

CASE REPORT

Masquerading of Homicidal Strangulation as Roadside Accident – A Case Report

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Abstract:

In many mechanisms of suspicious death, it is not unusual for the body to be discovered at a place that is not the actual location of crime. Perpetrators frequently attempt to prevent the recognition and solution of the crime committed by various means, such as by concealing or disposing off the corpse, removing the ligature or hanging device, and setting arson to make the victim's identification and death investigation difficult or even impossible. Cases of homicides with subsequent corpse disposal are of special criminological importance because the disposed-off victim and the unknown site of crime complicate the analysis of trace evidence. A case of homicidal strangulation followed by dumping-off of the corpse in an open area, located subjacent to a national highway, is herein reported that was formally thought to be a traffic-related fatality. The autopsy in conjunction with crime scene details and ancillary investigations concluded the death resulting from ligature and possibly manual strangulation that initiated a potential homicide investigation, culminating finally in the arrest of possible perpetrators. Details of the police investigation, confessions of the suspects, and court proceedings are highlighted. A reappraisal of the key autopsy findings in strangulation-related deaths is also provided.

Keywords: Strangulation, Identification, Autopsy, DNA profiling, Accident, Modus operandi.

Introduction:

Related few cases of death by ligature strangulation are recorded worldwide. When facing a case of death due to strangulation, the most important question is, whether it is homicidal, suicidal or accidental. Although the majority of cases are due to foul play,¹ cases of suicidal ligature strangulation have been well documented.^{2,3} Accidental self-strangulations are occasionally seen in the pediatric population,⁴ as autoerotic paraphilias,⁵ or asphyxial (choking) games played by preteens and young adolescents.⁶

Cases of homicidal strangulations are frequently disguised as suicides, accidents or natural deaths, which may be misinterpreted due to secondary cover-up activities of the perpetrator.⁷

An autopsy case is herein represented whereby the victim's dead body, after killing by strangulation, was dumped into a dried-up old drain, running along a national highway, to simulate a traffic-related fatality. The autopsy findings, in conjunction with the crime scene details, helped in concluding the cause and manner of death. Subsequent arrest and confessions of the perpetrators, medical testimony and basic *modus operandi* are explained.

Case Details:

Crime scene details: The dead body of a 47 years old male individual was found during an early summer morning, in a bushy

area located on the slant of a national highway (Figure 1). A trash collector notices the dead body and informs the local by-passers who then called the police. The police reached the spot, examined the scene thoroughly and called the decedent's relatives on the basis of a motorbike's details that was laid in the vicinity. The bike was largely hidden within long grass tufts, few meters away from the body, bearing specific registration number and a nick name that were traced to the victim. It was however free of any major damage or abnormal stains. A broken car bumper and an indicator light were additionally visible on the ramp.

Close-up view of the body displayed an optimally clothed male individual, with an upwardly displaced shirt, lying in a supine yet moderately right lateral tilt, with crossed over legs and left upper extremity extending backwards (overhead) (Figure 2). The head and neck were placed largely supine. The body's back was supported on round marble stones that were occupying majority of the surrounding area along with dense growths of flowers, bushes and grass. A tree stood few feet away cephalad to the body. Long creepers stemming from the tree were dangling over and around the body but did not encircle/enwrap it anywhere (enquired specifically).

The soft tissues over left side of face were apparently consumed by the scavengers. No antemortem injury was visible on exposed body parts. The police talked about moderate rigor mortis over extremities in the displayed position. Except for a small roundish blood patch underneath right side of the face, no major blood stains were found near/over the body, on the runway or the adjoining ramp. No personal documents or money were found in the clothes. No foot wears were present. Handling of the corpse by public, before arrival of the police, was ruled out.

The relatives did not raise any suspicion of foul play over the victim's death. The case's *prima facie* was concluded as 'death due to traffic accident' by the investigation police officer and the dead

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body was brought for autopsy after about 22 hours of its discovery.

Autopsy findings

The dead body was of a well-built and nourished male individual,



Figure 1. Crime scene located on the slant of a national highway. A corpse is lying amongst marble stones near a tree. A motorbike is hidden within long grass tufts.



