

Modern Approaches to Sinus Lifting: Methods, Materials and Clinical Results

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Annotation: Sinus lifting is one of the most popular and effective methods of surgical intervention in dentistry aimed at increasing the volume of bone tissue in the upper jaw, which allows creating conditions for successful dental implantation in cases where anatomical features or degenerative processes have led to insufficient bone tissue. The sinus lifting procedure is widely used in the planning and installation of dental implants, ensuring reliable fixation and restoration of the dentition. The article discusses the main indications and contraindications for sinus lifting, methods of its implementation, possible complications, as well as innovative approaches used in this area of modern dentistry. Particular attention is paid to the selection of materials for bone grafting, as well as postoperative care.

Key words: sinus lifting, dental implantation, bone grafting, dental surgery, maxillary sinus, bone tissue restoration methods, complications, materials for bone grafting.

Introduction

One of the key tasks in modern dentistry is to ensure successful installation of dental implants. However, in some cases, patients face a deficiency of bone tissue in the upper jaw, which complicates or makes it impossible to install implants. This can be caused by factors such as age-related changes, injuries, chronic diseases, and inflammatory processes that lead to bone tissue atrophy. In these cases, the most important procedure that allows you to restore bone tissue volume and create conditions for successful implantation is sinus lifting.

1. Definition of sinus lift and its necessity

Sinus lift (or lower maxillary sinus lift) is a surgical procedure aimed at restoring the lost volume of bone tissue in the upper jaw to create conditions for dental implantation. During the operation, the mucous membrane of the maxillary sinus is lifted and the resulting space is filled with bone material, which promotes the formation of new bone tissue.

2. Indications and contraindications for sinus lifting

Sinus lifting is performed for various clinical indications. The main indications are:

- ✓ Insufficient bone volume in the posterior portions of the upper jaw.
- ✓ Bone atrophy after tooth extraction.
- ✓ The need to restore bone volume after injury or inflammation.
- ✓ It is impossible to install implants without increasing the volume of bone tissue.

However, there are also contraindications to sinus lifting, such as:

- ✓ Acute inflammatory diseases in the nasopharynx.
- ✓ Chronic diseases of the upper respiratory tract (eg, chronic sinusitis).
- ✓ Recent surgery in the maxillary or sinus area.

- ✓ Low level of general health of the patient.

3. Methods of performing sinus lifting

There are several sinus lifting techniques that are selected depending on the clinical situation, the volume of lost bone tissue and the patient's condition. The most common methods are:

- **Open sinus lift** is the most commonly used method, in which an incision is made in the upper jaw area, the sinus lining is opened, and bone material is introduced through the hole in the bone tissue.
- **Closed sinus lift** is a less invasive technique in which a special instrument is inserted through a small incision into the gum to lift the sinus mucosa and introduce bone material.

Each method has its own indications and limitations, and the choice of the appropriate technique depends on the extent of bone deficiency and the patient's condition.

4. Materials for bone grafting

A wide range of materials are used for sinus lifting, which can be divided into autogenous, allogenic and synthetic. Each type of material has its own advantages and disadvantages. For example:

- **Autogenous materials** (patient's bone tissue) are the most biocompatible, but may require additional surgical intervention to collect the material.
- **Allogenic and xenogeneic materials** (taken from donors or animals) have good compatibility, but can cause an immune response.
- **Synthetic materials** (calcium phosphate materials, hydroxyapatite and others) are often used to provide stability and rapid restoration of bone tissue.

5. Possible complications and their prevention

Despite the high efficiency of sinus lifting, this procedure can be accompanied by a number of complications, including:

- ✓ Perforation of the sinus mucosa.
- ✓ Infections.
- ✓ Bleeding.
- ✓ Disturbances in the process of bone tissue healing.

To prevent complications, it is important to maintain strict sterile conditions, choose the right intervention technique, and provide careful postoperative care.

6. Post-operative care and recovery

After sinus lifting, it is important to follow the doctor's recommendations for successful healing:

- ✓ Use of antibiotics and anti-inflammatory drugs.
- ✓ Avoiding physical activity and traumatic factors.
- ✓ Regular inspections and monitoring of the surgical area.

7. Modern innovations and prospects

Modern research and technology allow us to improve sinus lifting techniques. The development of new biomaterials, the use of laser technologies and 3D modeling for more accurate planning of the operation significantly increase the effectiveness of the procedure and reduce risks.

Conclusion

Sinus lifting is a highly effective procedure for restoring bone volume in the upper jaw and creating conditions for successful implantation. With the right technique and compliance with all the surgeon's recommendations, the procedure can significantly improve the quality of life of patients, restoring the functionality and aesthetics of the dentition. It is important that the success of sinus lifting largely depends on the professionalism of the surgeon, the choice of materials and the individual characteristics of the patient.

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