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CASE REPORT Open Access

Suicidal cut-throat with medico-legal masquerades: case illustration and review of the literature

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Abstract

Background Furnishing an opinion about the manner may be challenging for a forensic pathologist in cases of spot deaths with isolated cut-throat injury.

Case presentation This fatality in a young male is elucidated for it to be found markedly deviant with reference to the factors described for suicidal cut-throat injuries, including (1) medical history; (2) death circumstances (non-home); (3) type of object that produced injury; (4) injury pattern in relation to dexterity, lack of old and fresh hesitation cuts at neck and elsewhere, predisposition (horizontal), and extent (superficiality); (5) autopsy findings (non-pale organs); (6) scene evidence/s; (7) findings at viscera examination; and (8) cause of death (choking). The deceased was a cannabis addict, practiced black magic, and lived separated from his wife. There was no lead of the event, and thus an inquest proceeding was initiated.

Conclusion The possibility of suicide by cut throat by razor blade was considered in the light of the pragmatic comprehension of the post-mortem and scene findings. A case of suicide cut-throat without hesitation cuts, but with venous outpour, and not-so-deep injuries caused by a razor blade, has not been reported. This unprecedented review aims to add to the virtually non-existent literature about medico-legal masquerades rarely seen in suicide cut-throat injuries. It is an endeavor to guide the deduction of the most qualified opinion with a guide to analyzing often undermined and neglected variables in cases of isolated cut-throat injuries. The causative association of marital conflicts that put young males at an increased risk of suicide is highlighted here.

Keywords Choking, Cut throat, Suicide, Razor blade, Cannabis, Black magic

Background

A cut-throat injury is a common method of perpetrating homicide (Yadav et al. 2016). It is rarely resorted to, to commit suicide, and accidental cut throats are very rare (Yadav et al. 2016; Knobler and Petrocelli 1998). Homicide cut throat is inflicted by the assailant from being in a position either at the back or front, in relation to that of the victim (Maio and Maio 2001). The complexity of issues related to the deduction of death manner in isolated cut-throat fatalities was strikingly highlighted in the OJ Simpson case, where the dead body of his ex-wife Nicole was recovered in suspicious circumstances (Maio and Maio 2001).

Homicide cutting the throat of a person by standing behind them is the more common situation. Here, the head is pulled back, and a sharp object is drawn across the neck from left to right by a right-handed person and vice versa (Mize and Shackelford 2008). Homicide cut-throat injuries inflicted from the front are uncommon.

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These tend to be short and angled, seen as multiple swipes or slashes instead of an isolated cut produced by one stroke of a long and continuous motion (Mize and Shackelford 2008).

Contrarily, a cut throat inflicted from the back position is relatively deep to begin with and gradually tails off at the opposite side of the neck (Solarino et al. 2011). Injury inflicted in this position is longer; it starts from a point below the ear, runs obliquely downward and medially, traverses straight across the front of the neck, and finally ends on the opposite side of it, at a point lower than that of the origin (Solarino et al. 2011). Multiple, nearly parallel, superficial cuts found above and below the deep fatal cut in homicide suggest either the attempt of the victim to get away with the attack or insufficient immobilization of the head in such cases (Solarino et al. 2011).

The pattern of suicide cut-throat injury resembles that sub-type of homicide cut throat, which is inflicted from a position behind the victim. The wound usually begins higher on the neck, on the side opposite to which it terminates (Mize and Shackelford 2008). This type of injury is accompanied by hesitation cuts, but this is not a fixed finding seen in all cases of suicide cut-throat injuries (Mize and Shackelford 2008). In other words, suicide without hesitation cuts over the neck is not something unheard of in cut-throat injuries (Patil et al. 2016; Shetty et al. 2009; Marak and Singh 2005). In fact, hesitation cuts have been rarely observed in homicidal cut-throat injuries too and thus are inconclusive evidence for the determination of manner in cut-throat injuries (Ozdemir et al. 2013; Kumar et al. 2011).

A person committing suicide appears to raise the chin for better access to the throat. This also stretches out the skin to cause straight-edged incisions rather than jagged cuts ("dentele" toothed incision), which may be seen when a sharp object is drawn across the loose skin. Throwing back the head moves the carotid bundle under the protection of the sternocleidomastoid muscles. In this case, only the larynx or trachea is damaged if the cuts are confined to the center of the front of the neck rather than large blood vessels (Saukko and Knight 2004). A few of the 'classic signs of asphyxia', namely, the petechial hemorrhages of the skin of the face and lining of the eyelids, the congestion and edema of the face, central cyanosis (bluish discoloration of the skin of the face), congestion of the right side of the heart, and abnormal fluidity of the blood, may be seen in cases of cut-throat injuries (Payne-James et al. 2011).

