Analysis of dental DNA in forensic odontology

Abstract: Modern methods using dental DNA in forensic odontology are specialized fields which help analysis of dental evidence in the interest of justice. Teeth represent an excellent source of DNA material within distinct locations of themselves. DNA which is preserved in and extracted from the teeth of an unidentified individual can be compared to a known antemortem sample or to a parent or sibling. The principal laboratory techniques used to compare and evaluate fragments of DNA material from a suspect or victim are restriction fragment length polymorphism (RFLP) and polymerase chain reaction (PCR) analyses. The method currently preferred to extract as much high-quality DNA as possible is a method called cryogenic grinding. This technique involves cooling the whole tooth to extremely low temperatures using liquid nitrogen and then mechanically grinding to fine powder. The major disadvantage of this method is that the tooth needs to be completely crushed. This specialty is also utilized for identification of individuals through developmental disturbances of teeth, regressive alterations of teeth and tumors and cysts of oral cavity.

Conclusion: When conventional dental identification methods fail, DNA (deoxyribonucleic acid) material from teeth can provide the necessary link to prove identity.

Keywords: modern forensic odontology, deoxyribonucleic acid, teeth.

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