



Personal experience of Forensic evidence and solutions: A case series in a Forensic Odontology frame work

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Abstract:

Globally, challenges are faced in the field of Forensic Odontology and there is a need for correct training in the subject. There is an overlap with the justice system and the subject has its application disaster victim identification (DVI) scenario. The current article presents cases series which will give an insight on how a dental expert can obtain, analyse and present oral evidence. These cases are compilation of personal experience during authors posting as Dental Health Officer, Department of Health and Family Welfare, Government of Karnataka. The series of cases presented shall be of interest to all the readers, especially for budding Forensic Odontologists, as they have to be prepared to be present as an expert witness in the Court of Law. An insight to DVI is also added for highlighting how forensic odontologist can gain from cases discussed in the current article.

Keywords : Forensic odontology, expert witness, Court of Law.

Introduction:

Forensic odontology/forensic dentistry has been defined as “that branch of forensic medicine which in the interest of justice deals with the proper handling and examination of dental evidence and with the proper evaluation and presentation of the dental findings.” [1,2] In simpler sense forensic odontology is application of oral and para-oral expertise and knowledge in civil and criminal context. [2]

Earlier dental findings were used to identify victims of 'Great fires' those being the first great accidents, even long before the existence of the aero planes. It was valuable in solving crimes and used to work on practical basis without support from the scientific evidence. Increase in facilities of air travel led to increase in air crashes that cause the death of large number of people at one and the same time. Slowly the Countries / Air Services have accepted the significance of Forensic Odontology. [3]

In recent times, Forensic Odontology has become even more advanced as there is involvement of Central and State level Government in criminal matters, disasters (man-made /

natural), and for the purpose of legal litigations. [4] Forensic odontology has been included in the Bachelor of Dental Surgery (BDS) curriculum in the year 2007. [5,6] The subject in spite of being relatively new and has come long way. Indo-Pacific Academy of Forensic Odontology (INPAFO) has played an important role in bringing academicians and researchers of world over on a common platform for upliftment of the subject of forensic odontology. Though the current article presents 4 case reports for readers of journal of INPAFO to highlight how dental expertise can be utilised in forensic context.

Case 1: Government General Hospital, Gonikoppa, Coorg District, Karnataka (2001).

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Local Police of Gonikoppa, Coorg, came to General Hospital with a person, male aged around 50 yrs and requested for the analysis of the three teeth which they bought in a small container and their query was that 'Does these teeth belong to this person?' and 'when was it avulsed?' as the accompanying person was claiming that the teeth belong to him and this happened due to the fight between two parties in the same morning.

After clinical examination, I could confirm that, teeth belonged to the person bought by the police. The teeth identified were of the lower mandibular arch, two central incisors and left lateral incisor, corresponding to the missing teeth of that person.

For the question, "when was it avulsed?" After taking intra oral periapical x-ray and evaluating, I told that the teeth were avulsed at least 3 to 4 days back and not on that day morning as claimed by the individual. The wound closure was seen clinically and teeth were having not much of bone support as per the x-ray and the person was suffering from chronic generalized periodontitis.

Later it was found out that this person wanted to take revenge on his opponent as he knew fracture / avulsion of teeth is a grievous injury and this would favor him in Court of Law.

Case 2: Government K R Hospital, Mysore Medical College, Mysore, Karnataka (2002).

A 17-year-old boy came with avulsed both upper central incisors with laceration and other injuries to the Medical OPD and later referred to Dental Department of K R Hospital, Mysore. In a street brawl, the boy was hit by a kada (Steel bangle). The case was documented in Medico Legal Case (MLC) register (register maintained at Dental Department of K R Hospital, Mysore) and wound certificate was issued.

Later, I was called upon as expert witness for the same in court. The expert witness must carry MLC register to the court for the perusal of honorable judge. During the evidence presentation, the lawyer of the offender just asked two questions & wanted me to answer in 'Yes/No' format:

Question 1: Is the MLC register which you are carrying is it from K R Hospital, Mysore?
My answer: 'Yes'

Question 2: The register shows the name as Dental Department, K R Hospital.
My answer: 'Yes'

Then lawyer turned towards the Honorable Judge and argued that the 'Doctors are maintaining a parallel register at their whims and fancies at their Dental Department of K R Hospital. This register must not be considered as a valid Medico Legal Case register of the K R Hospital, Mysore.