Case presentation

History

A person with a cut-throat injury was found dead on the spot, in the shade of a bus. A razor blade was lying on the road in a puddle of blood admixed with dirt, about 20 cm away from the right hand of the deceased (Fig. 1). Blood stains were present at places on the road within a distance of 1–2 feet from the body. Congealed blood was present beneath and adjacent to the body on the road. The whereabouts of the deceased revealed him to be a right-handed person who used to practice black magic and was a *ganja* (dried leaves of cannabis) addict who lived alone, deserted by his wife. The statement of any eyewitness, suicide note, or any other evidence regarding the expression of suicidal intent was not available for the instant case.

Autopsy

It was the dead body of a young male of average build and thin predisposition, attired in a pink shirt and blue jeans. There were no cuts or tears on items of clothing, which were blood-soaked, predominantly over the anterior aspect (Figs. 2 and 3). Rigor mortis was present

Fig. 1 A razor blade lying on the road at the crime scene in puddle of blood admixed with dirt

Fig. 2 Clothing of the deceased

Fig. 3 Clothing of the deceased

all over the body. Hypostasis was present over the back of the body, and it was fixed. Approximately 10 g of *ganja* were recovered from the pocket of the deceased's shirt. A glass bottle (10 ml) containing a liquid that smelled like kerosene and soaked a soft silvery-whitish metal was recovered from the pocket of the deceased's trouser (Fig. 4). A spindle-shaped, cut-throat wound of size 11.4 cm × 0.3 cm × 0.15 cm (after apposition of the margins) was present in horizontal predisposition over the anterior aspect of the neck at a distance of 4.6 cm below the chin in midline. The injury extended to a length of 3.3 cm and 8.1 cm over the neck towards the left and right of the midline, respectively, exposing the underlying tissues through the gaping ends. The part of the injury over the left side of the neck was sub-cutaneous tissue deep; the depth then increased to reach up to the thyroid cartilage over the front of the neck, thereby involving the muscles, to finally become superficial with *tailing* present towards the outer aspect of the right side of the neck (Fig. 5). The vital reaction was present at the margins of the cut. A superficial cut of size 1.2 cm × 0.1 cm × 0.1 cm was seen in horizontal predisposition over the upper border of the right ala of the thyroid cartilage (Fig. 6). The (thyrohyoid) muscle and membrane each showed a linear cut of size 1.4 cm × < 0.1 cm × airway lumen deep at a location just above the upper border of the thyroid cartilage. The anterior jugular vein on the right side was found transected at a location just above the level of the upper border of the thyroid cartilage, with ecchymosis in the surrounding tissues. A cut of size 0.7 cm × 0.1 cm × subcutaneous tissue depth was obliquely present over the palmar aspect of the tip of the right index finger with vital reaction at the margins (Fig. 7). The brain was found to be congested and edematous, with petechiae

Fig. 4 Glass bottle containing kerosene and solid sodium recovered from the trousers of the deceased

