



## Letters to the Editor



## Frontal sinus radiographs – A useful means of identification

Forensic importance of frontal sinus radiographs is well-known in identification.<sup>1–4</sup> Comparison of antemortem and postmortem frontal sinus radiographs serves as an excellent method of identification in the forensic case work where other means of positive identification like DNA matching and reconstruction of facial contours are not possible.<sup>5,6</sup>

In an interesting case report<sup>7</sup> recently published on the subject matter the authors have made certain surprising observations and conclusions. In the reported case of an unidentified victim, post-mortem facial photographs, fingerprints and DNA material was collected as evidentiary material prior to the burial procedure. Later on the victim was eventually identified by the family members from postmortem photographs. Since fingerprint records were not available and DNA matching is not done routinely, a 6 year old skull radiograph (AP view) was acquired from the presumed family members, and the skull and jaw bone were obtained after exhumation. Postmortem radiographs of the skull were taken for comparison with the antemortem records.<sup>7</sup>

On comparing the same reference points in the antemortem and postmortem images, the values obtained did not match. The authors at this point have attributed the difference in absolute values to the changes in the positioning of the skull while radiographs were taken, radiographic distortion, and absence of soft tissues in the postmortem specimen. The authors had the liberty to identify the exhumed skull and mandible even when the antemortem and postmortem values did not match since the real identity was never a question in the reported case; the victim was already identified by the postmortem photographs. The possibility of antemortem and postmortem radiographs belonging to two different individuals was never considered. The authors further observed the antemortem and postmortem ratios for different variables to be the same. Probably owing to the same reason that the actual identity was never in doubt, the authors very conveniently considered that same ratios indicate the validity of the applied technique. Table 1 in the article [7] however does not support the claim of the authors. The ratio for different variables actually varies from 0.80 to 0.89 and this range itself appears quite big to be considered as same.

It is quite apparent from the case details that since the victim was already known and initially identified by postmortem photographs, even after a disparity in absolute values in antemortem and postmortem radiographs, and variations in the observed antemortem and postmortem ratios authors were able to fix the identity of the victim with certainty. Important issue remains if it is reliably possible to identify an individual (in absence of photographs) by this method in cases when the values in antemortem and postmortem radiographs show a disparity as reported in the case.

Apart from the absolute values, other points of resemblances between the antemortem and postmortem images such as shape, margins and density etc. need to be confirmed in such cases of disparity. Instead of taking antemortem and postmortem ratios, facial reconstruction or superimposition with the help of photographs remained the better available choice for confirmation of identification. The authors<sup>7</sup> claim that the ratios between antemortem and postmortem radiographs provide evidence looks overenthusiastic when the ratios actually vary to a certain extent. Similar ratios may be observed in skulls belonging to different individuals and thus these ratios should not be taken as a reliable parameter of identification from frontal sinus prints.

## Conflict of Interest

None declared.

## References

1. Silva RF, Pinto RN, Ferreira GM, Daruge Júnior E. Importance of frontal sinus radiographs for human identification. *Braz J Otorhinolaryngol* 2008;**74**(5):798.
2. Christensen AM. Assessing the variation in individual frontal sinus outlines. *Am J Phys Anthropol* 2005;**127**(3):291–5.
3. Ribeiro Fde A. Standardized measurements of radiographic films of the frontal sinuses: an aid to identifying unknown persons. *Ear Nose Throat J* 2000;**79**(1):26–8. 30, 32–33.
4. Quatrehomme G, Fronty P, Sapanet M, Grévin G, Baillet P, Ollier A. Identification by frontal sinus pattern in forensic anthropology. *Forensic Sci Int* 1996;**83**(2):147–53.
5. Campobasso CP, Dell'Erba AS, Belviso M, Di Vella G. Craniofacial identification by comparison of antemortem and postmortem radiographs: two case reports dealing with burnt bodies. *Am J Forensic Med Pathol* 2007;**28**(2):182–6.
6. Pfaeffli M, Vock P, Dirnhofer R, Braun M, Bolliger SA, Thali MJ. Post-mortem radiological CT identification based on classical ante-mortem X-ray examinations. *Forensic Sci Int* 2007;**171**(2–3):111–7.
7. da Silva RF, Prado FB, Caputo IG, Devito KL, Botelho T de L, Daruge Junior E. The forensic importance of frontal sinus radiographs. *J Forensic Leg Med* 2009;**16**:18–23.

Tanuj Kanchan DFM MD  
(Assistant Professor)

Department of Forensic Medicine and Toxicology,  
Kasturba Medical College,  
Mangalore,

India

Tel.: +91 9448252394; fax: +91 824 2428183.

E-mail address: [tanujkanchan@yahoo.co.in](mailto:tanujkanchan@yahoo.co.in)

Kewal Krishan MSc PhD  
(Assistant Professor)

Department of Anthropology,  
Panjab University,  
Chandigarh,  
India