Letter to Editor

Human Identification through Dental Implants: A Novel Perspective

Bones and teeth are the only clue of identity for exhumed human body, single murders, after mass disasters in forensic odontology.[1] Dental implant is placed within the jaw bone to support the dental prosthesis by the process of osseointegration.[2] Dental treatment has witnessed a revolution with the extensive use of dental implants worldwide. This significantly increases the role of dental implants in human identification in forensic science. Various methods used for implant identification are Implant Recognition Software (IRS), radiographic recognition of dental implant, and assessment of batch number of the dental implant. IRS is based on collecting data set stored in a database and recognition by comparing with its radiographic and clinical images of the derived system.[1] Nuzzolese *et al*. in 2008 studied the comparison of postmortem dental radiographic records with antemortem dental radiographic records in forensic identification. The study concluded that an universal radiographic implant image database is needed for a wider geographical evaluation of the different manufacturers.[3] Berketa *et al*. in 2010 stated that there is marginal difference in IRS compared to radiographic method, and IRS needs to be updated with more number of radiographic images.[4] Another study by Berketa *et al*. in 2010 showed laser-etched batch number within the implant chamber survived the process of incineration that could aid identification. The author also emphasized about convincing companies about insertion of serial batch numbers on each implant for deceased identification.[5]

Byraki *et al*. in 2010 used restorative material radiodensity for implant restoration as additional evidence in dental identification apart from the three main morphological parts of implants for identification (apical, midbody, and coronal).[6] Berketa *et al*. in 2011 studied the changes that occur in the implant, and the visibility of the batch number presents within an implant following cremation. The result showed that there was a minimal image difference in all implants with identifiable threads and groove, and batch number on the implant was clearly visible on microscopic examination.[7]

The above studies focus on a need of a comprehensive dental implant database that is continuously updated for ease of access. A major challenge to the creation of strong database is the confusion that is present within the scientific community in the absence of universal implant identification and numbering system. This significant challenge and problem were addressed by Sharma and Jhingta who proposed implant identification, numbering, and nomenclature system inclusive of seven components, namely.[8]

1. Dental implant position spatially in quadrant according to Fédération Dentaire Internationale (FDI) tooth numbering system
2. Implant location identified with natural equivalent tooth/ teeth according to FDI tooth numbering system.
3. Endosseous dental implant symbol "≠"
4. Diameter and length of implant with symbol "Φ"
5. Type of dental implant and the name of implant manufacturer
6. Type of abutment

7. Additional information.

The focus of the present article is on the Sharma and Jhingta Implant identification numbering and nomenclature system (IINN) and its utilization in human body identification in forensic odontology. The seventh component of IINN system proposes additional information about the implant. The incorporation of etched serial batch number of the dental implant as additional information in the 7th component of IINN system is recommended. As inclusion of etched batch number in IINN system would generate unique identity serial number to the individual. The identification generated through proposed Sharma and Jhingta IINN system with patient's demographic information needs to be uploaded by the dentist in the manufacturer website. This information stored in database of manufacturer will go a long way in human identification in forensic science. This simplifies the retrieval of the information from the manufacturer database by the competent investigator. If a human body to be identified has dental implant(s), the forensic odontologist could use the above-mentioned method providing a significant lead in identification. It thus becomes quintessential for manufacturer to introduce etched serial batch numbers in dental implants which remain unaffected by the decomposition factors of the environment. Thus, the integration of Sharma and Jhingta IINN system with manufacturer etched serial batch number for the creation of authentic human dental implant database in forensic odontology is the need of the hour.

FINANCIAL SUPPORT AND SPONSORSHIP
Nil.

CONFLICTS OF INTEREST
There are no conflicts of interest.

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How to cite this article: Gurung D, Sharma D, Bhardwaj VK, Jhingta P. Human identification through dental implants: A novel perspective. Int J Forensic Odontol 2021;6:84-5.