Figure 2. Closer view of the male dead body, lying supine with moderate right tilt. Facial soft tissues are apparently consumed by scavengers. Creepers are dangling over the body.



Figure 3. Facial features are largely obliterated due to soft tissue scavenging, probably by rodents. Tip of tongue is clamped between front teeth.



Figure 4. Transverse, focally indented, an incomplete and parched ligature mark over right lateral-posterior neck region. Deeply congested rim surrounds the medial margin symmetrically.

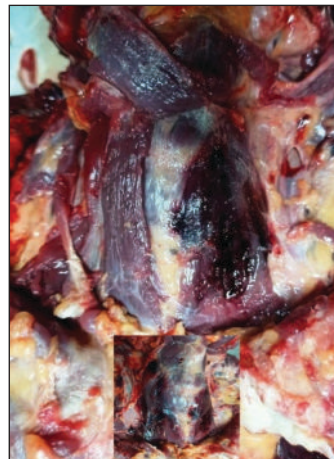


Figure 5. Layered dissection of neck displays bruising and hemorrhaging in the middle layer strap muscles. Inset displays similar hemorrhaging near arytenoid margins of vocal folds above airways.



Figure 6. Inside of larynx depicting submucosal petechiae and flame-shaped ecchymoses, esp. confluent near arytenoid margins of vocal folds (arrows).

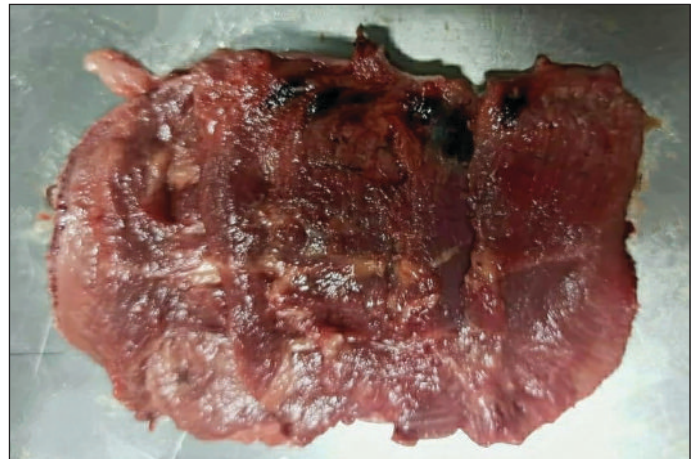


Figure 7. Horizontally sectioned tongue displaying multiple stripes of intramuscular hematomas just inner to right margin. A tiny hematoma is additionally visible just behind the left tip.

apparently dark complexioned, 174 cm in length that was clad in a blue full sleeved shirt, formal pants, and black sacred threads over the neck and torso. The clothes were completely devoid of any tears or scuffs, blood or major mud stains and worn as usual. Little rigor mortis was appreciated over fingers and toes (only).

Generalized soft tissue scavenging over whole of the middle-lower face, left supraorbital, right sub mandibular and right ear helix was present, with scalloped margins and tiny puncture marks in the vicinity. The tissues were devoid of any vital hemorrhage (Figure 3). The tongue's tip was slightly protruded and wedged between front teeth with postmortem darkening over right. Fixed, bluish-purplish PM hypostasis was symmetrically distributed over dorsum of the body but absent over front of the neck and further down the body. No vibices (postmortem hypostatic hemorrhages) were present anywhere.

The forehead's skin was livid-congested, additionally showing confluent to isolated dark scrape-like marks, possibly from bird (s) beak (s), in the vicinity of scavenged margins.

The following injuries were seen over the body:

(1) A transverse albeit wavy, brownish-black parched ligature abrasion of 14 cm x 0.8 cm over right lateral-posterior region of neck situated 8 cm below mastoid process and 6 cm belowinion (Figure 4). The surface was smooth and showed three separate areas of indentations along its course. It was rimmed by an intense congested zone, 1.5-2 mm wide, more prominent medially. On dissection, the dermis and superficial subcutaneous tissues showed intermittent ecchymoses in congruence with the external mark. Rest of the tissues in depths, nuchal and paraspinal muscles were unremarkable. No similar mark was seen anywhere else on the neck (or the back of head). Spine was intact on general palpation. Facial and orbital petechiae could not be appreciated due to soft tissue scavenging.

