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Identification Procedures of Dead Bodies by Dental Means

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Authors:
Dr. med. Dr. med. dent. Claus Grundmann
Institut für Rechtsmedizin, Duisburg
Dr. med. dent. Hans-Peter Kirsch
AKFOS, Saarbrücken
Priv.-Doz. Dr. med. Rüdiger Lessig
Institut für Rechtsmedizin, Universität Leipzig
Dr. med. Dr. med. dent. Klaus Rötzscher
AKFOS, Speyer

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Introduction

The unique structures and traits of human teeth and jaws readily lend themselves to use in the identification of living persons and deceased victims. Dental data can be recovered and recorded at the time of postmortem examination and compared to antemortem data which are supplied by generalist and/or specialist dentists who treated the victim during her/his lifetime. The teeth are well protected in the oral cavity and are able to withstand many external influences near, at or after the time of death. Teeth comprise the hardest substances in the human body, so as the body\'s soft tissues decompose, the dental characteristics which are so valuable for identification purposes remain accessible.

This is especially true concerning tooth treatments, such as restorative and aesthetic fillings and crowns, root canal procedures and dentures since these are custom-made as unique treatments for each individual. But other anatomical and morphological traits can also be compared even in absence of any dental treatment.

Objectives

The conclusions available to the DVI odontologist to choose of, following his comparison of postmortem and antemortem dental records includes:

- Positive identification: PM and AM records are from the same person
- Possible identification: Cannot be excluded as the same person but minimal data is present
- Negative identification: PM and AM records are from different persons
- Inconclusive: Insufficient dental data are present to reach a conclusion

Material and Methods

Documentation

- Interpol dental chart (without roots) (Fig. 1)
- A new dental chart with roots (Fig. 2)
- Plass data PM-dental chart (without roots) (Fig. 3)

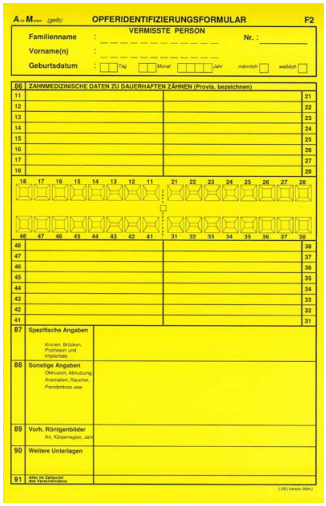

Fig. 1: Interpol dental chart (without roots)

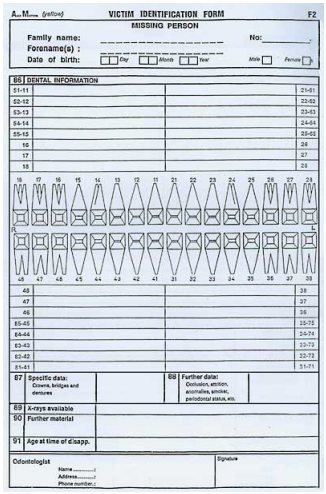

Fig. 2: A new dental chart (with roots)

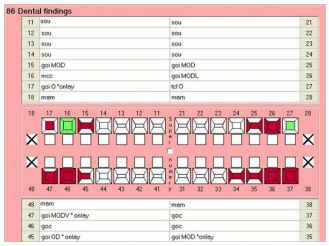

Fig. 3 Plass data PM-dental chart (without roots)

Maceration

- Ultrasound instrument for the maceration with ENZYRIM® (Fig. 4)
- Upper and lower jaws after maceration with ENZYRIM® (Fig. 5)

Fig. 4: Ultrasound instrument for the maceration with ENZYRIM®

Fig. 5 Upper and lower jaws after maceration with ENZYRIM®

Photography

- Upper jaw after maceration with ENZYRIM® - belongs to Fig. 8 (Fig. 6)
- Plaster model (after orthodontic treatment) and the upper jaw of a burned person - after maceration with ENZYRIM® (Fig. 7)

Fig. 6: Upper jaw after maceration with ENZYRIM® - belongs to Fig. 8

Fig. 7: Plaster model (after orthodontic treatment) and the upper jaw of a burned person (after maceration with ENZYRIM®)

X-rays

- Antemortal x-ray - belongs to Fig. 6 (Fig. 8)
- Digital dentalx-ray, possibility of several false colour display modes to enhance visibility of even slightest greyscale gradations (Fig. 9)

