use of antiseptics and dressings, and secondary suturing after granulation [2, 3].

The foundation of modern methods of surgical treatment of open wounds is moist wound management. Maintaining optimal moisture in the wound is crucial, and the main means for achieving this are modern collagen and hydrogel dressings for different phases of the wound process. There are dressings with a high absorption capacity for highly exudative wounds, such as “Sorbalgon” (a sterile calcium alginate fiber dressing), “HydroClean+” (a hydroactive dressing for rapid wound healing), “Suprasorb” (polyurethane foam), and “Hidrocoll” (a moisture-retaining dressing). Proteolytic enzymes such as Chymotrypsin, which breaks down necrotic tissues, hydrogels, polyurethane films, atraumatic dressings, and antimicrobial coatings are also used [1, 6].

A new approach to wound treatment includes laser surgery and regenerative medicine. Laser treatment reduces the risk of infection, accelerates tissue regeneration, and decreases pain and inflammation. In regenerative medicine, stem cells are used to restore damaged tissues, and growth factor therapy stimulates regeneration and accelerates healing. Another promising method for replacing damaged areas is 3D bioprinting of tissues for wound closure [4, 7].

Thus, the application of modern methods of surgical wound treatment in veterinary medicine significantly improves the prognosis for animals, shortens rehabilitation time, and reduces infection risks. Traditional methods remain the foundation of treatment, but innovative technologies such as biomaterials, laser surgery, and regenerative medicine open new opportunities in veterinary surgery. Further research in this area can enhance the effectiveness and accessibility of innovative methods.

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