Forensic Odontology in India: Present Scenario, Hurdles & The Way Forward

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Abstract

The utilization of forensic odontology services in India is not proportional with the volume of research undergoing in this specialty. A lot of scientific knowledge is generated in this field, but recommendations on how to translate this knowledge into real world for the benefit of stakeholders are lacking. This article presents some of the key areas where forensic odontology can be of significant help, highlighting the present scenario and hurdles associated with them along with recommendations for better utilization of forensic odontology services. A special act for the regulation of activities of a forensic odontologist would expedite the mainstreaming of forensic odontology. A credentialing body modeled on the functioning of various international organizations needs to be constituted in India.

Key Words: Forensic Odontology, Disaster Victim Identification, Bite Mark, Age Estimation

Background

Developing nations including India are vulnerable to many sort of disasters, spanning from natural to man made. The nation recently witnessed the wrath of nature in the form of floods hitting the Uttar Pradesh and Bihar regions causing multiple casualties. Many lives are also lost because of human error in the form of structural failure, Kolkata flyover collapse being the latest example. Most of the bodies of victims of such disasters remain unidentified.

With gender equality being the center of sustainable development, crime against women are on the rise in India. Latest Govt. report on crimes against women states that, more than 1,28,000 rape cases were pending trial in Indian courts by 2017, the latest year for which data is available. More than 100 children are sexually abused everyday in India as per National Crime Records Bureau data. Many cases of sexual violence remain pending for long period in courts for the want of evidence.

With India implementing Citizenship (Amendment) Act, 2019 the country is facing issues about illegal immigrants and refugees. These illegal immigrants/refugees have no official documents such as Govt. issued identity card, address proof or birth certificate with them. In addition to this issue, in India many births occur outside hospital setup and they are never reported to the authorities. Therefore many Indians too, along with the illegal immigrants and refugees, do not have birth certificates. While deciding between illegal immigrants and Indian legal citizens depends upon specific documentary proofs, the issue of date of birth, thus age remains unanswered.

Insurance regulatory & development authority of India (IRDAI) is set to include dental treatment under the umbrella of insurance cover, but it has not addressed the potential problem of dental fraud.

Utilization of forensic odontology (FO) services is not proportional with the volume of research undergoing in this specialty. Many scientists are doing the novel work of improving the existing knowledge by
Discussion

Disaster Victim Identification (DVI)

As citizens of different nationalities can become victims of a disaster, the nation’s DVI policy holds great importance. DVI is primarily the responsibility of the nation in which the disaster happens.

Present scenario:

National Disaster Management Authority is the nodal authority for disaster management. But no policy on DVI exists.

Hurdles:

Lack of DVI policy has been the cause of many unidentified bodies thus contributing to the persistent agony to the families of the departed.

Recommendations:

Initially, DVI policy of Interpol can be adopted to constitute a core team of experts which includes forensic odontologist, forensic anthropologist, forensic geneticist and a fingerprint expert.

Expected outcome:

Efficient implementation of DVI policy will result in rapid closure of matters (financial, social, etc) associated with the departed.

Identification of human bodies & remains recovered from a crime scene

Investigation of a homicide case cannot progress until the body or recovered remains are positively identified. Dental identification is promising in cases of mutilated, charred or decomposed bodies.

Present scenario:

Unidentified bodies recovered from a crime scene are photographed and these photographs are circulated with other police stations (on official websites) for visual recognition. Unidentified bodies are stored in mortuary freezer for 72 hours, after which they are disposed. In very few cases only, recovered human remains are dispatched for Deoxyribose Nucleic Acid (DNA) identification.

Hurdles:

Not many efforts are put in for scientific identification. An unidentified body stalls further investigation of a homicide case. DNA identification, which is technique sensitive, costly and time consuming, does not guarantee results in every case. Services of forensic odontologist are not sought on a regular basis.

Recommendations:

In such cases, oral autopsy should be made mandatory. Forensic odontologist will perform oral autopsy to facilitate dental identification of the unidentified body or human remain in the form of a skull.

Expected outcome:

Scientific identification of unidentified bodies will expedite the process of investigation and will assure accuracy of the death certificate thus issued.

Bite-mark analysis

Bite-marks not only allow for the identification of the biter, but their presence on different areas of the body is also a tell tale sign of the nature of offence committed.

Present scenario:

Medical officers are responsible for collecting evidences from a sexual offence survivor. Govt. has given detailed guidelines on the components of the medicolegal examination report of sexual violence. Forensic medicine experts collect such evidences in cases the victim is dead.

Hurdles:

Although the guidelines acknowledge bite mark as
one of the many physical injuries possibly found on the body of a victim, it does not comment on collection of bite mark evidence itself. Neither medical officers nor forensic medicine experts are trained in identifying, collecting & interpreting bite-mark evidence.

Recommendations:

Services of a forensic odontologist should be sought in each and every case of a sexual assault and rape for identification of bite-mark injuries and relevant evidence collection. Forensic odontologist should be appointed at each one stop center dedicated to the survivors of such crimes.

Expected outcome:

Accurate interpretation of bite-mark evidence will add significant merit to the prosecution’s case and lead to speedy delivery of justice.

Age estimation of living individuals

It is required in cases where knowing the age of the victim or accused is pivotal to the outcome of the case.

Present scenario:

As many births in India occur outside hospital setup, birth certificate is never issued in such cases. Indian civil & criminal courts, call for a bone age test to solve the problem of age with such people. Such cases are referred to radiologists and forensic medicine experts. Age estimation is also done for sexual violence survivors.

Hurdles:

Bone age test means skeletal age estimation. Overall, the accuracy of dental age estimation is better and in developing age group the accuracy is remarkable as compared to skeletal age estimation. Annexure 3 of Govt. issued document which defines guidelines for age estimation of the sexual violence survivor, are not in accordance with the latest research in the field of forensic age estimation, especially dental age estimation. Radiologist and forensic medicine experts are not trained in dental age estimation.

