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An unusual case of corpse concealment driven by emotional distress

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A B S T R A C T

Corpse concealment involves hiding a body for criminal purposes for many different reasons, such as destroy evidence of a murder or avoid the discovery of the victim. Although defendants could argue that they did not conceal the corpse with any criminal intent, but rather to spare themselves or others from emotional distress or to honor the wishes of the deceased. However, these arguments are often challenging to substantiate, and defendants may encounter significant legal obstacles when attempting to justify their actions.

Herein, we report a case involving the concealment of a woman's corpse by her father. Autopsy and histological investigations were significantly limited due to the advanced decomposition of the body. Nevertheless, by integrating these data with radiological findings obtained from total body CT and micro-CT of the larynx-hyoid complex, hanging was deemed the cause of death. Additionally, the psychological evaluation of the father indicated that the act of concealment was motivated by emotions rather than criminal intent.

1. Introduction

Corpse concealment, by definition, involves hiding a corpse for criminal purposes. In this context, the main reason at the basis of body concealment is to destroy crucial evidence of a murder and/or avoid the discovery of the victim, representing a "defensive behavior" [1]. Furthermore, the delay of the corpse can prevent others from discovering that the person has passed away, in order to continue collecting their old-age pension, for example. Finally, corpse concealment may also be only a secondary aim, while the primary drive may be dominated by sexual perversions or psychosis which are indentifiable as "offensive", "aggressive", or "necromaniac behavior" which are often associated with mutilation of the corpse [2].

In some cases, defendants may argue that they did not conceal the corpse with any criminal intent, but rather to spare themselves or others from emotional distress or to honor the wishes of the deceased. However, these arguments are often challenging to substantiate, and defendants may encounter significant legal obstacles when attempting to justify their actions.

Herein, we present a case involving the concealment of a woman's corpse by her father. The man reported to the authorities that he had retained his daughter's body due to emotional attachment after discovering her hanging lifeless at home. The integration of forensic, radiological, histological, toxicological, genetic, and psychiatric evidence provided to establish the most likely cause of death and manner of death, as well as determining whether the man could be charged with concealing a corpse.

2. Case report

During the on-site inspection performed at the time of the COVID-19 pandemic lockdown, the body of a 40-year-old woman was found in a bathtub, sealed with a plastic sheet, in the bathroom of her apartment (Fig. 1). The cohabiting father confessed to discovering the corpse hanging from a rope in the house a month earlier. According to his statements, he kept the corpse in the house due to emotional attachment. After a few days, he deemed it necessary to move the body into the bathtub to allow for the draining of decomposition fluids. Recently, he sealed the bathtub with transparent plastic film and used a ventilator to blow air out of the bathroom window, reducing the spread of the

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decomposition odor inside the condominium. Despite the man's statements, the prosecutor ordered a judicial autopsy and investigated the man for murder, contempt, and concealment of a corpse.

2.1. Autopsy

At the external examination, the body was in an advanced state of putrefaction, but the clothing remained intact. There was a mark on the neck, which was superficial and consisted of a pale skin band extending from the angle of the jawbone anteriorly (toward the front) and caudally (toward the lower part) to the subhyoid region (Fig. 2). No evidence of external traumatic injuries was found. The major organs and tissues, including the soft tissues around the larynx, were partially liquefied. Upon palpation of the thyroid cartilage, prethermotility at the base of the posterior-superior cornets was bilaterally detected. Due to these findings, the hyoid-larynx complex (HLC) was carefully removed and fixed in a formaldehyde solution.

2.2. Radiology

Before the autopsy, a post-mortem computed tomography (PMCT) scan was performed (Philips Brilliance, Philips, Eindhoven, the Netherlands; 120 kV, 36 mA, 2 mm slice thickness, spacing between slices 1.0 mm). A bilateral discontinuation at the base of both superior horns of thyroid cartilage were observed (Fig. 3A, B and C). Moreover, another subtle discontinuation of the apical portion of the right thyroid superior horn was observed (Fig. 3B and C). On the other side, there was a cartilago triticia in its typical position above the upper horn (Fig. 3C).

