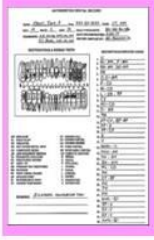
UTILITY OF COMPUTER SOFTWARES IN FORENSIC ODONTOLOGY

INTRODUCTION: We are living in the era of science & technology that has infused with many aspects of our everyday life. The importance of identification is on increase as natural calamities, mass disasters and crimes are on a rise. The forensic dental team plays a vital role in the process of identification during such unfortunate events. For this purpose, comparative analysis is done which is simplified with the usage of computer assisted softwares. This poster emphasizes the role of the various recent and upcoming softwares used vividly in the field of forensic odontology.

COMPUTER SYSTEMS USED IN FORENSIC ODONTOLOGY

Computer Assisted Post Mortem Identification (CAPMI)
- Oldest computer system
- Used for dental identification of the passengers on Valuejet disaster.

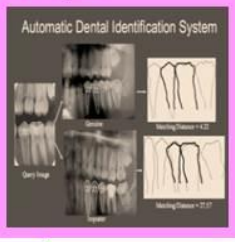


WINID
- System for matching missing and unidentified persons.
- Replaced CAPMI.

INTERPOL- Disaster Victim Identification(DVI)
- International appeal.
- Employs the FDI tooth numbering system.

National Missing and Unidentified Persons NamUs
- Launched in July 2007.

Automatic Dental Identification System (ADIS)
- Uses image processing and pattern recognition techniques.

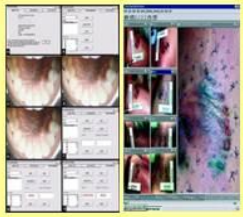


SIGNIFICANCE IN FORENSIC ODONTOLOGY

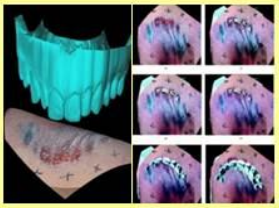
ADOBE Photoshop
- Clarify video stills, convert formats, remove unwanted colours or artefacts to reveal hidden information and compare and autnenticate the data.

Image Explorer for Age Estimation (TW2 method)
- Software development platform of the Image Sciences Institute.

Integrating dental data in missing persons and unidentified remains investigations (DIP3)
- A computerized aid to assist in dental identification.
- Integrated into the RESOLVE INITIATIVE, a joint endeavour by the Ontario Provincial Police.



Palatal Rugae Comparison Software (PRCS).
- To match the clinical photographs.
- Excellent results to support the individuality of Rugae.



Forensic 3D CAD supported photogrammetry approach (FPHG)
- Use a 3D surface scanner.
- The first 3D approach for bite mark analysis.
- The documentation has no distortion artifacts

WinID

WINID
- System for matching missing and unidentified persons.
- Replaced CAPMI.

SOFTWARES FOR IMAGE ENHANCEMENT

PICASA

iClone

ADOBE

FORENSIC TOOL KIT

CSIpix

LUCIS Pro 6.0

AutoCAD

ADVANTAGES OF COMPUTER SOFTWARES OVER MANUAL METHODS

1. To store, sort and match antemortem and postmortem records in a speedy and accurate manner.
2. Accurate process.
3. Less time consuming.
4. Enables clear visualization of the images.
5. The 3-D images can be freely moved, rotated or zoomed to any specific region of interest.

CONCLUSION

Forensic Odontology has much to offer to the law inforcement in the detection or solution of crime or in civil proceedings. Computer softwares have become one of the promising tools to aid in the unquenchable pursuit of evidence. These advances in forensic odontology have proven to be a breakthrough in solving the medico legal cases.

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UTILITY OF COMPUTER SOFTWARES IN FORENSIC ODONTOLOGY

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Abstract

We are living in the era of science & technology that has infused with many aspects of our everyday life. The importance of identification is on increase, as natural calamities, mass disasters and crimes are on a rise. The forensic dental team plays a vital role in the process of identification during such unfortunate events. To come to conclusive identification, comparative analysis is done which is simplified with the usage of computer assisted softwares. They have continued to facilitate and enhance the practice of forensic dentistry as well as revolutionize the way in which the forensic odontologist deals with the cases involving identification, human abuse and perhaps most significantly, the bite mark cases.

There are four modes of positive identification of human remains- gene mapping using deoxyribonucleic acid (DNA), comparison of visual, dental and fingerprint post-mortem data, or combination of these, with ante-mortem information. The computer assisted softwares like CAPMI, WINID, INTERPOL, and Automatic Dental Identification System (ADIS) were designed to improve forensic science examiner efficiency, by relegating aspects of repetitive chart by chart comparison of ante and post mortem records to a computer.

Various sophisticated softwares like Image ADOBE photoshop, Forensic 3D CAD supported photogrammetry approach (FPHG) and Palatal Rugae Comparison Software (PRCS) are developed in order to clarify video stills, to convert formats, to remove unwanted colours or artefacts, to reveal hidden information and to compare and authenticate the data. The inherent efficiencies of computer assisted softwares make it extremely beneficial in future legal proceedings; however, the practitioner needs a basic understanding of computer technology for proper utilization. Proper selection and implementation of the appropriate computer equipment combined with necessary training and correct workflow patterns is required.

This poster emphasizes the role of the various recent and upcoming softwares used vividly in the field of forensic odontology.

Presented at:
National Forensic Odontology CDE & Workshop, at K.G. Medical University, Lucknow, UP

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