World Journal of Pharmaceutical Science and Research

www.wjpsronline.com

Case Report

ISSN: 2583-6579
SJIF Impact Factor: 6.916
Year - 2026
Volume: 5; Issue: 7
Page: 455-462

BILATERAL ABDOMINAL STAB WOUNDS: A FORENSIC DIAGNOSTIC CHALLENGE IN DETERMINING THE MANNER OF DEATH – A CASE REPORT

Dr. Sourav Vishal[1], Dr. S. Valliappan*[2], Prof (Dr.) C. P. Bhaisora[3]

[1]Post Graduate, Department of Forensic Medicine, GMCH Haldwani, Nainital, Uttarakhand.

[2]Associate Professor, Department of Forensic Medicine, VCSG GMC, Srinagar, Uttarakhand.

[3]Dean & Principal, Department of Forensic Medicine, SSJGIMS&R, Almora, Uttarakhand.

Article Received: 21 May 2026 | | ***Article Revised: 11 June 2026*** | | ***Article Accepted: 02 July 2026***

***Corresponding Author: Dr. S. Valliappan**
Associate Professor, Department of Forensic Medicine, VCSG GMC, Srinagar, Uttarakhand.
DOI: https://doi.org/10.5281/zenodo.21370898

How to cite this Article: Dr. Sourav Vishal, Dr. S. Valliappan, Prof (Dr.) C. P. Bhaisora (2026) BILATERAL ABDOMINAL STAB WOUNDS: A FORENSIC DIAGNOSTIC CHALLENGE IN DETERMINING THE MANNER OF DEATH – A CASE REPORT. World Journal of Pharmaceutical Science and Research, 5(7), 455-462.

ABSTRACT

In general, determining the manner of death in fatal stab injuries is one of the most challenging aspects of forensic practice, particularly when the alleged history conflicts with objective forensic findings. We report a case of 47-year-old male admitted with an alleged history of self-inflicted bilateral abdominal stab injuries. Emergency exploratory laparotomy revealed perforations of the ascending and transverse colon, which were surgically repaired. During the course of treatment, the patient succumbed to septicemia secondary to perforation peritonitis five days later. Medicolegal autopsy revealed two bilateral abdominal stab wounds of similar dimensions and morphology, along with postoperative laparotomy and drain sites. The bilateral distribution of injuries, comparable wound characteristics, absence of hesitation wounds, and correlation with investigative findings were inconsistent with classical self-inflicted stab injuries and were more consistent with homicidal assault. This case highlights the indispensable role of meticulous medicolegal autopsy in determining the manner of death and emphasizes that clinical history alone should not be relied upon in differentiating suicidal from homicidal stab injuries, particularly in surgically managed cases.

KEYWORDS: Abdominal stab wound; Homicide; Suicide; Medico-legal autopsy; Sharp force injury; Perforation peritonitis.

INTRODUCTION

Sharp force injuries remain one of the leading causes of violent deaths encountered in forensic practice and constitute a significant proportion of homicidal, suicidal, and accidental fatalities especially in India and globally. Among these, stab wounds are produced by pointed sharp-edged weapons and may cause death through massive hemorrhage or injury to vital organs. The determination of the manner of death in fatal stab injury cases is one of the most challenging responsibilities of the forensic medicine expert, as an incorrect interpretation may substantially influence criminal investigation and subsequent Judicial Proceedings.[1] Consequently, meticulous correlation of the clinical history, crime scene examination findings, Police investigation, and autopsy observations is indispensable in arriving at a scientifically sound medicolegal opinion.[2,3]

Penetrating abdominal stab injuries are frequently encountered in Emergency surgical practice and continue to be associated with considerable morbidity and mortality despite advances in trauma care in India. The severity of injury depends upon of the following factors such as the type of weapon used, force applied, anatomical site involved, and the extent of visceral damage. Although prompt exploratory laparotomy and definitive surgical management have significantly improved survival, delayed complications such as perforation peritonitis, septicemia, and multiple organ dysfunction remain important causes of mortality in patients surviving the initial injury.[4,5] Furthermore in addition, operative intervention may considerably modify the original wound morphology leading to Surgically altered wound, thereby creating additional challenges during subsequent medicolegal autopsy and forensic reconstruction of same.

In routine forensic practice, the differentiation between suicidal and homicidal stab wounds would be done based on classical forensic criteria such as the number, location, direction, depth, and accessibility of wounds, the presence or absence of hesitation injuries and defence wounds, associated clothing damage, and corroborative crime scene evidence. Suicidal stab wounds are generally solitary or limited in number, present over easily accessible regions of the body, and may be accompanied by tentative or hesitation wounds. In contrast, homicidal stab wounds are more frequently multiple, variable in direction and depth, associated with defence injuries, and may involve relatively inaccessible anatomical regions. Nevertheless, these features are not absolute, and considerable overlap exists between the two entities. Contemporary forensic literature has repeatedly emphasized that no single morphological feature is pathognomonic of either suicide or homicide and that determination of the manner of death should always be based upon comprehensive evaluation of all available evidence rather than isolated autopsy findings.[6,7,8]