(2) No external injury marks were present over front of the neck. On layered and bloodless dissection of the neck, however, subcutis over frontal-bilateral neck regions showed oval to irregular almond-sized ecchymoses at few places. The strap muscles revealed confluent areas of bruising and hemorrhage at different levels, some of which were discoid-shaped, and overlaid fascia ruptured at places (Figure 5). The epiglottic and laryngeal mucosae depicted multiple petechiae and flame shaped ecchymoses. The latter were confluent in the vocal folds near arytenoids (Figure 6). On sagittal and transverse sectioning of individual vocal folds, bilateral deep laryngeal muscles depicted diffuse and marked ecchymoses.

The right lateral margin of tongue was uniformly bruised and confined intraorally. On slicing the tongue horizontally in two halves (from tip to base), multiple striped fresh intramuscular hematomas just inner to the right margin and a single tiny muscle hematoma just behind the left tip were appreciated (Figure 7). No dental or jaw trauma was present.

The complete laryngeal-hyoid skeleton was ossified yet intact. Laryngeal articulations, vascular intima, cervical spine with pre- and paravertebral soft tissues and posterior cricoarytenoids were unremarkable.

(3) Multiple faint-bluish focal blurred bruises over bilateral frontal scalp region. Underlying scalp layers, including right subgalea, were ecchymosed. The galeal scalp and bilateral temporalis were deeply congested, with multifocal congestive ecchymoses over right temporalis.

The visceral and neurocranium were intact. Brain revealed moderate oedema with generalized cortical congestion and two focal subarachnoid effusions over right frontal pole and middle of right central sulcus. Coronal sections of cerebrum and hindbrain were unremarkable.

(4) An oblique, reddish linear sharply defined scratch abrasion with reddened hem, over right lateral lumbar abdominal wall.

(5) A pale rectangular area of confluent punctate excoriations just beneath (4).

(6) An oval area comprising of fronds of peeled-off dark parched epidermis and exposed pale moist dermis, over back of right

lumbar region.

No additional musculoskeletal injuries were found. Layered preparation of torso and extremities did not reveal any deep soft tissue ecchymoses or fractures. Thoracic and abdominal viscera were intact. No abnormal fluid accumulations in any serous cavity.

Lungs were congested and focally emphysematous and atelectatic at places. Cut pulmonary surfaces were hemorrhagic and edematous. Non-hypostatic surfaces of abdominal viscera were deeply congested. Numerous subpleural and epicardial Tardieu's spots were present. Dark-red fluid blood could be well appreciated.

In consideration with the crime scene findings, the cause of death was given as mechanical asphyxia due to ligature and possibly manual strangulation. Injuries 1 through 4 were antemortem while injuries 5 and 6 were peri-or postmortem in nature. A femur bone was preserved for DNA profiling, as the facial features were largely obliterated and unidentifiable. The general body features and osteological profile were consistent with the alleged age.

Chemical analysis of viscera, peripheral blood and bile samples were negative for ethyl alcohol, common poison, or stupefying agent. No significant internal organ or vascular pathology was found.

Subsequent police investigation and court trial

Two days before discovery of the dead body, an FIR had been lodged under section 346 of Indian Penal Code (IPC) (punishment for wrongful confinement and restraint of a person), on the concern of deceased's father, as the deceased had left home without information and turned untraceable.

