

Dyadic Death: Roles Unveiled

Karthi Vignesh Raj K¹, Abhishek Yadav², Varun Chandran A³, Zahid Ali C H⁴, Gokul G⁵,
Sudhir K Gupta⁶

How to cite this article:

Karthi Vignesh Raj K, Abhishek Yadav, Varun Chandran A et al./Dyadic Death: Roles Unveiled/J Forensic Chemistry Toxicol. 2022;8(2):99-103.

Author Affiliation: ^{1,4}Senior Resident, ²Additional Professor, ³Assistant Professor, ⁵Junior Resident, ⁶Professor and Head, Department of Forensic Medicine and Toxicology, All India Institute of Medical Sciences, New Delhi 110029, India.

Corresponding Author: Abhishek Yadav, Additional Professor, Department of Forensic Medicine and Toxicology, All India Institute of Medical Sciences, New Delhi 110029, India.

E-mail: drayad-in@yahoo.in

Received on: 06.10.2022

Accepted on: 07.12.2022

Abstract

Dyadic death is a scenario of two persons dying in a series in a different manner, usually Homicide followed by suicide. Shooting, poisoning, and hanging are the methods used for committing dyadic death. Dyadic deaths by cut-throat methods are rarely reported in the literature due to the extremely painful and violent nature of the injury. The interpretations of cut-throat wounds and other incised wounds could fit into both homicide and suicide. Therefore, a thorough analysis of the crime scene is required for corroboration with post-mortem findings. A crime scene is a cluster of evidence like fingerprints, footprints, bloodstains, patterns, etc. The author's report a case of Dyadic death involving cut-throat, stab and incised wounds. The authors intent to highlight the importance of correlating the crime scene findings, which unveiled the sequence of events thereby helping the investigating agency.

Keywords: Murder-suicide, Dyadic death, Homicidal cut-throat, Crime scene, Defense wound.

Introduction

Dyadic death is the term used when a person kills another and then commitssuicide.¹⁻⁴ These deaths happen in series, with variants, like Homicide-suicide or Suicide-Suicide (suicide pact).⁵ The frequency of dyadic deaths is less in the world.⁶ It is commonly seen among relations like husband-wife, husband-wife-children, brothers etc. The common reasons being infidelity in case of couples,

while other reasons are property disputes, poverty, and unemployment.⁷ "Honour Killing"- a term used in India is similar to dyadic death generally involving homicides when son/ daughter goes into a relationship or desires to marry a person against their family wishes out of their caste, status or religion. The perpetrator in the dyadic death is a person who is in a moral or emotional relationship with the victim like a father, brother, spouse, lover,

co-worker, etc while the perpetrator in an honour killing are family members.⁸⁻¹¹

Shooting, poisoning, and hanging are the methods in the decreasing order used for committing dyadic death.^{2-4,10,12} The perpetrator generally uses the same weapon or method to end their life.^{2,3,10} Cut-throat methods in dyadic death are frequently reported in the literature due to the painful and violent nature of the injury.¹³⁻¹⁵ In case of dyadic death due to cut-throat wounds, the autopsy surgeon significantly contributes in establishing the sequence of events. The findings of the homicidal and suicidal cut-throat wounds overlap each other, as highlighted by Knight and Saukko.^{16,17} Hence differentiating between them is an important part of Medicolegal investigation, which would be difficult without proper crime scene examination. The crime scene is a cluster with shreds of evidence like fingerprints, footprints, bloodstains, patterns, etc. Previous case studies also highlight the consideration of crime scenes, to arrive at a better conclusion regarding the sequence of events.¹⁸ The authors, performed a thorough autopsy examination and correlated the findings observed with the crime scene, and unveiled the sequence thereby helping the investigating agency.

Case Report

A university student living in a rented accommodation was not responding to multiple phone calls. His room was broke open by his friends. The boy along with a girl was found dead. The entire scene of occurrence was having different patterns of bloodstains. The girl's body was found lying on a king-size cot and the boy's body was found lying on the floor nearby. During the preliminary assessment by police, both of them were found to have deep cut throat injuries. Two sharp, blood-stained kitchen knives were discovered at the scene of the crime. Fingerprints, footprints, and samples of bloodstains were collected by the forensic crime team experts. Then both bodies were transferred to Department of Forensic Medicine & Toxicology, All India Institute of Medical Sciences (AIIMS), New Delhi for conduction of autopsies.

