isu-conference.com

ISU
INTERNATIONAL SCIENTIFIC UNITY

COLLECTION OF SCIENTIFIC PAPERS

ISSUE
№25

4th INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE

GLOBAL TRENDS IN THE DEVELOPMENT OF INFORMATION TECHNOLOGY AND SCIENCE

JUNE 25-27, 2025
STOCKHOLM, SWEDEN

INTERNATIONAL SCIENTIFIC UNITY

4th International Scientific and Practical Conference

«Global Trends in the Development of Information Technology and Science»

Collection of Scientific Papers

June 25-27, 2025
Stockholm, Sweden

UDC 01.1

Global Trends in the Development of Information Technology and Science: Collection of Scientific Papers with Proceedings of the 4th International Scientific and Practical Conference. International Scientific Unity. June 25-27, 2025. Stockholm, Sweden. 316 p.

ISBN 979-8-89704-992-9 (series)
DOI 10.70286/ISU-25.06.2025

The conference is included in the Academic Research Index ReserchBib International catalog of scientific conferences.

The collection of scientific papers presents the materials of the participants of the 4th International Scientific and Practical Conference "Global Trends in the Development of Information Technology and Science" (June 25-27, 2025. Stockholm, Sweden).

ISBN 979-8-89704-992-9 (series)

ISU
INTERNATIONAL SCIENTIFIC UNITY

SECTION: MARKETING AND ADVERTISING

SECTION: MEDICINE

SECTION: MILITARY AFFAIR

SECTION: PEDAGOGY, PHILOLOGY AND LINGUISTICS

SECTION: MEDICINE

THE ROLE OF THE DENTOFACIAL APPARATUS IN FORENSIC IDENTIFICATION OF THE DECEASED WITH BLAST INJURY

Sukhonosov Roman Oleksandrovych
PhD in Medicine, Associate Professor
Department of Human Anatomy, Clinical Anatomy and Operative Surgery
Iegorova Anastasiia Denysivna
First-year student
Hladush Marharyta Armenovna
First-year student
Kharkiv National Medical University
Kharkiv, Ukraine

Relevance: Blast injuries of the oral cavity are not limited to fractures or tooth loss - they may have more severe consequences: morphological, functional, and aesthetic. This issue becomes extremely important during wartime, when the dentofacial area becomes key in forensic identification of fallen soldiers. The injuries are often accompanied by multiple dislocations, damage to the alveolar process (*processus alveolaris*), and deformations of dental arches. Moreover, it is precisely the condition of the teeth, orthopedic constructions, and radiographs that makes it possible to establish identity in the absence of other biological features.

The purpose of the study is to consider the anatomical and clinical aspects of damage to teeth and alveolar structures in blast trauma and the role of dental features in the process of identifying the deceased.

Materials and methods. Theoretical: review and analysis of scientific and methodological literature describing clinical and expert characteristics of blast injuries of the dentofacial apparatus.

Practical: own research using the anatomical-physiological method, logical-sequential analysis of the forensic identification process, and a review assessment of digital registries.

Results and conclusions. Blast injuries to the oral cavity lead to massive tooth dislocation (luxatio dentis), damage to the periodontal ligament apparatus (ligamentum periodontale), destruction of the alveolar bone (os alveolare), and tooth loss. In severe cases, teeth fall out together with a part of the alveolar ridge. This disrupts occlusion, bite, chewing function (masticatio), and aesthetics [1].

Damage to the anterior dental row (dentes incisivi) is especially common - these areas are the first to be affected by the frontal shock wave. Avulsion (complete knocking out of the tooth) often occurs, accompanied by bleeding, open wounds, and risk of infection. Left untreated, such defects cause cascade atrophy of the jawbone [2].

Rehabilitative dentistry faces difficulties in forming the correct bite, especially in young individuals. Loss of one or more supporting teeth (dentes molares) often causes secondary jaw deformation and requires further orthodontic interventions [3].

Some patients after blast trauma lose not only tooth crowns but also segments of the alveolar arch, which leads to the necessity of using ventilated titanium plates and individual modeling of the future prosthesis [4].

Disruption of contact between the upper and lower jaws (malocclusio) leads to pathological overload of the masticatory muscles (mm. masseter, temporalis). This, in turn, causes pain in the temporomandibular joint, which, if left untreated, can become chronic [5].

A key aspect is that teeth have the highest resistance to thermal exposure among all body tissues. They do not change structure when exposed to temperatures up to 1000 °C. This makes them the main biological material for forensic identification in combat conditions [6].

For identification, orthopantomograms (panoramic dental X-rays) from dental charts are used; analyzed are: shape of teeth, number of fillings, implants, orthodontic arches; also examined: lifetime 3D images, digital databases, military registries, and visual documentation [7].

Complications arise in cases of complete jaw destruction or multiple implants without a protocol card - in such cases, isotope studies of enamel and cementum, as well as dentin microscopy, are conducted [8].

Teeth and jaw structures are not only involved in the traumatic process - they become the basis for post-mortem identification of the individual. Wartime conditions demand the creation of centralized digital registries of dental data, integration of clinical X-rays into military IDs, and regular recording of orthopedic interventions. Without this, hundreds of bodies remain unidentified.

References

1. Non-invasive Molecular Detection of Minimal Residual Disease in Papillary Thyroid Cancer Patients - PMC (date of application: 14.06.2025).
2. Teeth in Forensics (date of application: 14.06.2025).
3. Dental Evidence in Forensic Identification - An Overview, Methodology and Present Status (date of application: 14.06.2025).
4. Forensic Odontology - “Dentist as a Third Eye” (date of application: 14.06.2025).
5. Imaging of mandibular fractures: a pictorial review (date of application: 14.06.2025).
6. The transcription factor OsSUF4 interacts with SDG725 in promoting H3K36me3 establishment - PMC (date of application: 14.06.2025).
7. (PDF) 3D dental records in Australian dental practice - a hidden gold mine for forensic identification (date of application: 14.06.2025).
8. Barriers to human remains identification using forensic odontology in resource-constrained settings (date of application: 14.06.2025).