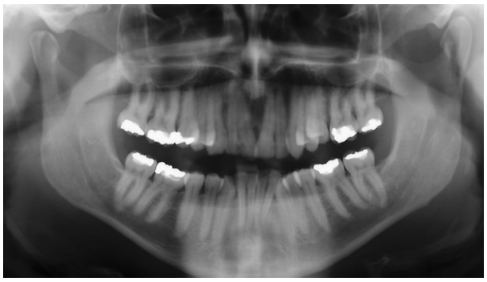

Fig. 8: Antemortal x-ray - belongs to Fig. 6

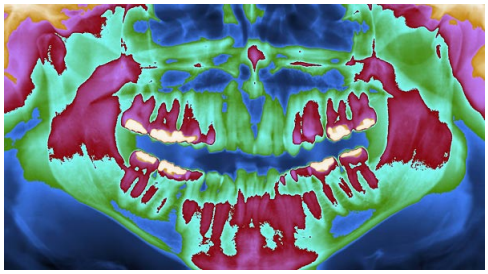

Fig. 9: Digital dental x-ray, possibility of several false colour display modes to enhance visibility of even slightest greyscale gradations

Results

The guidelines (DVI Guide-Draft odontology sections, March 21th, 2007) may be of assistance to police and dentists in obtaining corresponding antemortem data. Please note that often dentists refuse to release patients' original records for such purposes. But they must be encouraged to do so since original records are needed during a DVI response. It is appropriate for the police officer to suggest that the dentist keeps a duplicate of the records and then releases the original records to be used in the DVI effort:

- Description of the individual's dental status
- Original dental charts, treatment records, clinical photographs and x-rays, including original periapical radiographs, and/or bitewing radiographs and/or other x-rays (OPG films, panoramics, lateral cephalometrics, occlusals, etc.)
- Cranial and/or sinus x-rays
- CT scans of the head and/or cranium
- Digital x-ray images (as a digital file and as a hard copy)
- Dental casts (ceramic or plaster) of the upper and lower jaws and teeth
- Impressions, moulds, bite registrations, temporary crowns, prostheses, etc.
- Orthodontic casts, braces or other treatment appliances
- Full face and intraoral photographs
- Photographs of family members including the missing person and recent personal photographs or portraits in which the missing person\'s teeth are visible
- Old false teeth, dental prostheses, dentures and other dental devices

The information listed above are needed in order to reconstruct the antemortem dental status of the victim with respect to existing restorations (incl. dental jewellery) and specific features suck malformation, anomalies and malocclusion.
The documentation of the dental status is prepared on the basis of available records and provides a precise description of existing dental restorations, including information regarding the materials used.
It is essential to ensure that all original treatment records are labelled with the name and date of birth of the patient, as well as dates, stamps and signatures of the treating dentist.
If the records and materials listed above cannot be obtained from the missing person\'s family dentist, the following persons and institutions may be potential sources of information:

- Oral and maxillofacial surgeons
- Orthodontists
- Oral pathologists (dentists concerned primarily with dental anomalies)
- Dental technicians, dental mechanics
- Endodontists (root canal treatment specialists)
- Paediatric dentists (specializing in dentistry for children)
- School dental services
- Public hospital dental clinics
- Dental health insurers and Hospitals (where policyholders have been treated)
- Dental records maintained by correctional facilities/hospitals/social security insurers
- Military organizations

Conclusions

Postmortem dental examination
During the assessment of dental status, the standard nomenclature used in a given country should be used for national DVI operations. Internationally harmonized terms, codes, abbreviations and nomenclature are to be used for international DVI operations.
Exposed radiographs (x-ray films) are to be numbered individually and placed in numbered bags. Developed radiographs are to be mounted, numbered and sorted into numbered Ziplock bags. It may be necessary to obtain additional radiographs of specific features discovered during the initial examination.
Upper jaws should be left in place. The odontologist examiner is responsible for deciding whether isolated lower jaw removal is needed to achieve a better assessment of dental status.
If a decision is made to remove the lower jaw, every attempt shall be made to minimize the extent of surgical Intervention and to replace the tissues in their original position at the end of the examination. Every attempt must be made to reduce the risk of loss of these tissues.
Both the loosened lower jaw and the attached upper jaw can be cleaned and subjected to precise dental examination and radiography. The advantage of this approach is that maintaining the upper jaw in situ virtually eliminates the risk of subsequent mismatching. Once the examination is completed, the lower jaw is replaced and the incision closed if appropriate.

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This Poster was submitted by Dr. med. Dr. med. dent. Claus Grundmann.