Autopsy findings of the deceased girl

There was a single deep cut-throat injury on the front aspect of the neck, with dried bloodstains on the face depicting an arterial spurt. Vital structures including bilateral common carotid arteries, jugular veins, vagal nerves, esophagus, and trachea were severed showing clean-cut edges (Fig. 1A). The anterior aspect of corresponding vertebral bodies showed imprinted shallow transverse sharp cuts

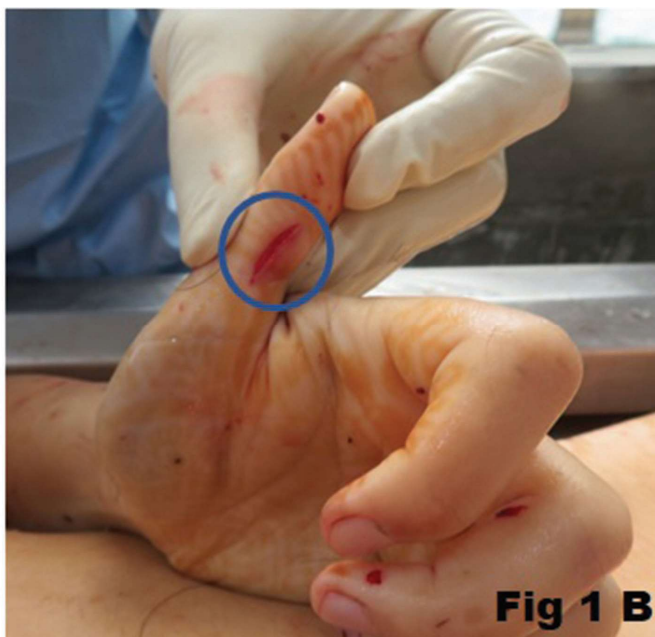
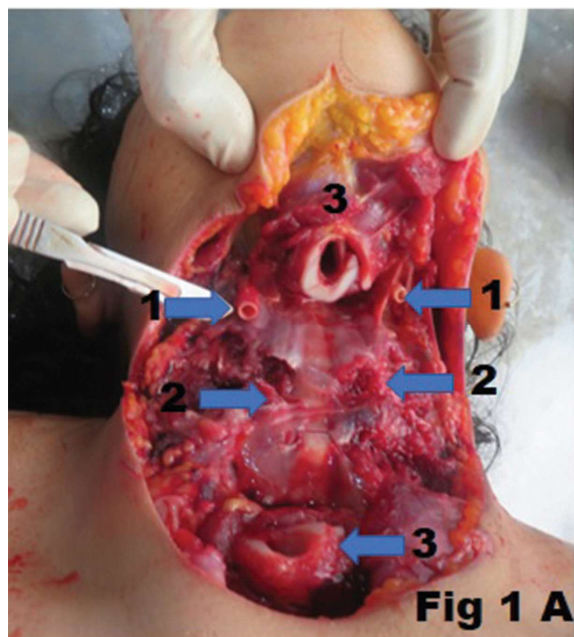


Fig 1A: 1 – Severed upper ends of left and right common carotid artery.

2 – Horizontal cuts are also noted over the underlying vertebra.

3 – Severed upper and lower ends of Trachea.

Fig 1B: An incised wound was present at the inner aspect of the left thumb



Fig 2A: A shallow cut-throat wound was present at the anterior aspect of the neck.

Fig 2B & C: The wound is shallow on the left side of the neck and became deeper towards the right

Fig 2D: A stab wound over the left hypochondriac region.

Fig 2E: Cadaveric spasm depicting the stab towards the left chest.

(Fig. 1A). There was air embolism to the right side of the heart, sub-endocardial hemorrhages over the anterior surface of the left ventricle, severe pallor, and aspirated blood in lower airways. An incised wound suggestive of self-protection / defense injury was present on the inner aspect of the left thumb (Fig 1B). She was wearing a pair of pink socks devoid of bloodstains.

