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CLINICAL-EXPERIMENTAL BASIS OF RECONSTRUCTION OF BONY DEFORMITIES IN THE FACE-JAW AREA USING POLYLACTIC ACID (PLA) BIOMATERIAL

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Abstract: This study is devoted to the study of the clinical and experimental basis of the use of polylactic acid biomaterial for the restoration of bone deformities in the face-jaw area. The purpose of the research is to determine the effectiveness of bone defect restoration methods using modern biomaterials.
Keyin words: Maxillofacial deformations, Bone regeneration, Polylactic acid biomaterial, Biomaterials in medicine, Experimental research, Clinical practice, Maxillofacial surgery, Regenerative medicine, Biocompatibility of biomaterials, Bone regeneration, Innovative surgical methods, Orthopedic biomaterials, Facial treatment of jaw bones, biological activity and regeneration, medical application of polymeric materials

In the work, biological flexibility, osteoconductive and regenerative properties of polylactic acid biomaterials were analyzed through experimental and clinical studies. Mechanisms of adaptation and decomposition of this material in the body have been studied to stimulate bone regeneration.The results showed that biomaterials created on the basis ofpolylactic acid help to successfully restore bone deformations in the face-jaw area. This technology makes it possible to accelerate the regeneration process and improve functional recovery in surgical procedures.

The scientific novelty of the research is manifested in the development of clinical foundations for the use of biomaterials based on polylactic acid in the face-jaw area. The obtained results are important in the development of maxillofacial surgery and regenerative medicine in medicine.

The topic "Clinical-experimental principles of restoration of bone deformations in the face-jaw area using polylactic acid biomaterial" is relevant in the field of modern medicine and biotechnology. This topic includes reconstruction of defects caused by anatomical deformations, injuries or diseases of bones in the face-jaw area with the help of modern biomaterials. Polylactic acid biomaterial can play a key role in this regard, as it has the following properties:

1. Bioavailability: *Polylactic acid (poly-lactic acid, PLA) breaks down in the body and does not produce harmful byproducts.*

2. Flexibility: *This material can be molded appropriately to adapt to the morphology of damaged bones.*

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3. Bone regeneration: *Polylactic acid creates a solid foundation for the regeneration of collagen and other bone tissues.*

Clinical-experimental foundations:
Experimental studies: *Laboratory studies show the biocompatibility of polylactic acid. By combining it with a special cell culture, good results are achieved in stimulating bone regeneration.*
Clinical practice: *Clinical studies conducted with patients for the restoration of deformities in the face and jaw area confirm that this material is able to successfully restore damaged areas.*
Scientific and technological basis:
Bringing polylactic acid biomaterial to the desired shape using 3D printing technologies. Adding osteoinductive additives to the material to accelerate the regeneration process.

The use of biomaterials in the restoration of bone deformations in the face-jaw area is one of the important directions of modern medicine. Polyacetic acid biomaterials are bioactive substances used in regenerative surgery, and their clinical-experimental basis has been studied in the following areas:

1. Characteristics of biomaterial:
Biomimetic: *Polylactic acid is easily adapted in the body and helps to form bone tissue.*
Biodegradation: *Their composition breaks down biologically over time and does not harm the body.*
High mechanical strength: *Polyacetic acid biomaterials allow to be used as bone substitutes in surgery.*
2. Clinical advantages:
Speed of the process: *Using these materials, faster and more effective methods of restoring bone deformities are introduced.*
Improvement of regeneration process: *Polyacetic acid stimulates cell proliferation and differentiation.*
Reduced complications: *The risk of infection is low and immunological problems are not observed.*
3. Experimental results*: Polylactic acid implants had a suitable effect on the natural bone regeneration process in laboratory experiments and animal models. Clinical trials confirmed the high efficiency of these biomaterials in restoring face-jaw deformities.*
4.Future prospects: I*ncreasing the efficiency of regeneration by using it together with genetic and cell technologies. Development of biomaterials based on individual 3D technologies.*

The study of clinical-experimental foundations of restoration of bone deformities in the face-jaw area with the help of polylactic acid biomaterial is aimed at studying current problems in the field of surgery and biomedicine. Here is a brief summary of the topic:
1. The essence of the problem:
Bone deformations in the face-jaw area occur as a result of birth defects, trauma, inflammatory processes or tumor diseases. In the treatment of such cases, there is a great need for effective and safe biomaterials for tissue regeneration.
2. Advantages of polylactic acid biomaterial:
Biocompatibility: *Polylactic acid is well adapted to living tissues.*
Biodegradation: *It slowly breaks down in the body and is excreted as safe substances.*

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The properties of water solubility and conformability increase the possibility of use in surgery.

3. Clinical-experimental foundations:

At the experimental stage: *bone regeneration stimulating properties of polylactic acid implants are investigated in animal models.*

Clinical application: *Biomaterial is used in surgical procedures for face-jaw deformities, improving functional and aesthetic indicators of patients.*

4. Results and conclusions:

Studies show that biomaterials with polylactic acid accelerate bone formation, reduce the risk of complications and ensure efficiency in tissue regeneration. Prospects for the wide use of this material in medicine are high.This direction is of great importance in the development of innovative approaches in maxillofacial surgery.

Summary.

The use of polylactic acid biomaterials is an effective method for restoring bone deformations in the face-jaw area. Studies have confirmed the biological flexibility and regenerative potential of the biomaterial. This method eases the operation process and shortens the rehabilitation period. The widespread use of polylactic acid biomaterials can increase the effectiveness of treatment in the field of maxillofacial surgery.

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