A micro-CT scan (Skyscan 1275, Aartselaar, Belgium; 15 lm isotropic voxel size, kV 65, uA 153, exposition time 1210 ms, rotation step 0.4, frame averaging 2, 1280_1024 pixel Field of View) of the larynx-hyoid complex was performed. Reconstructions were performed by N-Recon Software and 3D images were obtained by CT-Vox Software (Fig. 4) (Skyscan, Aartselaar Belgium). We observed complete and irregular discontinuations at the base of the superior horns of the thyroid cartilage, as well as in the apical portion of the right thyroid superior horn, along with several fragments. The surfaces of the fragment on the apical portion of the left thyroid superior horn appeared typical of a cartilago triticia (regular and rounded).

2.3. Histopathology

Tissue alterations related to advanced transformative processes strongly limited histopathological analyses. In some areas of the skin of the neck, at the level of the groove a significant loss of structure of the stratum corneum of the epidermis associated to areas of vascular congestion and hematic infiltration were detected. Moreover, aspects of hemorrhagic infiltration of soft tissues surrounding the discontinuation at the base of both superior horns were observed.

2.4. Toxicology

Toxicological analyses were performed on putrefactive liquid from pleural cavity collected during autopsy. The presence of typical products of post-mortal tissue decomposition, such as ethyl alcohol, acetone, dimethyl sulfide, 1-propanol and butanoic acid were detected [3,4].

Analyses for other drugs of abuse (cannabis, opiates, methadone, cocaine, amphetamines) or psychotropic medications, such as sedatives, were negative.

2.5. Genetics

The victim's genetic profile was detected in putrefactive liquid samples collected in the victim's bedroom and in the bathroom, although samples collected and extracted showed a high degradation index. The father's genetic profile was detected in a drop of blood collected in the father's bedroom.

Vaginal, rectal and buccal samples were taken during the autopsy, resulting negative for seminal fluid.

2.6. Psychiatric profile

Following the discovery of the body, the man was admitted to a psychiatric ward. Medical records described him as coherent, cooperative, and not in a state of agitation or confusion. He informed the doctors that he had been unable to seek help when he realized his daughter had passed away. No symptoms indicative of mood disorders were observed, nor medications were administered during his hospitalization. After 24 days, he was discharged with a diagnosis of an unspecified adjustment reaction.

The daughter had been diagnosed with mild mental retardation since childhood and had a tendency toward social isolation. In recent years, she had experienced several brief hospitalizations due to acute alcohol intoxication.

3. Discussion

In cases involving concealed cadavers, the evaluation of the cause and manner of death may become complex due to body manipulation and the advanced stages of putrefaction commonly observed [1]. First of all, in such cases, a complete forensic investigation aimed at establishing the cause and manner of death is mandatory [5].

Since the father of the deceased woman stated that his daughter had committed suicide by hanging, it was mandatory to collect evidence useful in identifying any asphyxia-related injuries, in order to confirm or refute the account given by the victim's father. To achieve this, the 'forensic asphyxia protocol' proposed by de Bakker et al has been adopted [6]. The protocol involves four main steps: a PMCT, a forensic autopsy, and, if there is suspicion of neck trauma, the removal of the HLC, which contains hyoid bone, thyroid bone, and direct surrounding

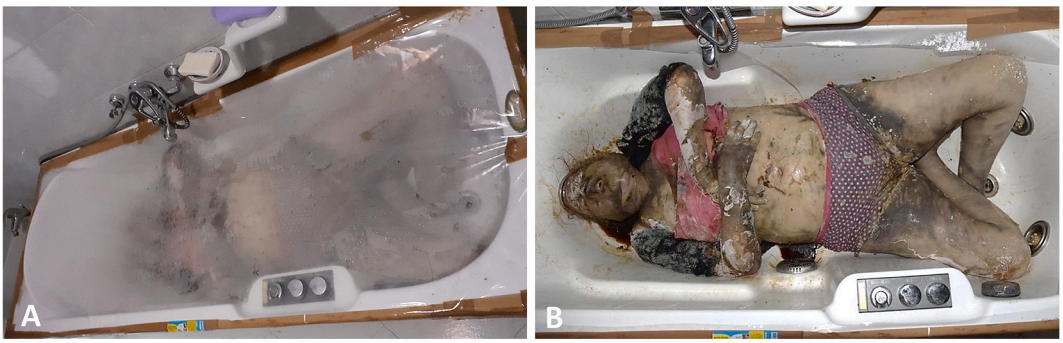

Fig. 1. On-site inspection findings. A: bathtub sealed with a plastic sheet. B: body found in the bathtub after removing the plastic sheet.