Initially, I was not allowed to give clarity by the lawyer. Later the Honorable Judge gave a patient hearing to my explanation of the validity of the MLC register. I explained how records are maintained in our Dental Department to the Honorable Judge and it is a Valid MLC register and all Dental records of K R Hospital, Mysore is recorded here as the treatment and further management done by the Dental Department, K R Hospital Mysore. This allowed the victim to get the compensation from the offenders.

Case 3: Bus accident took place at Pandavapura (Village) near to Mysore, Karnataka.

A bus accident took place in a village called Pandavapura around 30km from Mysore city. Patients with major & minor injuries were brought for treatment to Government K R Hospital, Mysore. One of the patients was a school girl aged around 8 yrs, was sent to Dental Department K R Hospital for the needful. On examination, her both upper right maxillary deciduous molars were intruded and fractured along with other injuries which were treated. Wound certificate was issued, stated as 'grievous injury' as tooth was intruded inside the socket.

Patient went to the Court at Pandavapura for compensation from the driver and also the owner of the bus. I was called for expert evidence twice to present in the Court of Law and this case went on for more than a year. To give evidence, I was travelling from Mysore city to Pandavapura (village) where the Court was present (around 30 km) as expert witness.

The Court wanted to know is that the case grievous or not, to fix the compensation. I explained the Honorable Judge that the patient is young female and the nature of injury where permanent successors may or may not erupt even with orthodontic treatment. This will have tremendous effect on the patient throughout her life esthetically / physically and psychologically / mentally.

Case 4: Indian Airlines Flight 605; A320-231 Air crash; Bangalore, Date: 14 Feb 1990

I wish to share my experience as student at Government Dental College, Bangalore, in the year 1990. It was Karnataka' worst air accident of the Indian Airlines flight Airbus A320-231 Aircraft VT-EPN, (Figure 1) dated 14th February of 1990. [7,8] The crash occurred at 13.30 hrs, at

Bangalore Airport (Karnataka, India). The Aircraft was 400 meter short of the runway when it hit the ground killing 92 passengers and injuring 54 passengers.

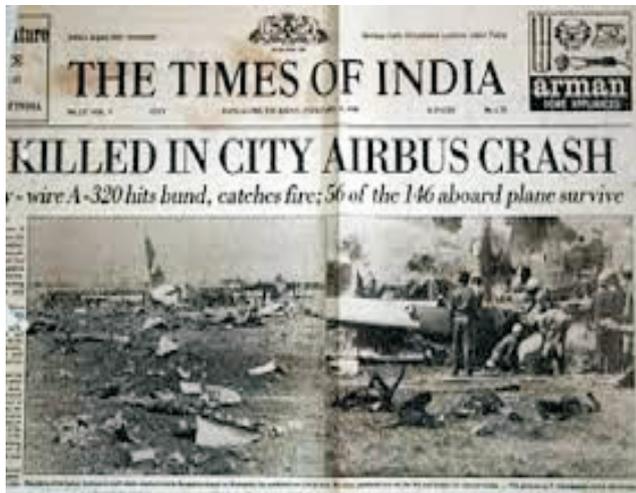


Figure 1: Newspaper clip of Times of India for Bangalore air crash

At the site people were limping out of the water as it was a sort of wet marshy land. Entire Bangalore police was there for the rescue. Wireless sets were the only means of communication with the police Department. Injured were moved to the hospitals.

More than 50 bodies were shifted to Victoria hospital, Bangalore. There were no facilities to preserve the bodies. No transferring of the bodies until the relatives identified the bodies. Many bodies were not claimed by next of kin. The bodies were badly charred, forcing the police to go for a mass funeral. Later, after a prayer for the departed souls, a mass funeral was held.