Fig. 5 Cut-throat wound over the neck

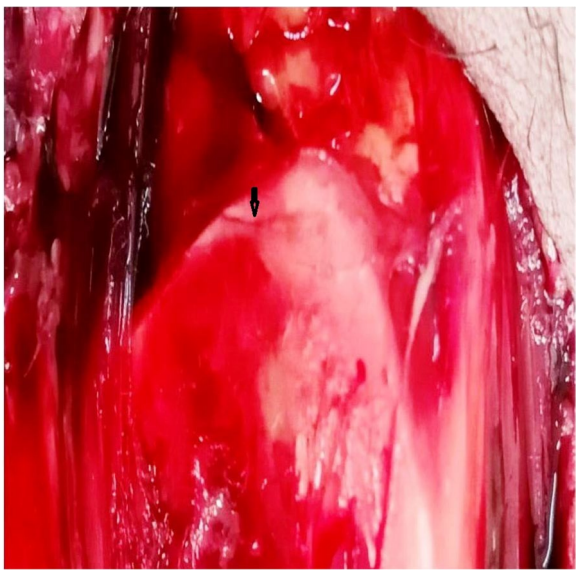

Fig. 6 Superficial cut over the thyroid cartilage

Fig. 7 Incised wound over the right index finger

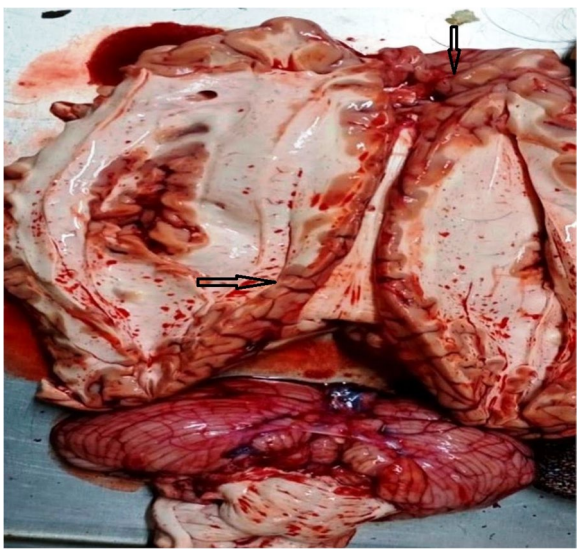

Fig. 8 Edematous brain

in the white matter (Fig. 8). The airways showed aspiration of blood with a frothy appearance at some places. Blood admixed with froth was seen oozing out from the cut surfaces of the lungs (Fig. 9). The smell of alcohol was absent in the stomach contents of the deceased. The internal organs were found to be congested. The cause of death was opined to be asphyxia consequent upon choking by aspiration of blood in the airways consequent upon a cut-throat injury. The blood group of the deceased matched the traces present over the blade (Fig. 1). The soft, silvery-whitish metal recovered from the deceased was determined to be solid sodium. The viscera chemical examination was negative, and the possibility of suicidal cut-throat injury could not be ruled out in this case.

Discussion

The unavailability of a proper history or statement by witnesses vitiates the elucidation of manner and circumstances in cases of spot deaths, including cut-throat injuries (McKee and Egan 2013). An *accidental*

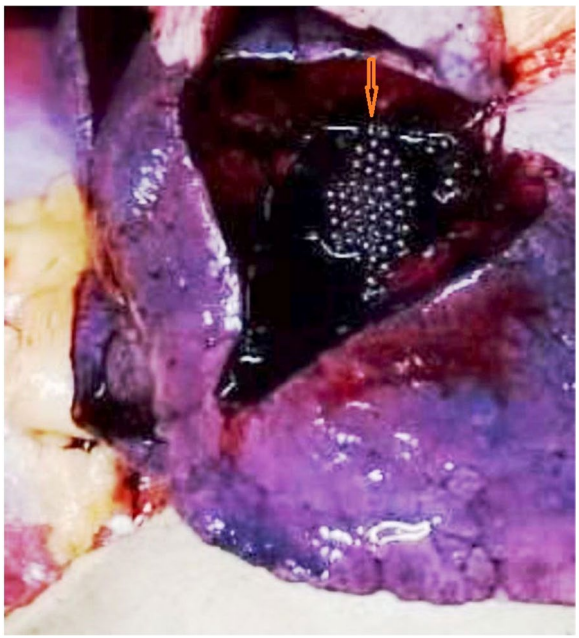

Fig. 9 Frothy blood coming out from a cut section of the lung

cut-throat injury usually involves a sharp-edged object or weapon, like its suicidal and homicidal counterparts, but it is a very rare sub-type in comparison to them. Diagnosis of the manner of death is not that severe a problem in accidental cut-throat injuries, as compared to the other two sub-types. Nearby lying glass or metallic fragments, associated bodily injuries (especially over the face) other than those at the neck, scene of occurrence, and damaged equipment or vehicle help amply in elucidating the manner of death in accidental cut-throat injuries (Nail et al. 2012).

An absence of tentative cuts at the beginning of the neck wound is a good guide to differentiate homicide cut-throat fatalities from suicide ones (Nail et al. 2012). Death circumstances, evidence of struggle or resistance, disheveling of clothes, absence of self-inflicted injuries at places other than the neck, no evidence of suicidal intent, and non-recovery of a suicide note or farewell message are the factors that help to diagnose homicide cut-throat injuries (Waghmare et al. 2016).