After receiving autopsy results, the police investigations were initiated towards a potential homicide. The police apprehended deceased's wife and two young men after a couple of weeks who conspired jointly in murdering the victim. An extramarital affair and resulting domestic violence were found to be the perpetuating factors. Important facts were established from the suspects' confessions, as follow:

The victim was called in the fields of one of the male suspects, to convince and agreeing with the affair between deceased's wife and suspect. He was insisted to divorce and to let all of them live happily. An escalating argument ensued and the decedent was strangled with a white cotton parna (male scarf). Thereafter the dead body was placed in the trunk of an SUV car and dumped (placed) at the site of body's discovery. The suspects made another round to the fields and bring the deceased's motorbike for disposing it off near the dead body. The broken car bumper and signal lights, already present over the ramp of scene, were additionally brought to simulate a real car-bike collision scene. After arrest, the primary and secondary crime scenes were pointed out by suspects to the police. The spouse planned the whole modus operandi.

The additional belongings of the deceased, including personal (ID-related) documents, a wallet and those mentioned in the FIR (a pair of golden ear rings and foot wears), were also retrieved from the suspects. The male suspects had fled away from their

resident village after killing the victim. The whole (documented) story was communicated to the forensic doctors by the investigation officer while seeking opinion to a set of queries. The ligature was, however, not produced for medical examination (submitted at Regional FSL by the police).

The case is currently under trial. The charge sheet has been filed under sections 302 (punishment for murder), 120B (criminal conspiracy to commit an offense punishable with death) and 201 (causing disappearance of evidence of offence) of IPC.

During medical testimony, the counsel for the defense raised question about possibility of strangulating the victim with a rope (in general), the possibility of which could not be denied. The soft tissue bruising over neck and additional internal neck trauma was however denied to be sustained from a 'friendly' application of hand over neck. No additional details of the case are currently known.

Discussion:

Intentional simulation and dissimulation of criminal acts are behavior patterns frequently met in both police investigations and forensic medicine.⁷ Cases of homicidal strangulations are commonly simulated as suicides,^{8,9} and rarely also as accidental deaths.¹⁰ Evidence of ligature strangulation is frequently detected in conjunction with other traumatic violence like manual strangulation and blows, thereby, ligature strangulation may be either the eventual or a concurrent cause of death or even may be a secondary finding.¹¹ As a secondary finding, cases of recent assaults by strangulation with major add-pathoanatomic findings, yet with entirely different cause of death at autopsy have been recorded.¹²

The autopsy findings in strangulation-related death are subjected to multiple variables such as composition of ligature, intensity and duration of force, victim's age and constitution, status of alcohol/drug intoxication, prior infliction of any blunt/bleeding trauma and interposition of any material between victim's neck skin and ligature/hands.^{11,13} The morphological findings are generally attributed to one of the two major classes: (1) local neck injuries as a result of the mechanical compression, (2) signs of a cranial congestion from vascular compression.¹³

Physical evidence of massive venous congestion, referred to as congestion syndrome, is predominantly seen in ligature strangulation, manifesting as petechiae and/or confluent bleedings above the level of neck compression.¹¹ The increase in venous compression from ligature strangulation, in the presence of continued arterial input, damages the venous endothelium and tunics, resulting in minute points of bleeding referred to as petechiae.¹⁴ The petechiae become visible predominantly in the eyes, face, and neck. Severe cranial congestion may also cause bleedings from nose, ear and mouth,¹⁵ in extraocular muscles (subfascially),¹⁶ retina,¹⁷ mucosa of sphenoid sinuses,¹⁶ and ethmoidal labyrinth.¹⁸

Hemorrhages of the tongue have been found to be useful for the diagnosis of a lethal neck compression, especially protracted strangulations.¹⁹ In majority of the cases, they may be categorized in two classes: (1) Bruises/bite marks of the apical or marginal

parts of the tongue that are considered typical of violent assaults to the neck, especially homicides by manual and/or ligature strangulation.^{8,9,19,20} They are typically absent in suicidal ligature strangulation and rare in suicidal hanging,¹⁹ (2) Congestion-related bleedings in victims with severe cranial venous congestion where the local engorgement of blood may cause intramuscular bleedings/hematoma in the central-middle and posterior parts of the tongue, as well as submucosally over the root, regardless of the kind of strangulation.^{19,21} Severe intramuscular bleedings may be fashioned in a rope-ladder like arrangement, likened to an apoplexy or infarction of the tongue.^{11,19} In one case, focal intramuscular bleeding into base of the tongue, depicting pattern of the impacting hyoid bone, was decisive in proving homicidal ligature strangulation at autopsy.²²

