

Short Communication

Investigation of concealed homicide and establishment of positive identification

Mohammed Iliyas Sheikh

Forensic Medicine and Toxicology, Surat Municipal Institute of Medical Education and Research (SMIMER), Opposite Bombay Market, Umarwada, Surat – 395010 Gujarat, India. E-mail: drmiliyas@gmail.com.

Accepted 20 October, 2010

Investigation of homicide is very difficult, starting from pointing out the culprit to collection of positive evidences in favor of the case. More difficulties arise when the evidences are destroyed or the body of offence concealed, by throwing the body in the outskirts or burning or mutilating by the accused. A case is discussed here, having more or less same observations. Various aspects about cause of death, establishment of positive identification etc. are discussed in this paper.

Key words: Homicide, skeletonization, superimposition, positive identification, DNA typing.

INTRODUCTION

History of the case

A complaint was lodged in one of the city police station of Ahmedabad by the father of the missing girl on 16/08/1997. She was a chartered accountant working with a Sari emporium. The investigation was too slow; so the relatives had to approach the homicide department of the Government of Gujarat, for the investigation by the Crime Investigation Department (CID). The case was transferred to CID crime Gandhinagar after four months of investigation by Ahmedabad police. The investigating officer found some clues about the case and arrested the suspected driver and his assistant, working with the owner of the shop. After long interrogation and lie detection test, they told the story of the case and were ready to help in locating the site of disposal of the body of the deceased.

Case summary

On 29/12/1997 police inspector of CID branch Gandhinagar, brought a requisition letter to the department of Forensic Medicine and Toxicology of Government Medical College, Surat, to attend an exhumation at the suspected site of burial of the missing deceased about 200 km away from this center.

The exhumation started on 30/12/1997 morning, in the presence of the executive magistrate, investigating

officer, myself, persons from Forensic Science Laboratory, two independent witnesses and four helpers at the site located by the suspected accused. The site was a hard, elevated, dry soil area, about 30 feet away from the main road. On careful searching in the surrounding a shoe that was recognized by the suspected partner of the accused was recovered. The site shows growth of shrubs, 2 to 3 feet high, samples were collected for further investigation. Digging process started slowly and carefully. After removing about one feet of soil, skull bones became visible, from this moment the instrumentation stopped and cleaning process was carried out manually.

Nearly skelatonized body was recovered in supine position and was missing some small bones. A careful examination was carried out at the site, for any visible injury or fracture. Remains of soft tissues were present at occipital, gluteal, back of right thigh and back of right knee region. On careful examination, fracture of hyoid bone was observed *in situ*, that was picked up and kept on cotton, preserved carefully and sealed. The rest of the bones did not show any fracture.

The skeleton was then shifted on a white cloth and kept in a plastic bag and sealed in coffin, forwarded to the institute for further study. Soil samples were collected from the site, below, above and 10 feet away, for control.

On 31/12/97, at the institute, the proper detailed examination was started and samples like hairs, muscle tissues, scrapping from suspected blood stained areas,



Figure 1. Body *in situ* at exhumed site

dried brain matter etc. along with skull, mandible and teeth were collected and preserved for further investigation. The investigating officer wanted the following clarifications from the medical examination:

1. Race
2. Sex
3. Age
4. Stature
5. Identification – confirmation of suspected missing person.
6. Cause of death.

After cleaning and drying of the bones, the following observations were made.

The bone belongs to a single individual of human origin, features were in the favour of a female having 28 erupted teeth and third molar was impacted in the socket. Blood stained areas were present over posterior and lateral epicondyle of left humerus, over greater trochanter of right femur and over medial aspect of left tibia, that was not washable. Hyoid bone shows evidence of blood stains over the upper front and lower back parts of the body and fracture of the left cornu, with dried blood stains *in situ* and that could be washed with running water (Figure 1).

There was no history of chronic illness in the suspected deceased and no long term medication or any operation was conducted as indicated by the records provided by relatives. The following inferences were made on first hand examination:

1. The bones belong to a single individual of human origin.
2. Sex of deceased was female.
3. All tissues were in the same stage of decomposition.
4. Stature as calculated from long bones by application of multiplication factor and Karpearson's formula was 159.92 ± 2.0 cm.
5. Age of the deceased was between 30 to 40 years.
6. Blood stained area suggestive of antemortem collection

of blood in soft tissues and fracture of hyoid bone.