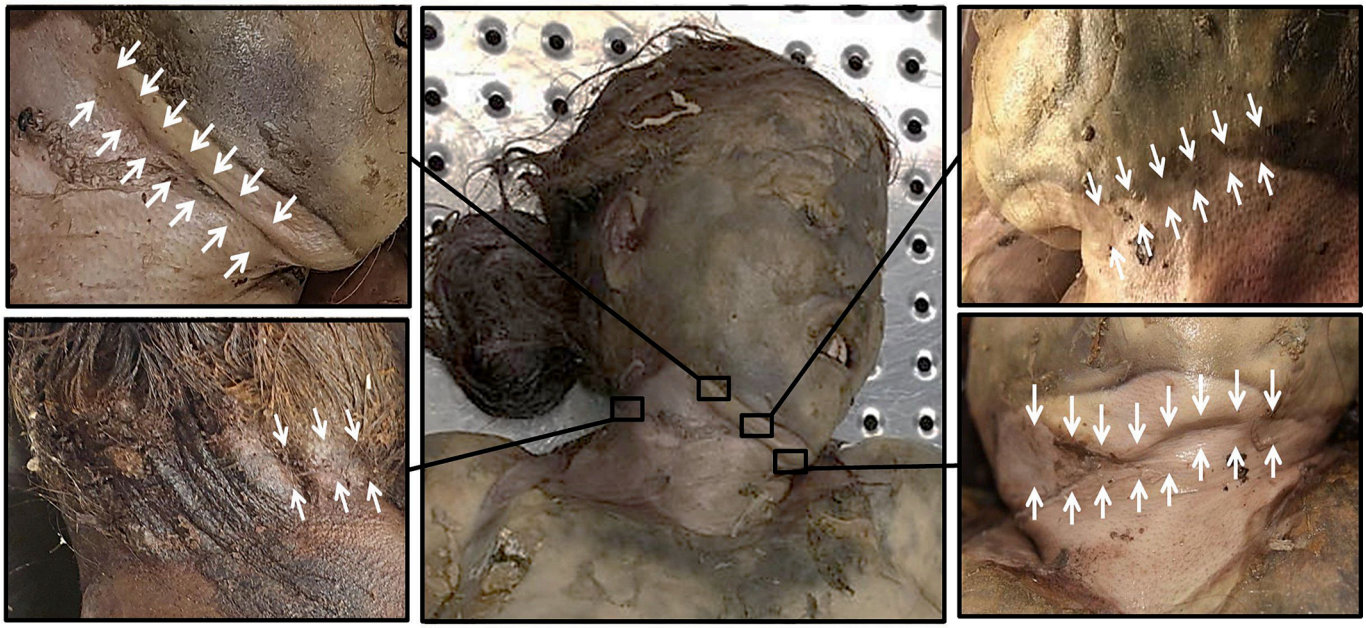

Fig. 2. Mark on the neck.

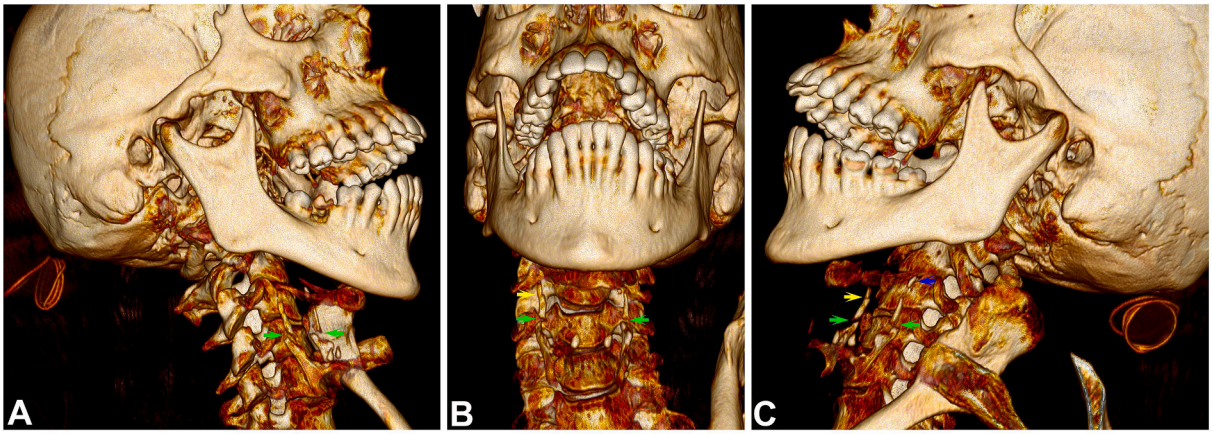

Fig. 3. TC scan. A: light side view of thyroid cartilage. B: anterior view of thyroid cartilage. C: left side view of thyroid cartilage. Green arrows: discontinuation of the base of superior horns; yellows arrows: discontinuation of the apical portion of superior horn; blue arrow: cartilago triticia. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

structures. Additionally, high-resolution radiological examinations were conducted on the explanted HLC, followed by histological examination.