Autopsy Examination of deceased boy

A cut-throat wound was present at the anterior aspect of the neck of the boy (Fig 2A). The wound was shallow on the left side of the neck and became deeper towards the right with a clean cut edge (Fig 2B). The external jugular vein on the right side, the airway at the level of the thyrohyoid membrane was severed (Fig 2C). A single deep transverse incised wound on the front of the left forearm transecting all flexor muscle bellies and tendons was present. Multiple linear superficial incised wounds suggestive of hesitation cuts were present in front of the left lower forearms. A stab wound just piercing the diaphragm was noted in the left hypochondriac region (Fig 2D). Both the layers of cloth worn by the boy showed fresh cuts corresponding to the stab injury. Air embolism and aspiration of blood into the lower airway, and generalized pallor were observed.

Discussion

A cut-throat injury could be a homicide, suicide, or

an accident on rare occasions.¹⁷ Thus, an autopsy surgeon needs to analyze every single factor while framing an opinion. In our case both the girl and boy were known to each other, studying in the same college and allegedly in a relationship, indicating a possibility of a suicide pact. The door was locked from the inside ruling out outside interference. The literature review suggested that the perpetrators in extra familial homicides suicides could either be adults or adolescents. Adolescents when compared with adults were less likely to complete suicide following the homicide.⁹

There were no hesitant cuts on the body of the girl. The cut-throat wound was a single sharp clean cut, severing both the carotids. Two horizontal cuts were also noted over the underlying vertebra. Homicide wounds are deeper, extending to the vertebra due to the excessive use of force by the assailant.¹⁹ The same was also observed in the present case. An incised wound suggesting defensive action of the deceased was also present on the inner aspect of the left thumb. Défense wounds were more commonly present in homicide cases contradictory to hesitation cuts which are characteristic of suicidal cases.¹⁹⁻²¹ According to Taylor, defense injuries arose when the victim tried to defend themselves and the palmar surface of the hand was the most commonest site to occur.²² Knight and Saukko pointed out that web space between the base of the thumb and the index finger to be a most common site for defense wounds due

to the pincer action.²³ Kumar²⁴ had reported the presence of hesitation cuts in a homicidal cut-throat to the neck. They justified that on the repeated cutting of the neck by the assailant, hesitant cuts can be produced. However, our case finding corresponds to Yadav et al. with the presence of a combination of a cut-throat wound and a *défense* wound.¹⁷ The presence of defense wounds on the girl's hand and horizontal cuts at the vertebra ruled out the possibility of a suicide pact.

The cut-throat wound found on the boy's neck was muscle deep severing the thyrohyoid membrane and external jugular vein with less severity when compared to the girl's wound. The findings observed followed the mechanism as depicted by Knight and Saukko as well as Taylor.^{22,23} There was no injury found to the carotid arteries due to the hyper extension by the boy at the time of severing the neck which protected the carotids in the carotid sheath, as it lied posterior to the sternocleidomastoid, even though, a cut was noted on both sternocleidomastoid muscles.

A single stab injury over the left chest pierced the diaphragm without any damage to the heart and lung. The manner was concluded as a suicidal stab wound considering the number and site which was congruent with literature.¹⁶ The deceased had stabbed the chest through his clothing while the literature highlighted that the deceased removes the clothing before stabbing. Also, there were multiple horizontal fresh tentative cuts noted over the inner aspect of the left wrist joint and forearm. The incised wound at the wrist joint was deeper to transect the tendons. The cadaveric spasm of the right hand depicted the posture of the deceased stabbing his left chest. The posture was flexion at the wrist with all fingers incompletely flexed enough to hold the knife recovered from the crime scene (Fig 2E). All the above-mentioned points favoured that the boy had completed the homicide suicide act. Further, the secured crime scene was visited post autopsy by autopsy surgeons. The room was locked from the inside during the incident as per the investigating officer and evidence of a broken lock was present. The arterial spurt pattern was observed on the wall corroborating with the girl's head position, who was lying on the bed. Blood stained footprints of the boy were identified due to the evident disparity in dimensions of the foot of both, which was noted during the autopsy. Later, police also recovered a vague suicide note written in the boy's personal diary.

Conclusion

The detailed workup of the case helped in unfolding the sequence of events that occurred during the death circumstance. In such cases, there is a thin line of demarcation in interpreting the incised wounds and cut throat wounds into homicide or suicide and needs cautious approach. Hence, proper correlation of findings at autopsy along with crime scene findings should be done like in the present case which helped in unveiling the role of the assailant.

