

# LOCAL INFILTRATION ANESTHESIA AND ITS IMPORTANCE IN SURGICAL PRACTICE

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## Abstract

This article highlights the role and importance of local infiltration anesthesia in surgical practice. Information is provided about the essence of infiltration anesthesia, its mechanism of action, methods of application, and the main anesthetic drugs used in surgical practice. In addition, the advantages, disadvantages, and possible complications of this method are also analyzed. According to the research results, infiltration anesthesia is considered one of the effective and safe methods of pain relief in minor surgical operations.

**Keywords:** Infiltration anesthesia, local anesthesia, surgery, pain relief, anesthetic drugs, surgical practice.

## Introduction

In modern surgical practice, methods of pain relief occupy an important place. During operations, various types of anesthesia are used to reduce or completely eliminate the sensation of pain in the patient. One of them is local anesthesia, which serves to temporarily eliminate pain sensation in a specific part of the body. Among local anesthesia methods, infiltration anesthesia is the most commonly used. Local infiltration anesthesia is a method of blocking nerve endings by injecting anesthetic substances into the tissues of the area to be operated on. This method is widely used in minor surgical procedures, dentistry, traumatology, and dermatology. The method of infiltration anesthesia is distinguished by its simplicity, effectiveness, and safety.

The concept of local infiltration anesthesia. Local infiltration anesthesia is a method of temporarily eliminating pain sensation by injecting an anesthetic drug into tissues layer by layer. In this process, the anesthetic substance blocks the ability of nerve fibers to conduct impulses, and as a result, the pain sensation does not reach the central nervous system. The method of infiltration anesthesia is widely used in surgical practice, especially in performing minor operations. With this method, the patient remains conscious but does not feel pain in the operated area.



**Purpose and Objectives:**

Anesthesia is the temporary loss of sensitivity, including pain sensation, under the influence of various drugs. This makes it possible to perform operations and procedures painlessly.

There are several types of anesthesia:

**Local.** It allows numbing a small part of the body. For example, when you are at a dentist's office, before placing a filling, the doctor applies a local anesthetic. As a result, you lose sensation in a certain part of your face or jaw.

**Regional anesthesia** numbs a larger area of the body, that is, a specific region. During anesthesia, the patient remains conscious but does not feel pain. For example, this type of anesthesia is often used during cesarean section or childbirth. In this case, the lower half of the body, including the abdomen, loses sensitivity to pain.

**Materials and Methods:**

General anesthesia or narcosis is a very deep sleep artificially induced with the help of special drugs. Consciousness and pain sensitivity throughout the body are turned off. General anesthesia is performed by a specially trained doctor – an anesthesiologist. During the operation, he monitors that the patient does not feel pain and that the vital functions of the body (breathing and blood circulation) are maintained.

**Local anesthesia and its types**

Local anesthesia is defined as a condition in which the patient remains conscious, while the operated area becomes numb under the influence of anesthetic substances.

In surgical practice, the following types of local anesthesia are distinguished:

1. Application (surface) anesthesia;
2. Layer-by-layer infiltration anesthesia;
3. Fascial anesthesia;
4. Conduction (regional) anesthesia;
5. Intravenous and intra-arterial anesthesia;
6. Intraosseous anesthesia;
7. Freezing anesthesia;
8. Epidural anesthesia;
9. Spinal anesthesia;
10. Sacral anesthesia;

**Results and Conclusions:**

1. Application anesthesia. It is widely used in ophthalmology, urology, otorhinolaryngology, and bronchoscopy. Areas of tissue requiring loss of pain sensation are wiped with a tampon soaked in 1–10% novocaine solution or 0.1% novocaine with 2–3% dicaine solution.
2. Layer-by-layer infiltration anesthesia. This method consists of impregnating tissues layer by layer with an anesthetic solution. For this purpose, a 0.25–0.5% novocaine solution is used. This method



was developed in detail by A.V. Vishnevsky. In this method, along the incision line, novocaine solution is injected intradermally with a thin needle until a “lemon peel” sign appears.

3. Fascial anesthesia. This method was also developed by A.V. Vishnevsky. It is used in operations on the limbs. A tourniquet is applied above the incision site, and below the tourniquet, at two or three points through the skin, 0.25% novocaine solution (500–800 ml) is injected deeply under the aponeurosis. This method is widely used in limb amputations.

4. Conduction anesthesia. It is based on injecting novocaine solution directly into the nerve or surrounding tissues. For this purpose, 10–20 ml of 1–2% novocaine solution is used.

5. Intravenous and intra-arterial anesthesia. This type is also used in operations on the limbs. After exsanguination of the limb, a venous tourniquet is applied above the surgical field. By puncture or open method, novocaine solution is injected into the vessel. For the arm 60–80 ml, for the leg 100–200 ml of 0.25–0.5% novocaine solution is required.

6. Intraosseous anesthesia. It is a type of intravenous anesthesia. A venous tourniquet is applied to the limb, then 30–50 ml of 1% novocaine solution is injected into the spongy substance of the bone (heel, femur tuberosities, upper metaphysis of tibia, heads of radius and ulna) through a special thick needle. This type is widely used in orthopedic and traumatological operations.

7. Freezing anesthesia. For this purpose, a stream of chloroethyl is directed to the area requiring anesthesia.

8. Epidural anesthesia. The anesthetic is injected into the epidural space without puncturing the dura mater. 20–30 ml of 1% trimecaine or lidocaine solution is used.

9. Spinal anesthesia. The anesthetic is injected into the subarachnoid space of the spinal cord. Mixing with cerebrospinal fluid, it bathes the nerve roots, resulting in anesthesia. For this purpose, 1–2 ml of 5% novocaine, 0.5–1 ml of 1% sovcaine, or 1–2 ml of 2% trimecaine or lidocaine is used.



### Conclusion

Local infiltration anesthesia is one of the widely used effective methods of pain relief in surgical practice. In this method, the anesthetic substance is injected into the tissues of the operative area, temporarily blocking the conduction of nerve impulses. As a result, the patient does not feel pain during the operation, while the need for general anesthesia is reduced. The infiltration anesthesia method is distinguished by its simplicity, rapid effect, and relative safety. It is widely used in minor surgical procedures, dental treatments, and operations involving skin and soft tissues. At the same time, strict adherence to aseptic and antiseptic rules and correct selection of anesthetic drugs are important when applying this method. Thus, local infiltration anesthesia is one of the effective, convenient, and safe methods of pain relief in surgical practice, and its proper application contributes to the successful outcome of the operation and improvement of the patient's condition.

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