



USE OF COMPUTER TECHNOLOGIES TO STUDY ERRORS AND COMPLICATIONS IN DENTAL IMPLANTOLOGY

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Abstract:

This paper examines the problems of errors and complications arising during dental implantation, which has become widespread in dental practice in recent years. The constantly growing demand for implant treatment requires further improvement of planning and implementation methods. However, a misconception has developed in the professional community about the simplicity and universal accessibility of implant procedures, which often leads to complications and, consequently, conflicts between doctor and patient. One effective way to improve the quality of implant treatment is through a systematic and objective analysis of errors, complications, and unsuccessful outcomes. In this regard, the authors developed a specialized computer database designed to accumulate and analyze data on dental implant complications. The resulting information is used in the educational process for students of dental faculties, as well as for doctors undergoing advanced training and professional retraining.

The algorithm for the computerized complication analysis program is based on a modern classification system, including intraoperative, early and late postoperative complications, as well as disorders associated with the prosthetic stage and implant use.

Keywords: dental implantation, errors and complications in implant treatment, computerized database.

Using Computer Technology to Analyze Dental Implant Complications

Currently, implant treatment is widely used in dental practices in the Republic of Uzbekistan, performed in both public and private clinics in Tashkent. The number of dental implant procedures is steadily increasing annually, reflecting the high public demand for this type of orthopedic surgical care. However, both professionals and patients often harbor misconceptions about the technical simplicity of implant procedures and the ability to achieve predictable results without sufficient specialized training. Practical experience shows that the problem of errors and complications in dental implantation remains relevant in today's environment, and in some cases, it is particularly significant from the perspective of medical and legal liability and the assessment of the quality of dental care provided.

The specifics of domestic dental practice often hinder the open analysis of implant treatment failures and complications. Doctors, especially those working in the private sector, often seek to conceal errors that may be due to insufficient clinical experience, limited professional training, or a subjective overestimation of their own capabilities. At the same time, according to S. Eckert, regular disclosure of information on implant

complications is a necessary condition for the professional development of specialists.

To obtain objective data, sociological studies were previously conducted using anonymous surveys of dentists, the results of which allowed them to identify the most common and characteristic complications of dental implantation.

The growing number of patients requiring implant treatment dictates the need for an in-depth study of the causes of failures and complications. In this study, the authors supplemented the existing computerized medical record management system with a subsystem that includes clinical cases of patients seeking treatment for complications that arose after implantation performed at various medical institutions in the city.

The results of the analysis of identified errors and complications are used in lecture courses and in practical classes for students and doctors undergoing continuing professional education.

Computerized Medical Record Management System The developed software package is designed to improve the efficiency of diagnosis, treatment, and follow-up of dental patients. It ensures the integration of all stages of the treatment and diagnostic process, standardization of documentation, and convenient access to clinical information.



The main principles of the system's creation are consistency, modularity, compatibility with other software products, standardization, automation of document flow, formalization of medical records, a simple interface, and accessibility for the end user.

The program menu includes the following main sections:

1. Electronic patient medical record;
2. Calculation of dental hygiene indices;
3. Analysis of immune status and selection of immunocorrective therapy;
4. Assessment of the patient's psychoemotional state and quality of life;
5. Recording and analysis of errors and complications of dental implantation.

The electronic medical record contains passport data, clinical and radiographic examination results, diagnosis, treatment complexity assessment, treatment plan, follow-up period, and a clinical diary. The program allows for the storage of photographs and radiographic images in digital format.

Despite the limited legal significance of electronic documentation, the system allows printing individual pages and medical reports for filing in a standard medical record.

Analysis of errors and complications of dental implantation. The complication analysis subprogram is based on a modern classification, including:

Intraoperative complications: bleeding, vascular and nerve damage, trauma to anatomical structures, lack of primary implant stabilization, implant and instrument fractures, soft tissue emphysema, and the presence of foreign bodies.

Early postoperative complications: postoperative bleeding and hematomas, nerve damage, early peri-implantitis caused by planning errors, poor surgical technique, and insufficient medical support.

Late postoperative complications: late peri-implantitis, implant loss, bone resorption, peri-implant gingival recession, structural failures of implants and prosthetic structures.

The subroutine allows data entry and editing, as well as the generation of reference reports sorted by various parameters (age, gender, date, type of complication, etc.). The accumulated information is used for educational analysis of clinical cases and the preparation of scientific publications aimed at improving the effectiveness and safety of implant treatment.

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