Samples were preserved for further examination by Forensic Science Laboratory and cause of death was kept pending for the above reports.

1. For chemical analysis:

- i) Dried mass from the cranial cavity (? brain matter).
- ii) Left humerus
- iii) Soft tissues from left knee area

2. For super imposition:

- i) Intact skull
- ii) Mandible

For DNA typing and matching with parents of suspected deceased:

- i) Tooth
- ii) Loose hairs with roots.
- iii) Lone bone
- iv) Soft tissues (Muscles)
- v) Scrapping from blood stained area.

Samples were forwarded to the Regional Forensic Science Laboratory for chemical analysis and superimposition with the photograph of the suspected deceased.

Sample for DNA typing and matching was forwarded to the officer on special duty, Center for DNA Fingerprinting and Diagnostics (CDFD) Hyderabad, with the blood samples of deceased father and mother, by maintaining cold chain. The chemical analyzer report does not reveal any chemical or poison in the samples supplied. The report suggested blood group AB and superimposition confirmed that, the skull and mandible supplied, belong to the suspected missing deceased.

The DNA report also confirmed that, the supplied samples were biologically matched with the blood of the mother and father of the deceased.

After receiving all the reports, the final opinion was drawn that, the exhumed body was of the suspected missing female and death appears to be due to, pressure over the neck, associated injuries over elbow and lower limb, in the absence of any other positive findings and negative chemical analyzers report.

RESULTS

The case was opened and tried in one of the sessions of a court. The honorable presiding officer appreciated the work carried out by the investigating team, especially in

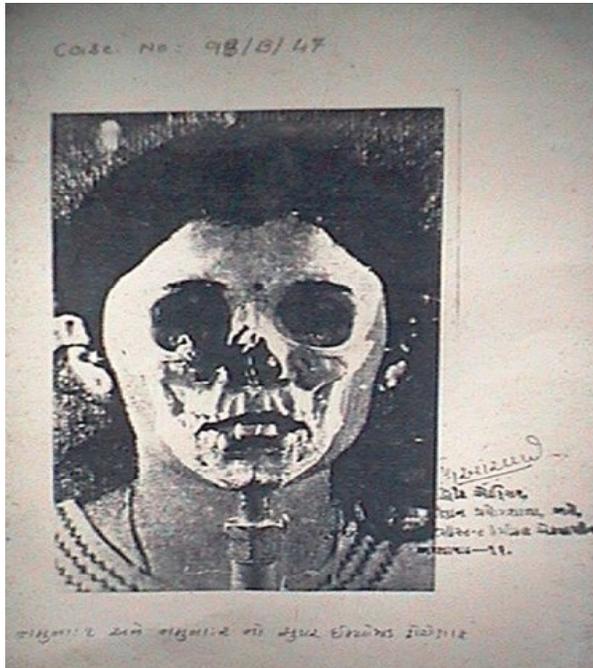


Figure 2. Positive superimposition.

the way the medical examination was conducted and how the final conclusion was reached on available trace evidences; and positive identification was established by all available possible means beyond any doubt (Figure 2). The verdict was passed to all suspects.

DISCUSSION

In partial or complete skeletonised body, one of the major problems is to establish positive identification and cause of death. The bones should be examined in two phases:

1. In general establishment of species, age, sex and stature.
2. A comparative study of the *ante mortem* data of suspected victims are matched with the available samples (Bernard, 1996).

Using accurate measurement of the long bones, like femur and tibia, one can establish the stature of the individual (Trotter and Gleser, 1952). Rapid estimation of height of an individual can be drawn by the length of humerus multiplied by five (Spitz and Fisher, 1980). It was observed that femur provide a better estimate of stature than the humerus and this is true for all races. There is

always diurnal variation in stature, due to physiological loss of tonicity in the intervertebral disc and the longitudinal vertebral muscles (Snow and William, 1971). From the remains of the long bones, various researchers achieved variable degree of success, to establish the identity of an individual, on the basis of stature, age and sex (Nat, 1931; Dupertius and Hadden, 1951; Athawale, 1963; Sunil et al., 2005; Azad et al., 2006). Sex and age of the deceased can also be established on the basis of skeleton and multiple bone examination will give more accurate result, rather than single bone (Krogman and Iscan, 1903; Franklin, 1988).

Superimposition of skull with deceased photograph and recently one of the most revolutionary advancement in the trace evidence examination for positive identification is DNA profiling or finger printing (Vij, 2005; Reddy, 2006).

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