Correspondence address:
Dr. med. Dr. med. dent. Claus Grundmann
Institut für Rechtsmedizin
Viktoriastr. 8
47166 Duisburg-Hamborn
Germany

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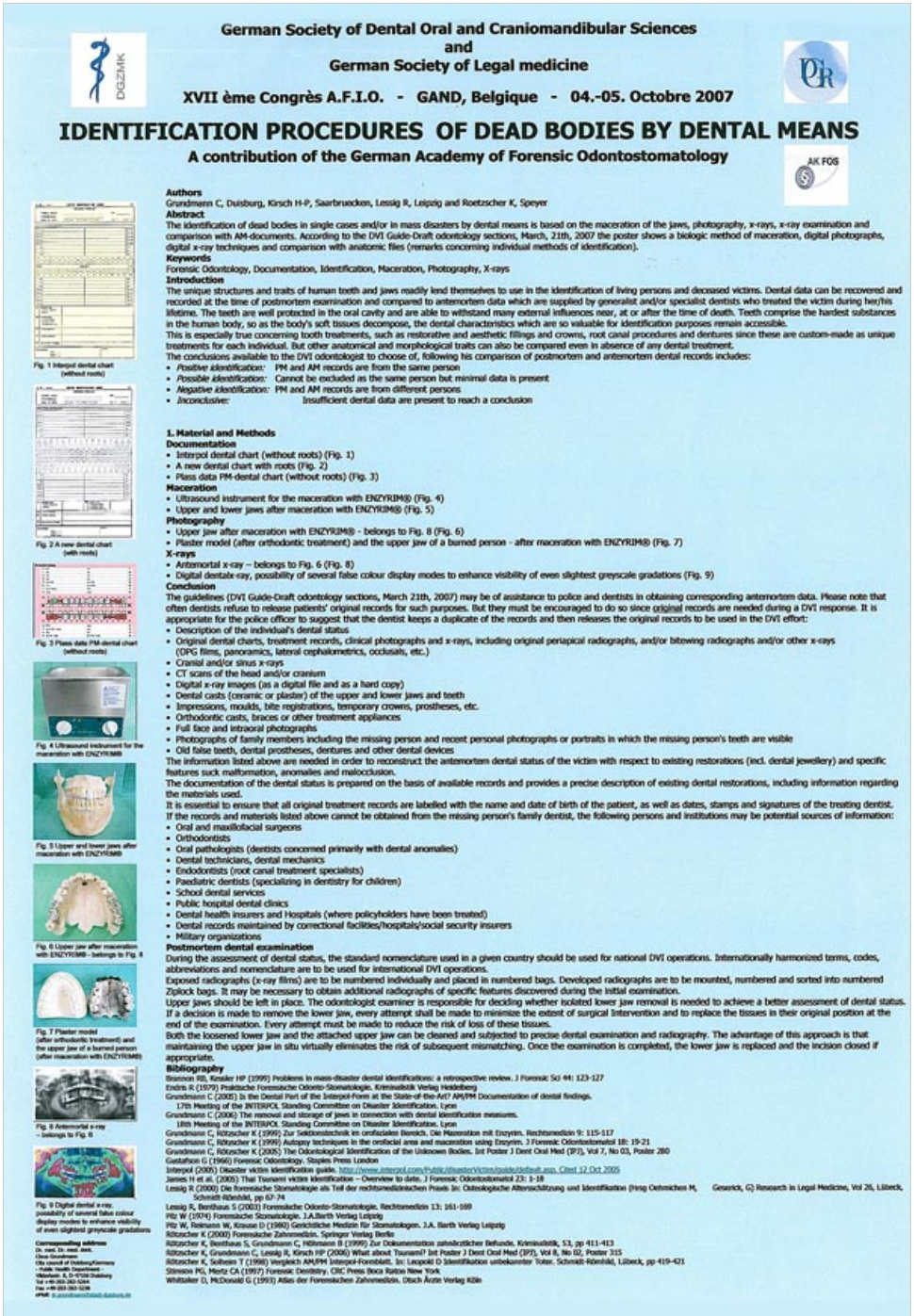

German Society of Dental Oral and Craniomandibular Sciences
and
German Society of Legal medicine

XVII ème Congrès A.F.I.O. - GAND, Belgique - 04.-05. Octobre 2007

IDENTIFICATION PROCEDURES OF DEAD BODIES BY DENTAL MEANS

A contribution of the German Academy of Forensic Odontostomatology

Authors
Grundmann C, Duisburg, Kirsch H-P, Saarbruecken, Lessig R, Leipzig and Roetzscher K, Speyer

Abstract
The identification of dead bodies in single cases and/or in mass disasters by dental means is based on the maceration of the jaws, photography, x-rays, x-ray examination and comparison with AM-documents. According to the DVI Guide-Draft odontology sections, March, 21th, 2007 the poster shows a biologic method of maceration, digital photographs, digital x-ray techniques and comparison with anatomic files (remarks concerning individual methods of identification).

Keywords
Forensic Odontology, Documentation, Identification, Maceration, Photography, X-rays

Introduction
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Corresponding address
Dr. med. Dr. med. dent.
Claus Grundmann
City council of Duisburg/Germany
- Public Health Department -
Viktoriastr. 8, D-47166 Duisburg
Tel +49-203-283-5264
Fax +49-203-283-5298
eMail: C.grundmann@stadt-duisburg.de