In the present case, due to the advanced state of putrefaction, typical radiological or autopsy signs of asphyxia, such as the gas bubble sign [7], cervical or pulmonary emphysema [8], hemorrhagic infiltration of the soft tissue surrounding the injuries of the HLC, and the intervertebral disc vacuum phenomenon [9], were not appreciable. However, important diagnostic features of hanging were observed in this case. Firstly, the pale skin depression around the neck exhibited characteristics such as morphology (i.e., single and incomplete), position (above the thyroid cartilage), and course (towards the nape of the neck), which were useful for differentiating hanging from ligature strangulation [10,11].

Concerning HLC, the frequency of fractures in hanging cases varies considerably, from 0 % to 100 % [12]. A *meta*-analysis by Godin et al. corroborated a mean incidence of 37 % for laryngohyoid fractures in hanging [13]. As regard the site of fractures, most authors have reported that the thyroid cartilage is more susceptible for fracturing in hanging than the hyoid bone or any other tracheolaryngeal structures [12]. Isolated fractures of the superior thyroid horn are the most common type of laryngohyoid fracture reported in the forensic literature of hanging victims [13]. More recently, Zátopková et al. confirmed this finding and also found that combined thyrohyoid fracture was the second most frequently identified type of fracture, followed by bilateral fracture of the superior thyroid horns [12]. The experiments conducted by Bockholdt et al. in hanging victims demonstrated that the thyroid cartilage fractures are typically located near the base of the horn; several authors confirmed this thesis and found also that these fractures occur often bilaterally [14]. Instead, fractures to the epiglottis, hyoid body, thyroid plates, inferior thyroid horns, cricoid cartilage, or the cervical part of the trachea sporadically occur in hanging and are most often found in non-hanging strangulations. The morphological characteristics of laryngohyoid fractures in hanging are not well described in the forensic literature. However, the thyroid cartilage fractures are usually incomplete, although complete separations can also appear. Moreover, their usual fracture patterns are oblique or transverse [12].

Anatomical variations, congenital defects and acquired anomalies of laryngohyoid cartilages may be erroneously evaluated. For instance, the agenesis and the developmental fragmentation of the thyroid superior

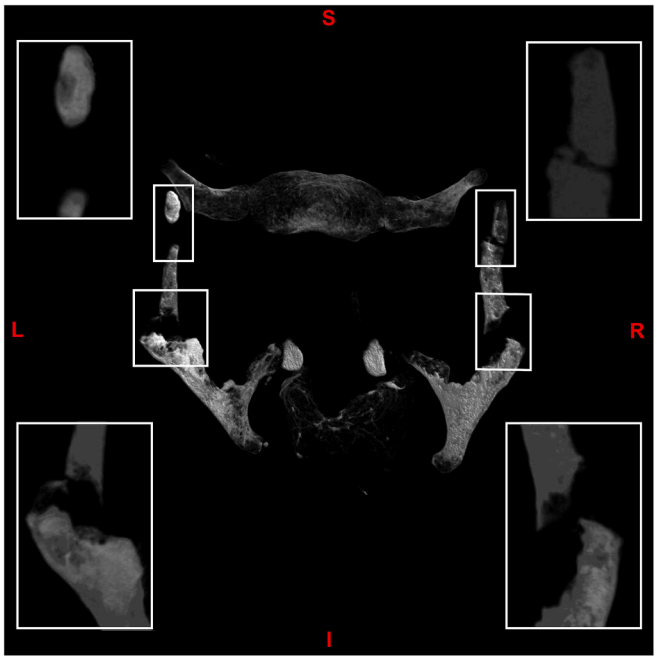

Fig. 4. Micro-CT scan.

horns or the monolateral or bilateral presence of triticeal cartilage may mimic a fracture. Consequently, the description of the shape of the cartilage margins is essential to differentiate a fracture of the thyroid superior horn from an accessory cartilage [15].