Forensically, similar intravital bleedings into tongue musculature have been reported in burnt corpses too, caused by burn-induced shrinkage of neck's soft tissues generating a (pseudo) strangulation-like mechanism, and cephalic congestive bleedings akin to ligature strangulation.²³

In the current case, apart from few non-specific perimortem injuries over torso, typical defense or struggle injuries were absent. This may be attributed to certain contextual factors such as physical disparity, sudden unanticipated attack, and prior (blunt) head trauma, thereby leaving the victim defenseless/incapable of act, and facilitating the strangulation process. Additional contributory factors may be physical infirmity, age extremes, and alcohol/drug intoxications.

Diffuse bleedings into the deep laryngeal/vocal muscles (esp. mm. vocalis) in strangulation or severe blunt neck violence has been related to local trauma caused by compression of the larynx leading to severe deformation of the vocal folds and dislocation of arytenoid cartilage(s).²⁴ The hemorrhages generally outnumber the cases of manual over ligature strangulation.^{24,25} Severe vocal fold bleedings are unusual in suicidal strangulation (by ligature as well as by hanging), and have not been reported so far in any forensic study.^{13,26} The finding may be the sole evidence of a fatal neck compression, esp. in younger individuals that all-too-often have an uninjured throat skeleton despite documented evidence of a lethal strangulation.²⁴ Vocal fold bleedings of congestive nature are often petechial and of minor degree in comparison to mechanical compression type.^{13,23}

Additional important 'hidden laryngeal injuries' in violent neck compressions are non-dislocated fractures/fissures of cricoid and thyroid cartilage plates, perichondrial tears, bleedings into posterior cricoarytenoid muscles and perichondrium of thy. c. laminae, and in synovium and/or capsule of laryngeal articulations.^{24,26}

Fractures of the hyoid bone or the thyroid cartilage are regarded as common findings in victims of strangulation, though by no means obligatory. No fractures of larynges were found in a study involving 12 female victims of homicidal strangulation.²⁵ Isolated fractures of hyoid bone have been found to be rare in homicidal strangulation while fractures of bilateral superior cornua of thyroid cartilage is the most common finding and cornual fractures of hyoid bone and thyroid cartilage is the most

common combination.²⁴

Additional studies have described 'intracartilaginous laryngeal hemorrhages' in the thyroid cartilage, as an isolated finding,²⁵ as well as morphological component of 'triad of laryngeal hemorrhages',²⁷ claiming their diagnostic value for the postmortem diagnosis of strangulation. The finding however could not be substantiated in a later study.²⁸

The presence of an incomplete ligature mark, as in the present case, is not too often an infrequent finding,²⁹ and may be due to various modifiers such as interposition of victim's hands/fingers or shirt's collar between ligature and the skin,³⁰ or due to unique ligature's characteristics. A possibility of strangulation with the creepers in the present case could not be ruled out at the first instance, especially from indentations in the course of mark. The appearance of such indentations is however more subjected to ligature's constitution and/or knot(s) pressure. In this context, a case of child sexual homicide by strangling with creeper plants has been previously reported.³¹ Similarly, female victims have been strangled with their own scalp hairs – natural³² as well as artificial extensions,³³ with nearly invisible to subtle external marks over the neck.

Tight stretching of a cotton parnaacross the neck, however, commonly creates narrow folds that form the base for a narrow-parched mark, such as seen in the present case.

On dissection, the ligature mark of an intense strangulation is generally well perfused and depicts hemorrhages in the underlying soft tissues to variable depths along its course, representing its internal counterpart.¹³ An internal mark with deep soft tissue injuries is however unusual in suicidal-ligature strangulation and hanging. In the former, an intense ligature pressure may rarely produce hemorrhage in the underlying strap muscles,³⁴ tears into carotid intima,³⁵ and peri-carotid soft tissue bruising.³⁶ The intensity of the pressure rather than ligature's characteristic is the leading factor determining the severity of internal cervical injuries.¹³ Similarly, in survived/resuscitated hanging victims, subcutaneous hemorrhage below the hanging mark may be seen irrespective of the duration of survival,^{37,38} which is rare in successful primary hanging.¹¹ If there is underlying tissue swelling, the mark may appear very faint or completely obliterated.