As for homicide cut-throat injuries, there are tell-tale signs at the neck that help to diagnose suicide cut-throat injuries. *Hesitation cuts* remain the most important of all of them. In fact, suicide by cut throats without hesitation marks is an extreme rarity, with only a few cases reported. This review also encompasses discussions of other medico-legal masquerades that are rarely seen in suicidal cut-throat injuries. A horizontally placed cut-throat injury, with the absence of tentative cuts over the neck, self-sustained by a curved sharp object (a wooden handled sickle—*Katthi* in local Kannada language in India) snatched from a coconut vendor, was reported as a rarity in the case of a 45-year-old, debt-ridden, ex-military man (Shetty et al. 2009). Another suicide cut throat in similar circumstances was reported to be even rarer, not only for the *absence of hesitation cuts* or the use of a curved sharp weapon to self-inflict a *horizontally placed incised wound* but also with respect to the absence of *tailing*, which is a highly unexpected occurrence in such cases (Patil et al. 2016). Coincidentally, another case of suicide cut throat sustained by a similar sharp object being used by a coconut seller was described for a 24-year-old male, but with alleged ingestion of lysergic acid diethylamide before commission of the act (detected later at viscera chemical examination) (Bose et al. 2021). A delay in the lethal effect of cyanide constrained the diagnosis of complex suicide cut-throat in another case (Curca et al. 2004).

One more suicide cut throat has been reported as a very rare case, but not for the absence of hesitation cuts, which in fact had multiple of them. However, it was reported to be highly unique with regard to the *total length and depth of the incised wound.* It completely encircled the neck to spare a small area of about 5 cm in the posterior left side of it and was vertebra deep, both of which are usually seen in cases of homicide and are uncommon for suicide cut throats except in cases of people suffering from an underlying psychiatric disorder (Fouda Mohammed and Abuidrees 2020).

A number of *epidemiological factors* guide the diagnosis of manner in cut-throat injuries. It is the group of young adults that most commonly presents with suicide cut-throat fatalities (Gilyoma et al. 2014; Kundu et al. 2013; Rao 2014; Panchappa et al. 2014; Sachdeva and Upadhyay 2017). Stigmata suggestive of previous suicidal intent may facilitate the formulation of an opinion about the manner in cut-throat fatalities (Kundu et al. 2013). Underlying psychiatric illness has been reported to be one of the major risk factors for suicide cut-throat injuries (Gilyoma et al. 2014; Dergisi 2019). A suicidal cut throat is attempted in solitary and confined settings, like a house bolted from inside (most preferably in a bathroom in front of a mirror for an adequate view of the neck) (Fremingston et al. 2005; Adoga et al. 2010). The severity-wise compartmentalization of injuries due to sharp force over the neck can serve as a guide for the management of cut-throat injuries, but the ascertainment of manner per se is slightly impractical by such systems (Fagan and Nicol 2008).

This case of suicide cut-throat injury was coherent for a few, albeit differed with respect to most of the 'epidemiological factors' as previously reported for such fatalities. Except for age and gender (young males) (Gilyoma

et al. 2014; Kundu et al. 2013; Rao 2014; Panchappa et al. 2014; Sachdeva and Upadhyay 2017), most of the described factors were found either equivocal or absent and did not provide any lead about the manner in which this suicide cut-throat fatality occurred. There was no suggestive history that the deceased suffered from any psychiatric illness (Dergisi 2019), though it was also not possible to rule out the affection of the deceased with underlying depression in lieu of estranged marital relations in the present case. An absence of any stigma suggestive of previous suicidal intent was highly unusual for this case, though it has been reported in another rare case of suicide cut-throat fatality (Azia et al. 2016). As far as the rarity of unusual objects used to commit suicide with cut-throat injuries is concerned, a number of them, including circular saws (Asano et al. 2008) and band saws (Gloulou et al. 2009), have been reported. However, the use of a razor blade, as in this case, to sustain a suicide cut throat is an extreme rarity (Rao 2014) and has only been reported once in another case, which differed from the instant case in bearing multiple hesitation cuts and a vertebral deep cut-throat wound (Rautzi et al. 2004). The deceased, as per his relatives, had been suffering from depression for the last few days (Rautzi et al. 2004).

The rarity of 'pathology findings' has been described earlier for factors like *tentative cuts* (Shetty et al. 2009; Patil et al. 2016; Bose et al. 2021; Curca et al. 2004), *total length and depth* (Fouda Mohammed and Abuidrees 2020), *predisposition* (Shetty et al. 2009; Patil et al. 2016) (oblique or horizontal), and *tailing* (Patil et al. 2016) with reference to the presence of the wound over the neck in suicide cut throats. However, the greater extent of the length of the wound on the right side of the neck (8.1 cm) than on the left (3.3 cm) in this case of a right-handed person was a highly unusual and unprecedented finding with regard to the extent of the wound from the midline in cases of suicide cut throat as per the dexterity of the victim in question (Solarino et al. 2011).