A Team of Senior Faculty and Interns of Government Dental College, Bangalore went to mortuary for recording of the dental data. To open the jaws of the bodies was very difficult due to burn, subsequent swelling up of bodies, and the ice which was used to preserve. Foul smell of charred / decomposing bodies made it difficult to do the odontological recording. Literally our team used jaw - openers to open the jaw to record the dental findings. Tongues were swollen it was making things difficult for recording the details as some bodies were recovered from wet land.

We were well guided by our senior staff who were also doing the work and co-coordinating with the police and the relatives of the deceased. We were able to record dental silver amalgam fillings and dental fixed bridges. I also recorded the findings of two bodies. For us it was first 'first-hand

experience'. The routine training (hospital postings) in causality, emergency, burnt wards at different government hospitals made us endure these and do the needful.

Outside the mortuary the place was full of police, press and relatives. There was a display of the contents near the mortuary, found from the bodies like burnt purses, currency notes, gold chains, watches etc. Relatives who were present there were confused especially of the crew to Identify and claim the body because of the uniform with respect to cabin crew / disfigurement due to fire (charred bodies). The data collected by our GDC Bangalore team were useful in identifying many bodies and handed over to the family members.

Discussion and road ahead:

Forensic Odontologist can be involved in following tasks:

1. Dental Profiling:

- Dental Age estimation (DAE): Various techniques involving extracted teeth as well as 2D and 3D radiographs have been used in DAE with variable accuracy and precision. of these, DAE in living individuals is mostly done radiographically on orthopantomograms (OPGs). Amongst all methods employing OPGs, Demirjian 7-teeth and 8-teeth methods have been tested most frequently in multiple ethnicities, including Indian population. It has further been developed as comprehensive age estimation charts [DAEcc (9) and DAEC8 (10)] respectively, that have been validated on Indians from various regional backgrounds. [11] Many newer atlas based methods like London atlas and Camrierie open-apex methods are also being tested for populations in different age groups.
- Establishing ethnicity: There are various metric and non-metric traits which can govern ethnicity in varied populations. ASUDAS system (Arizona State University Dental Anthropology System) is the most popular and comprehensive non-metric ethnicity determinant and the terminologies employed for the morphological parameters of the teeth are best understood by a dentist and can be used to classify differences in teeth of multiple populations. [12]
- Sex determination: Various osteological and dental parameters govern the difference in male and female skulls and their identification can be aided by the anatomic and practical know-how of the dentists. [13]

2. Bite mark analysis:

Dental traits can be identified on the bite mark pattern, on site as well as on photographs. A forensic odontologist is trained

to take those photographs keeping an ABFO (American Board of Forensic odontology) scale by the site of bite mark and take life size records. Besides, the salivary DNA in a bite mark can also serve as signature for identification. [14,15]

3. Forensic Facial Reconstruction (FFR):

Various skills and knowledge honed by dentists can come handy while performing. Specifically, orientation for skull in Frankfurt Horizontal plane while performing FFR or recording it, applying facial soft tissue thickness (FSTT) on 10 midline and 11 lateral points can be identified as well as researched in different population and ages by the dentists. [16]

4. Disaster Victim Identification (DVI):

Comparative identification of victims can be made by antemortem records available with the dentists where anatomical, dental features along with case history records, radiographic and photographic records can be instrumental in DVI in case of mass disasters. [16]

5. Rugoscopy and Cheiloscopy:

Study of rugae (i.e. mucosal folds in the middle of palate) [17] and study of grooves present. [18]

After presentation of cases and appraisal of literature in the present article, following suggestion have been compiled:

1. Follow / have Standing Order Procedures
2. Create a dedicated team.
3. Have training keep abreast of the situation / mock drill.
4. Do some background work / know the terrain / ante mortem records
5. Be prepared for any kind of disaster
6. Give importance to 'Practicability and Objectivity'..
7. Be prepared' for the unforeseen.

It is suggested that Central and State Government should implicate in phased manners is to include digital OPGs of the population and link them with Aadhar card. This will serve as Ante mortem record and be helpful for the identification of the individuals. Besides, a forensic odontologist should be mandatory in the team involved in DVI and FFR.

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