Over the past decade, several studies have emphasized the significance of radiological investigations of HLC. Nonetheless, recently Lyness et al demonstrated a weak level of agreement between PMCT and autopsy in detecting fractures of the hyoid bone and thyroid cartilage [11]. Additionally, Treitl et al. assessed the diagnostic accuracy (ACC) of PMCT for isolated HLC fractures in comparison to post-mortem fine preparation (PMFP) [16]. Their findings confirmed that PMCT can effectively identify distinct injuries in the isolated HLC, with ACCs for the hyoid, thyroid, and cricoid at 94.4 %, 87 %, and 81.5 %, respectively.

In the present case, PMCT detected discontinuations at the base of both superior horns of the thyroid cartilage, as well at the apical portion of the right thyroid superior horn. A fragment above the apical portion of the left thyroid superior horn was also observed. However, the precise assessment of the cartilage margins was challenging and did not provide conclusive evidence of fracture. To address these limitations, we carried out a micro-CT analysis, which provides significantly higher spatial resolution and overcomes issues related to image quality [17–21] The discovery of multiple fragments with irregular surfaces at the base of both upper horns was indicative of traumatic fractures [22–24]. Additionally, another traumatic fracture, characterized by an irregular discontinuation of the apical portion of the right thyroid superior horn, not clearly appreciated on CT, was observed. In contrast, the fragment above the apical portion of the left thyroid superior horn appeared regular and rounded. Consequently, it was determined to be an anatomical variation (cartilago triticia) [25]. Finally, despite the advanced decomposition of the tissues, histological investigations were performed, and microscopic findings confirmed the vitality of the skin and superior horns of the thyroid.

Based on the aforementioned results, the cause of death was classified as asphyxia due to hanging [26]. The overall pattern of injuries and the circumstances surrounding the present case strongly support the conclusion that it was a case of suicide [27,28]. Having ruled out the murder hypothesis, an evaluation was conducted to determine whether the man could be held liable for offenses such as concealment of the corpse or even necrophilia.

Crimes with sexual purposes, such as necrophilia, were ruled out. Indeed, the girl's clothes were undamaged and well-worn, and genetic testing did not detect any fluids belonging to her father.

Even the chosen methods and sites of concealment may potentially provide pertinent information about the nature of the crime [29]. In the reported case, the method and site of concealment were unusual and significantly different from those commonly reported in murder concealments (i.e. abandonment in an isolated area, submersion in water, burial, dismemberment, dissolution in chemicals, burning, etc.) [1]. Indeed, the woman's body was placed in a place quite easy to discover (the bathtub of the house where the man was still living), and covered with a transparent plastic film which was clearly unsuitable for hiding the body.

Furthermore, following the psychological dynamics evaluation which concluded for a diagnosis of unspecified adjustment reaction, forensic psychiatrists hypothesized that the man decided not to report his daughter's death and to keep her corpse at home due to his inability to grieve and that, as a result of his daughter's sudden death, he exhibited behaviors consistent with psychosis or schizophrenia. In addition, it was assumed that there were other factors that exacerbated those psychotic symptoms. In particular, the death of the daughter represented for the man the loss of his primary point of reference, especially considering that he had been a widower for many years prior. Indeed, the daughter had limited social and work activities, leading her to spend most of her time at home, which further reinforced the co-dependent relationship with her father. These factors were exacerbated and magnified by the lockdown imposed during the COVID-19 pandemic, which heightened the dissociative and psychotic symptoms.

As reported in the literature, the associations between family neglect and codependent relationships between older people and their relatives have been found to correlate with risk factors, including mental health disorders and social isolation, that were particularly evident during the COVID-19 pandemic [30].

All of the findings described above, including the victim's suicide, the close relationship between the individuals involved, the concealment of the body at home using an atypical method, and the psychiatric evaluation of the victim's father, which indicated difficulty in processing grief, suggest that the act of concealment was driven by emotional motives rather than criminal intent, confirming the man's statements. Based on these findings, the man was not subjected to any criminal investigation.

4. Conclusion

The present case reports an atypical corpse concealment which follows the victim's suicide by hanging. The site and method of concealment indicate a close relationship, driven by an emotional motive to preserve the daughter's body rather than a criminal intent to destroy it.

In such cases, which are characterized by advanced post-mortem decomposition, we emphasize the application of protocols for suspected asphyxia-related deaths. High-resolution radiological techniques are particularly useful in identifying micro-fractures of the hyoid bone and laryngeal cartilages (HLC).

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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