Another rarity about the pathological findings at the neck in this case of suicide cut throat was the cause of death. It was choking due to aspiration of blood, contrasting the usually seen hemorrhagic shock due to transection of major vessels of the neck in cut-throat injuries (Rao 2014; Buchade et al. 2012). This, in the present case, is explained by the resistance posed by thyroid cartilage. It bore a superficial cut (length 1.2 cm × 0.1 cm × 0.1 cm) but led to the slippage of the blade upwards in the area of (thyrohyoid) muscles and membrane, leading to the production of corresponding cuts (1.4 cm × 0.1 cm × airway lumen deep) and allowing oozed blood to enter the airways, leading to aspiration and choking (Fig. 6). The direction of the cut throat was determined to be from left to right in lieu of the gradual deepening of the part of the wound over the left side of the neck, and this was confirmed by the tail abrasion at its right (Patil et al. 2016). The homicidal cut throat inflicted from the front was safely excluded (Mize and Shackelford 2008) (seen as multiple swipes and slashes) in this case. However, the possibility of homicide by cut throat inflicted from behind by a right-handed assailant was ruled out with difficulty (the wound being short, superficial, and angled), only after a comprehensive analysis of the circumstantial evidence and autopsy findings (Solarino et al. 2011). Air embolism, which is an important cause of death in cut-throat injuries, was ruled out in this case. Most of the vessels escaped cut-throat injury except the right external jugular vein, which is not a big vessel and must have collapsed to minimize massive blood loss. This was further substantiated by the pattern of blood stains manifested as *venous outpouring* at a few places on the road within a distance of 1–2 feet away from the spot of the recovery of the dead body.

The position and pattern of injury over the palmar surface of the index finger of the right hand (Fig. 7) were consistent with being caused by the other sharp edge of the blade (facing away from the neck) that was held with the thumb and index finger. A similar incised wound over the palmar surface of the right hand was reported in another case of cut-throat wound with nearly identical features at the neck (wound over the anterior part of the neck in midline located above the level of thyroid cartilage but without hesitation cuts) (Waghmare et al. 2016; Rautzi et al. 2004). However, the incised wound in that case was located over the thumb, instead of the index finger in the instant case (Waghmare et al. 2016). Also, the sternocleidomastoid muscles, larynx, esophagus, and carotids were found cut on both sides, along with pale internal organs, and death caused by hemorrhagic shock in this case (Waghmare et al. 2016). The instant case differed in that these structures were found intact, and internal organs congested, indicating death had been caused by choking (a type of asphyxia) consequent upon aspiration of blood rather than hemorrhagic shock. However, a firm intention to commit suicide, as revealed by the cut over the anterior aspect of the right index finger due to strong gripping of a sharp object in the instant case, resembled the injury over the thumb as reported previously (Waghmare et al. 2016). The instant case differed from another case of suicide cut throat with a razor blade, which had associated cut injuries over the palmar surface of the index finger of the right hand (Rautzi et al. 2004). The previously reported case showed multiple hesitation cuts over the neck, multiple cuts over the right index finger, and a vertebral deep cut-throat wound (Rautzi et al. 2004). This case also differed from another case where death due to a suicide cut-throat was opined

on the basis of the pattern of the injuries and psychological autopsy majorly. The dead body of the female in this case showed a total of 11 injuries, out of which only one injury was found fatal. The cause of death was aspiration of blood into the trachea as a result of incised penetrating injury to the right side of cricoid cartilage, in this case too. The absence of the weapon utilized to commit suicidal cut-throat was however not explained to even the minimum extent in this case (Bhat et al. 2016).

An absence of defense injuries suggestive to have been sustained by an attack with a sharp object or otherwise, along with intact clothing, were the findings that ruled out assault but were reported earlier in a case with few similarities (Waghmare et al. 2016). Also, the absence of hesitation cuts, though reported as insignificant as a factor for the determination of manner in suicide cut throats (Shetty et al. 2009; Patil et al. 2016; Fouda Mohammed and Abuidrees 2020), requires a formal description and reasoning for this phenomenon, and the authors tried to explain this as a condition for this case as well. Their absence is explained by the fact that the edges of a stainless steel straight razor blade are too sharp to receive any substantial resistance from the skin, which minimized the chances of hesitation cuts. A firm intention to accomplish suicide might have been another reason for the absence of the tentative cuts in this case (Waghmare et al. 2016). This was again indicated by the absence of blood stains at other places that might have otherwise been produced due to frantic efforts by the deceased to call for help as a last attempt to save his life.