References

1. Lew EO. Homicidal hanging in a dyadic death. *Am J Forensic Med Pathol.* 1988;9(4):283-6.
2. Byard RW, Knight D, James RA, et al. Murder-suicides involving children. A 29-year study. *Am J Forensic Med Pathol.* 1999;20(4):323-7.
3. Jena S, Mountany L, Muller A. A demographic study of homicide-suicide in the Pretoria region over a 5 year period. *J Forensic Legal Med.* 2009;16:261-5.
4. Shiferaw K, Burkhardt S, Lardi C, Mangin P, La Harpe R. A half century retrospective study of homicide-suicide in Geneva-Switzerland: 1956-2005. *J Forensic Leg Med.* 2010;17(2):62-6.
5. Prat S, Rérolle C, Saint-Martin P. Suicide pacts: six cases and literature review. *J Forensic Sci.* 2013;58(4):1092-8.
6. Viero A, Giraudo C, Cecchetto G, Muscovich C, Favretto D, Puglisi M, Fais P, Viel G. An unusual case of "dyadic-death" with a single gunshot. *Forensic Sci Int.* 2014;244,e1-e5.
7. Aggrawal A. Injuries: Classification and Medicolegal Aspects. In: *Textbook of Forensic Medicine and Toxicology.* Avichal publishing company: New Delhi. 2014; p 209.
8. Avis SP, Hutton CJ. Dyadic suicide. A case study. *Am J Forensic Med Pathol.* 1994;15(1):18-20.
9. Liem M. Homicide followed by suicide: a review. *Aggress Violent Beh.* 2010;15:153-161.
10. Santoro JP, Dawood AW, Ayral G. The murder-suicide. A study of post-agressional suicide. *Am J Forensic Med Pathol.* 1985;6(3):222-5.
11. Chan CY, Beh SL, Broadhurst RG. Homicide-suicide in Hong Kong, 1989-1998. *Forensic Sci Int.* 2004;140:261-7.
12. Ateriya N, Saraf A, Kanchan T, Shekhawat RS. Dyadic death-an unusual case of post-mortem mutilation. *J Forensic Sci.* 2018;8(1):1-6.
13. Karger B, Niemeyer J, Brinkmann B. Suicides by sharp force: typical and atypical features. *Int J Legal Med.* 2000;113:259-62.
14. Chadly A, Marc B, Paraire F, Durigon M. Suicidal stab wounds of the throat. *Med Sci Law.*

- 1991;31(4):355-6.
15. Driever F, Schmidt P, Madea B. Differentiation between self-inflicted and homicidal stab wounds to the neck. *Arch Kriminol.* 2000;205:92-101.
 16. Knight B and Saukko P. Self Inflicted injury. In: Knight's forensic pathology, 4th ed. London: CRC, 2016; p230-33.
 17. Yadav A, Raheel MS, Kumar R L, Sharma SK, Kanwar H. Cut-throat wounds: Suicidal and homicidal—two case reports and review of literature. *Med Sci Law.* 2016;56(1):53-7.
 18. Waghmare PB, Bhise SS, Nanandkar SD. Cut Throat Injury: Homicidal or Suicidal? Crime Scene Visit Solved the Mystery. *IJHRLMP.* 2016;2:138-40.
 19. Reddy KSN. The essentials of forensic medicine and toxicology, 31st ed. Hyderabad: K Suguna Devi, 2012; p179.
 20. Rao NG. Textbook of forensic medicine and toxicology, 2nd ed. New Delhi: Jaypee Brother's Medical Publishers Pvt Ltd, 2010; p.254.
 21. Vij K. Textbook of forensic medicine and toxicology: Principles and practice, 5th ed. New Delhi: Elsevier, 2011; p226-227.
 22. Mant K A. Taylor's Principle and practice of medical jurisprudence, 13th ed. New Delhi: B I Churchill Livingstone, 2000; p238.
 23. Knight B and Saukko P. Incised wounds. In: Knight's forensic pathology, 4th ed. London: CRC, 2016; p159.
 24. Kumar SA, Kumar MS V, Babu YR, Prasad M. A case of "atypical homicidal" cut-throat injury. *Med Leg J.* 2016;84(3):156-8.