In suicidal strangulations, the victims are frequently found with the strangulation device still in-situ around the neck which is uncommon in homicidal strangulation, although the reverse is sometimes seen on account of personal/criminal motives. The number of knots and ligature turns are of little use in ascertaining the mode of strangulation.¹³

Diffuse hemorrhages and discoid-shaped bruises of the strap muscles, sometimes in different layers, usually characterize an intense manual strangulation.^{24,39} The vital nature of such hemorrhages, however, mandates careful scrutiny as they may be introduced during corpse retrieval at the scene,^{40,41} as well as in the areas of declivous lividity.⁴² A microscopic differentiation between vital and postmortem skeletal muscle alterations has been suggested,^{41,43} although not absolutely validated.⁴⁴ Thereby, a

complete elucidation of corpse removal at the scene must be made, before making any conclusions.

The dead body in the current case was lying in a right lateral tilt at discovery, thereby necessitating exclusion of any hypostatic hemorrhages in dependent body regions. It was achieved on the basis of criteria already suggested,^{42,45} such as a complete lack of vibices any where, a regular patterned hypostasis over dorsum of the body devoid of any discordant/dual distribution, and lack of lividity over front of neck and further down the body. The head and neck were placed largely supine without any head/face down component (esp. no abnormal livores over right side of neck (cf. fig. 4)). The lividity (if present) would have been, presumably, completely translocatable at the crime scene.⁴⁵ The same holds true even if the body position had been changed by anyone else before arrival of the police (viz. trash collector, public, etc.).

The finding of rigor mortis in the discovered body posture was already suspicious at the scene.

The little (and only) blood loss, seen as small blood patch near the head region, was consistent with postmortem scavenging of facial soft tissues (possibly by some rodent species).⁴⁶ Although, a remote possibility of strangulation-related congestive bleeding from cranial natural orifices has to be kept in mind.¹¹

The disposal of a killed victim in an open place also merits due attention in the present case. Concealment or disposal of a corpse is not unusual, although an infrequent forensic entity. Several disposal methods have been described and graded in forensic literature, depending upon the complexity of procedure. As per Schneikert's grading, abandoning a dead body in an isolated area constitutes grade 1 of body disposal.⁴⁷ In a study over different 'homicide with corpse disposal' methods, De Matteis et al. found strangulation to be the cause of death in 21% of the cases while blunt head trauma was the leading entity.⁴⁸ Dogan et al. described two homicide cases that were dumped into the empty wells, out of which one had been killed by ligature strangulation.⁴⁹

The involvement of a female perpetrator in the corpse concealment, as in the present case, is not entirely uncommon as majority of the perpetrators are closely related to victim.⁵⁰ Ligature strangulation is the commonest mode of killing among all homicidal asphyxiation methods.¹ The most frequent motives for homicidal strangulations are rape, sexual disputes and personal rivalry, with females outnumbering the males as victims.¹

Key Points

- A careful and systematic approach is required towards every autopsy, unbiased of police history or preconceived assumptions and (all-too-often) appealing circumstances.
- Mutilation of the corpse does not imply mutilation of the cause and manner of death.
- Differentiation between different modes of strangulation should be made, whenever possible, based on a careful crime scene interpretation and autopsy findings.
- Bruising and/or intramuscular hemorrhages of the tongue are highly indicative of a ligature/manual strangulation-related

death in pertinent forensic situations.

- Deep laryngeal muscle hemorrhages suggest a violent compression of the neck when taken in appropriate context. The finding may be the sole evidence of strangulation, esp. in younger individuals.
- Soft tissue bleedings in the hypostatic regions must be carefully interpreted, especially in the presence of vibices.

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