

## IMPROVING RADIATION DIAGNOSTICS OF DENTAL DISEASES

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**Relevance of the topic.** Diseases of the maxillofacial region of the skull and teeth occupy a special place in the clinic due to their significant prevalence, difficulties in diagnosis and treatment, and extremely diverse and complex symptoms (Borovsky E.V., 2004; Ternovoy S.K., et al., 2004; Alpiste-illueca F., 2004; Rabukhina H.A., et al., 2006).

The high prevalence of dental caries and its complications and periodontal diseases, inflammatory, tumor and degenerative-dystrophic processes of the maxillofacial region of the skull leads not only to premature tooth loss, but also to the development of pathological conditions of the gastrointestinal tract (Bezrukov V.A. et al., 2002; Vorobyov Yu.I., 2004; Yilmas H.H., Aydin IL, 2004; Khan E.A., Tyndall D.A., Ludlow J.B., Caplan D., 2005). On the other hand, chronic pathological processes of internal organs activate the development of caries, periodontitis, diseases of the oral mucosa (Rabukhina H.A., Arzhantsev A.P., 2002; Mukovozov I.N., 2002; Wenzel A., 2004).

Before the advent of dental volumetric tomography (DOT), X-ray computed tomography (XCT), magnetic resonance imaging (MRI) and ultrasound (US), the possibilities of diagnosing diseases of the teeth and jaws were limited (Vykylyuk M.V., 2008, Lezhnev D.A., 2008, Serova N.S., 2008). At the same time, to this day, the possibilities of extraoral contact radiographs of teeth and jaws in oblique projections (EOCRJ), intraoral occlusal and interproximal radiographs performed on a dental X-ray diagnostic apparatus are still not fully utilized, which negatively affects the diagnosis of diseases and timely treatment of teeth and jaws (Grinina A.V., 1994; Dudarev A.L., et al., 1999; Getman A.V., 2002; Vorobyov Yu.I., 2002; Leonov B.I., Blinov H.N., 2004;

Bontrager K.L., 2005; Lezhnev D.A. 2007; Serova N.S., 2008). Despite the fact that the issues of using radiological examination methods in diagnostics of diseases of the dental system are covered to one degree or another in the works of researchers, most authors describe only individual aspects of the application of methods, techniques and projections of radiological examination. The radiological semiotics of caries and its complications, periodontitis, tumor processes, diseases causing pain in the parotid-chewing area and difficulty opening the mouth have practically not been developed (Egorov P.M., Puzin M.N., Kushlinsky N.E., 1991). It should be noted that the possibilities of clinical diagnostics of diseases and injuries of the dental system are very limited due to the non-specificity of the symptoms and the fact that more than 50.0% of the surface area of the teeth are not visible during external examination and can only be studied radiologically (Arzhantsev A.P., 1998; Badanin V.V., 2000; Baikov D.E., 2001; Schiff T., Solomon V.E., 2004; Hellen-Halme K., Rohlin M., Peters-son A., 2005; Friedrich A. Pasler Heiko Visser, 2007). At the same time,\* defects and errors in the treatment of diseases of hard tissues of teeth, periodontium and parodontum in the absence of radiological control or its irrational use reach 40-75% (Borovsky E.V., 2004; Frei C., Buser D., Dula K., 2004). There are no algorithms for radiation research taking into account the localization and spread of the pathological process to adjacent anatomical zones.

In these conditions, the rational use of optimal visualization methods and their consistent implementation are of particular importance for solving the diagnostic problem with minimal economic costs and the least danger to the patient.

Issues of digital, dental radiography (radiovisiography) of teeth and jaws, other methods of radiation research require a comprehensive study in terms of their implementation; both in the diagnosis of dental diseases and in assessing the quality of the treatment, as well as the creation of optimal algorithms for radiation research based on the principles of evidence-based medicine.

### Objective of the study

Improvement of radiological diagnostics of dental diseases using high-tech research methods.

### Research objectives

1. To evaluate the effectiveness of various radiological research methods in diagnostics of dental diseases.
2. To clarify the indications for conducting radiological research methods and projections in identifying the cause of pain in the dentition.
3. To supplement the radiological semiotics of dental and jaw diseases.
4. To clarify the indications for conducting radiological research methods and projections in identifying the cause of pain in the parotid-masticatory region.
5. To evaluate the informativeness of radiovisiography in diagnostics of dental and jaw diseases and in determining the quality of endodontic and surgical treatment.
6. To clarify and supplement the diagnostic capabilities of enlarged panoramic radiography and panoramic tomography in dental practice.
7. To determine the place in the diagnostic algorithm of dental volumetric tomography, multispiral computed tomography, ultrasound examination and magnetic resonance imaging.

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