Recommendations:

Dental age estimation (DAE) should be made mandatory to those who are not in possession of birth certificate or when its authenticity is contested. Judiciary should seek opinion of forensic odontologist for dental age estimation in such cases along with bone age test. DAE also has immense applications with respect to sports and child labour (The Factories Act, 1948).

Expected outcome:

As DAE is in a narrow range, chances of a juvenile being wrongly estimated as an adult and an adult being wrongly estimated as juvenile are far too less. DAE will result in better resolution of issues that are age sensitive, so that justice is not miscarried.

Age estimation and sex determination of human remains

Age and sex are important aspects of biological profile of the dead and their assessment allows the police to narrow down the possibilities in identification efforts. The question of age and sex is also significant where human remains are recovered from archaeological sites.

Present scenario:

Opinion of anthropologists and radiologists is taken to estimate age and determine sex of the human remains recovered from a crime scene or archaeological excavation site.

Hurdles:

The opinion of forensic odontologists is rarely sought in such situations. In western world such expertise has given valuable insights into the case.

Recommendations:

Expertise of forensic odontologists in areas such as face reconstruction and opinion on the race, ethnicity, culture, dietary habits, occupation can greatly help both the law enforcement as well as archaeologists, anthropologists and historians.

Expected outcome:

Knowledge of biological profile in the form of age, sex, race, ethnicity, etc. will not only solve the mystery of identity of the victim of a crime but also help us understand human history in a better way.
Opinion on dental trauma with respect to Section 320 Indian Penal Code (IPC)

Fracture or avulsion of a tooth is defined as grievous hurt under section 320 IPC.

Present scenario:

General practicing dentists are unaware of legal implications of dental trauma. Many cases of oro-dental trauma, which are in fact medico-legal in nature go unnoticed in general dental practice.

Hurdles:

Private dentists are focused only on the treatment aspect of such cases, completely ignorant of the legal implications. Not many dentists are versed with IPC section 320 which describes grievous hurt.

Recommendations:

Practicing dentists should be trained to identify and manage medico-legal cases or they should refer such cases to forensic odontologist or appropriate authorities. Emergency care and legal aspects of oro-dental trauma should be a part of dental undergraduate training.

Expected outcome:

Proper documentation of oro-dental injuries by the treating dentist will help law enforcement authorities in investigation.

Opinion in abuse cases

Signs of physical abuse are concentrated in head, neck and face region of the victim.

Present scenario:

Many cases of abuse go unnoticed by dentists. Dental practitioners are unaware of their vantage position to detect cases of abuse, because the region where signs of abuse are mostly found is actually the expertise of a dentist.

Hurdles:

As the abuse is not detected, thus intervened at right time, the abuse may continue, resulting in deep psychological trauma apart from the physical injuries incurred.

Recommendations:

Dental practitioners should be made aware of their social responsibility of reporting a potential case of abuse to appropriate authorities. Dentists who are already trained to diagnose & treat oro-dental trauma should be oriented towards this issue.

Expected outcome:

Many lives can be saved by timely intervention and stoppage of this vicious cycle of abuse.

Opinion in dental fraud cases

Multinational companies give various health related perquisites to their employees such as reimbursement of expenses incurred for dental treatment and dental insurance.

Present scenario:

This dental treatment expenditure is reimbursed to the employee upon submission of relevant documents as per the company’s policy. Insurance claims are also settled in a similar manner.

Hurdles:

The employees may produce fake documents in collusion with a dentist for financial gains. With India on the verge of inclusion of dental treatment in health insurance, the possibility of dental insurance fraud cannot be denied. This menace has already plagued developed nations where dental insurance is already in the mainstream.

Recommendations:

Corporates offering dental benefits and insurance companies should hire forensic odontologists as claim scrutiny officers.

Expected outcome:

IRDAI will make necessary provisions to keep a check on fraudulent cases. Fraudulent claims can be segregated from the genuine claims, increasing the overall efficiency of claim settlement procedure.

Conclusion

Govt. in the financial budget for 2020-21 has
announced a central forensic science university, which is a welcome move as it will increase the number of forensic experts in the country. This move will also spread awareness of forensic services among the stake holders.

Section 45 of The Indian Evidence Act, 1872 bestows the crown of an Expert Witness on the forensic odontologist. Although no additional legal provision is necessary in this regard; however, a special act for the regulation of activities of a forensic odontologist would expedite the mainstreaming of FO. To achieve this goal, Govt. should formulate an expert core committee consisting of all the stake holders such as police, judicial, scientific personnel, social workers and representatives of the people. The task of the core committee is putting up the road map of FO in the form of a bill. The bill should then be passed as an Act through appropriate constitutional provisions. Thereafter, the Govt. should issue directives to concerned authorities, regarding implementations of the recommendations of core committee in compliance with the said Act.

The functioning of forensic odontology societies of developed nations such as American Board of Forensic Odontology, British Association of Forensic Odontology, Bureau Of Legal Dentistry, Australian Society of Forensic Odontology needs to be studied. A credentialing body modeled on the functioning of these organizations needs to be constituted which will maintain a list of qualified experts as well as formulate the standard operating procedures related to different aspects of forensic case work to maintain quality of the forensic reports. Govt. should make necessary amendments in relevant acts to accommodate and better utilize the services of FO.

Complete utilization of the spectrum of FO services will ensure more names assigned to the unidentified bodies, higher conviction rate in sexual violence and homicide cases and reduction in child abuse. Forensic odontology is central to the overall motive of uplifting humanity even after death by promotion of humanitarian and ethical forensics.

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