

An Overview of Forensic Facial Reconstruction

Aditya Singh*

Department of Pharmacy, Forensic Science Section, University of Delhi, Delhi, India

Introduction

The technique of reconstructing a person's face from their skeletal remains using a combination of art, anthropology, osteology, and anatomy is known as forensic facial reconstruction (or forensic facial approximation). It is without a doubt the most arbitrary—as well as one of the most contentious—methodologies in the discipline of forensic anthropology. Despite this criticism, facial reconstruction has been successful enough times to warrant continued research and methodological advancements. Facial reconstructions are made for remains thought to have historical value, as well as for remains of ancient humans and hominids, in addition to those implicated in criminal investigations [1].

Types of identification

In forensic anthropology, there are two types of identification: circumstantial and positive [2-4].

Circumstantial identification: When an individual matches the biological profile of a group of skeleton or mostly skeletal remains, circumstantial identification is established. Since several people could fulfil the same biological description, this kind of identification cannot confirm or validate identity.

Positive identification: A set of distinctive biological traits of an individual are matched with a set of skeletal remains to establish positive identification, one of the fundamental objectives of forensic research. The skeletal remains must match up with certain ante mortem wounds or pathologies, dental or medical records, DNA testing, and other methods in order to be properly identified. When all other identification methods have failed, facial reconstruction offers investigators and family members involved in criminal cases involving unidentified remains a distinctive alternative. The inputs that eventually lead to a positive identification of remains are frequently provided by approximate facial representations [5].

Legal admissibility

The Daubert Standard is a legal precedent that the Supreme Court of the United States established in 1993 regarding the admissibility of expert witness testimony during legal proceedings. Its purpose is to guarantee that expert testimony is supported by adequate facts or data that are obtained through proper application of trustworthy principles and methods. No two reconstructions for the same set of skeletal remains produced by different forensic artists are ever identical, and the data used to build the approximations is largely lacking. As a result, forensic facial reconstruction does not adhere to the Daubert Standard, is not regarded as a method of positive identification recognised by

the law, and is not admissible as expert witness. Reconstructions are currently only created to support the process of positive identification in tandem with verified method.

Types of reconstructions

Two-dimensional reconstructions: Antemortem images, the skull, and two-dimensional facial reconstructions are the foundations for these. Sometimes radiographs of the skull are used, however this is not ideal because many cranial features are not visible or are not scaled appropriately. Typically, a forensic anthropologist and an artist must work together on this technique. Karen T. Taylor of Austin, Texas developed a widely utilised technique for 2D facial reconstruction in the 1980s. Taylor's technique is imaging an unidentified skull after attaching tissue depth markers at numerous anthropological sites. Drawings of faces on transparent vellum are then built upon life-size or one-to-one frontal and lateral photographic reproductions. The recently created computer software applications F.A.C.E. and C.A.R.E.S. swiftly create two-dimensional facial approximations that are relatively simple to edit and manipulate. Despite the fact that they might produce more generic images than hand-drawn art, these programmes may help speed up the reconstruction process and enable the application of tiny adjustments to the drawing.

Three-dimensional reconstructions: Modeling clay and other materials are used to build sculptures (formed from castings of cranial remains) for three-dimensional facial reconstructions, or high-resolution, three-dimensional computer graphics. Similar to two-dimensional reconstructions, forensic anthropologists and artists are typically needed for three-dimensional reconstructions. Computer programmes manipulate stock photos of face traits, scanned images of the unidentified skull bones, and other available reconstructions to produce three-dimensional reconstructions. Due to the fact that they don't come off as very fake, these computer approximations are typically the most successful in identifying victims. The National Center for Missing & Exploited Children adopted this technique and frequently uses it when releasing images of unidentified decedents to the public in an effort to identify the person in question.

Superimposition

One approach of forensic facial reconstruction that is occasionally used is superimposition. Because investigators must already be familiar with the identity of the skeletal remains they are working with, this technique is not always used (as opposed to 2D and 3D reconstructions, when the identities of the skeletal remains are generally completely unknown). A photograph of a person thought to be associated with the unidentified skeletal remains is placed over an X-ray of the unidentified skull to make forensic superimpositions. The anatomical features of the face should line up precisely if the skull and the image are of the same person.

Methods of reconstruction

Over the years since its discovery, several variations of craniofacial reconstruction have been applied in numerous fields. As previously mentioned, it is a method that is commonly utilised today all over the world and has shown to help with forensic investigations by identifying victims of various crimes. To reconstruct the victim's identity, forensic

*Address for Correspondence: Aditya, Singh, Department of Pharmacy, Forensic Science Section, University of Delhi, Delhi, India, E-mail: aditya_s@gmail.com

Copyright: © 2022 Singh A. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Date of Submission: 02 July, 2022, Manuscript No. jfr-22-74212; Editor assigned: 05 July, 2022, PreQC No. P-74212; Reviewed: 16 July, 2022, QC No. Q-74212; Revised: 22 July, 2022, Manuscript No. R-74212; Published: 30 July, 2022, DOI: 10.37421/2157-7145.2022.13.502.

professionals will draw on their in-depth understanding of the facial muscles and tissue attachments on the skull. In order to accomplish so, it is crucial to take into account the skull's appearance, the soft tissues that are related to it, and the corresponding scans (X-Ray, CT Scans, and ultrasound).

The Russian Method is a craniofacial rebuilding technique that makes use of the skull's muscles. This technique emphasises where the muscles attach to the skull and recreates the victim's skull's musculature using a material that resembles clay. The American Method is a different reconstruction technique that focuses on the skull's surrounding tissue. This technique requires the facial tissue depth information captured using tissue puncture markers and/or ultrasounds on previous remains or living patients. Based on characteristics like ethnicity, sex, and age, this technique can show how different reconstructions of remains differ from one another. The American Method and the Russian Method are combined to create the Manchester Method. It is discovered to be the approach that is currently employed the most frequently. It performs the reconstruction using the skull's musculature as well as tissue depth markers and landmarks.

Conflict of Interest

None.

References

1. Shrimpton, Sarah, Katleen Daniels, Sven De Greef, and Francoise Tilotta, et al. "A spatially-dense regression study of facial form and tissue depth: towards an interactive tool for craniofacial reconstruction." *Forensic Sci Int* 234 (2014): 103-110.
2. Deng, Qingqiong, Mingquan Zhou, Wuyang Shui, and Zhongke Wu, et al. "A novel skull registration based on global and local deformations for craniofacial reconstruction." *Forensic Sci Int* 208 (2011): 95-102.
3. Puech, P.F. "Forensic scientists uncovering Mozart." *J R Soc Med* 84 (1991): 387-387.
4. Wilkinson, Caroline. "Facial reconstruction—anatomical art or artistic anatomy?" *J Anatomy* 216 (2010): 235-250.
5. Cerroni, Lorenzo, Regina Fink-Puches, Barbara Bäck, and Helmut Kerl. "Follicular mucinosis: a critical reappraisal of clinicopathologic features and association with mycosis fungoides and Sezary syndrome." *Arch Dermatol* 138 (2002): 182-189.

How to cite this article: Singh, Aditya. "An Overview of Forensic Facial Reconstruction." *J Forensic Res* 13 (2022): 502.