The recovery of solid sodium and dried cannabis plant leaves requires a special mention. Solid sodium is commonly used in black magic or other superstitious activity in countries like India. Also, the use of cannabis as a substance of abuse has been reported to be associated with an increased risk of suicide (Price et al. 2009). However, this association has been eliminated after adjustment for confounders like psychological and behavior problems by the original study itself. For the instant case, the non-detection of the metabolites of cannabis at the viscera chemical examination additionally ruled out its role as a precipitating event in the commissioning of the suicide. The chronically mentally upset state due to marital disputes may be a strong risk factor for the firm determination to commit suicide in this case.

The death circumstances were highly unusual, but even then an accidental cut throat was ruled out as a differential diagnosis here. However, it was very difficult initially to label it as a case of suicide for the reason that the body was found in the shade of a bus parked on a busy road, without a suicide note, etc. A razor blade lying on a road with heavy traffic could not be linked conclusively for it to have been used to commit suicide, but not lying on the road being thrown discarded or otherwise. There was no eye witness to give a statement so as to rule out homicide otherwise. The cut throat was not associated with hesitation cuts. It was further complicated by the absence of fresh or old tentative cut/s at other place/s over the body, thereby negating the previous suicide attempt/s. The injury pattern classically masqueraded suicide cut throat for being placed horizontally and symmetrical, in the middle of the neck. A greater extent of the injury over the right side of the neck in this right-handed person, and at a relatively lower level, were the other perplexors in this case. A cut over the palmar surface of the right index finger simulated a defense injury. Congested, instead of pale internal organs, was another unexpected finding in this case. Death was caused by choking due to the aspiration of blood which was unusual for a cut-throat injury.

The presence of cyanosis, congestion, and edema of the visceral organs and petechiae in the white matter of the brain were important clues to indicate that the deceased survived for the minimum time required for the development of the features suggestive of the asphyxial mode of death. This indirectly pointed towards the suicidal death manner because any assailant will never allow any less a survival time, for a victim to seek help in cases of homicide cut throats. There was another important finding that indicated the suicidal intent of the victim via a different context that referred to the absence of blood stains expected to be produced at other places on the road, due to frantic efforts by the deceased to call for help as a last attempt to save his life. Death manner was comprehended well in this case by the analysis of the circumstantial findings, examination of the clothing, post-mortem findings (external and internal), along with exploration of the possibility of a suicide cut throat by an object (blade) with sharp edges.

In this case, the possibility of a suicidal cut throat inflicted by a weapon with both edges was analyzed. An evidence of asphyxial signs including congested organs instead of pale ruled out instantaneous death due to hemorrhagic shock. The authors thus humbly assert that in addition to hesitation cuts, the importance of signs like *total length*, *depth*, *predisposition* (oblique or horizontal), *tailing*, and *extent of the wound on either side of the neck from the midline (as reported by this case)* should not be undermined in cases of isolated cut-throat injuries. In fact, these factors act as the ultimate guide in the determination of the manner of death in cut-throat injuries. For this very reason, the importance of these factors has been duly emphasized via this detailed review paper that incorporates all the related cases of suicidal cut-throat injuries with deviant findings. The authors intended to confirm the cause of death by the microscopic histopathological examination of the lungs in this suicide,

but anticipated delay in reporting caused due to the long pendency of samples in cases of heinous crimes committed in much resource-constrained laboratories of the developing countries.

Conclusion

Opinions about suicidal cuts benefit from tentative cuts, but their absence does not rule out suicide. Cuts in the fingers caused by holding a sharp weapon's blade may be confused with defensive wounds. Cut-throat injuries' location, direction, margins, edges, and underlying tissue cuts should be thoroughly examined. Findings from crime scenes and police investigations will always aid the autopsy surgeon in better interpreting autopsy findings. A forensic pathologist should assess all the possibilities before opining the manner if required in isolated cut-throat fatalities.

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Consent for publication
The authors declare consent for publication.

Competing interests
The authors declare that they have no competing interests.

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