Interpretation becomes particularly difficult when the alleged history conflicts with the objective Forensic autopsy findings. Previous studies have demonstrated that atypical suicidal stab wounds may closely mimic homicide, while certain homicidal assaults may initially be interpreted as self-inflicted injuries, thereby creating significant diagnostic dilemmas. In such situations, the forensic autopsy assumes a pivotal role by objectively evaluating wound characteristics, injury trajectory, internal organ damage, operative alterations, and associated findings in conjunction with investigative information. The final medicolegal opinion should therefore be based upon careful clinicoforensic correlation rather than reliance on circumstantial history alone.[9]

Bilateral abdominal stab wounds constitute an unusual pattern of injury and present a unique diagnostic challenge in determining the manner of death. Surgical intervention(alteration) further complicates forensic interpretation because operative repair, drain placement, and tissue manipulation may obscure the original characteristics of the wounds.

Reports describing bilateral abdominal stab wounds initially alleged to be self-inflicted but subsequently determined to be homicidal following comprehensive forensic evaluation are rarely reported in the published literature.[10,11,12]

The present case describes a middle-aged male who was admitted with an alleged history of self-inflicted bilateral abdominal stab injuries, underwent emergency exploratory laparotomy with repair of ascending and transverse colonic perforations, and subsequently succumbed to septicemia following perforation peritonitis. Detailed forensic autopsy, together with careful review of the clinical records and investigative findings, demonstrated injury characteristics that were inconsistent with self-infliction and ultimately supported a homicidal manner of death. This case emphasizes the critical importance of comprehensive forensic evaluation in determining the true manner of death and illustrates the potential pitfalls of relying solely upon the initial clinical history in complex sharp force fatalities.[13]

CASE REPORT

A 47-year-old male was brought to the Emergency Department with an alleged history of self-inflicted stab injuries to the abdomen. According to the history obtained from the treating clinicians and police records, the patient had sustained two stab wounds over the anterior abdominal wall. He was conscious at presentation and was immediately evaluated for penetrating abdominal trauma.

Clinical examination revealed two penetrating stab wounds involving the right and left sides of the abdomen. Contrast-enhanced computed tomography (CECT) of the abdomen demonstrated features suggestive of bowel injury with pneumoperitoneum. The patient underwent emergency exploratory laparotomy, which revealed perforations involving the ascending colon and transverse colon with fecal contamination of the peritoneal cavity. Primary repair of the bowel perforations was performed along with peritoneal lavage and placement of bilateral abdominal drains. The postoperative period was initially uneventful; however, the patient subsequently developed features of generalized peritonitis followed by septicemia despite intensive medical and surgical management. His clinical condition progressively deteriorated, and he succumbed to his injuries five days after admission.

As the death occurred following an alleged self-inflicted stab injury, a medicolegal autopsy was conducted to ascertain the precise cause and manner of death. (Figure 1)

External Examination

The deceased was a moderately built and nourished adult male. A sutured midline laparotomy incision measuring approximately 16 cm extended vertically over the anterior abdominal wall, consistent with recent exploratory laparotomy. Bilateral postoperative drain insertion wounds were present over the lateral aspects of the abdomen. (Figure 2)

In addition to the operative wounds, two sutured stab wounds were identified.

The first stab wound was located over the right side of the abdomen. After removal of the sutures, the wound measured approximately 4 × 2 cm and was abdominal cavity deep. The wound margins were clean cut and regular with acute angles, consistent with a stab injury produced by a sharp-edged weapon.

The second stab wound was situated over the left side of the abdomen. Following removal of the sutures, it measured approximately 4 × 2 cm and was similarly abdominal cavity deep with clean-cut margins and acute wound angles.

Both injuries showed features of vital reaction and were ante-mortem in nature. No hesitation cuts, tentative injuries, or defence injuries were identified on detailed external examination. Apart from the surgical intervention, no additional external injuries suggestive of blunt force trauma were observed.

Internal Examination

On opening the abdominal cavity, approximately 500 mL of blood-stained fluid mixed with purulent exudate was present. The peritoneal cavity showed evidence of diffuse fibrinous peritonitis with inflammatory adhesions.

Careful examination revealed surgically repaired perforations involving the ascending colon corresponding to the right-sided stab wound and the transverse colon corresponding to the left-sided stab wound. The wound tracks were directed posteriorly with slight upward and lateral inclination. Surrounding bowel loops exhibited inflammatory changes with fibrin deposition consistent with postoperative perforation peritonitis. (Figure 3)

Both lungs were congested and oedematous. The liver, spleen, kidneys, and brain showed generalized visceral congestion. No evidence of natural disease sufficient to explain death was identified.

Opinion

Based on the autopsy findings, hospital records, operative notes, and circumstantial information, the cause of death was opined as*:"Septicemia consequent to perforation peritonitis following penetrating stab injuries involving the ascending and transverse colon."*.Although the initial clinical history suggested self-inflicted abdominal stab injuries, detailed medicolegal evaluation demonstrated injury characteristics that were inconsistent with classical suicidal stab wounds.

The bilateral distribution of the injuries, comparable depth and morphology of both wounds, absence of hesitation injuries, and overall wound configuration favored homicidal assault. These findings, when correlated with the subsequent police investigation, supported the opinion that the manner of death was homicide.

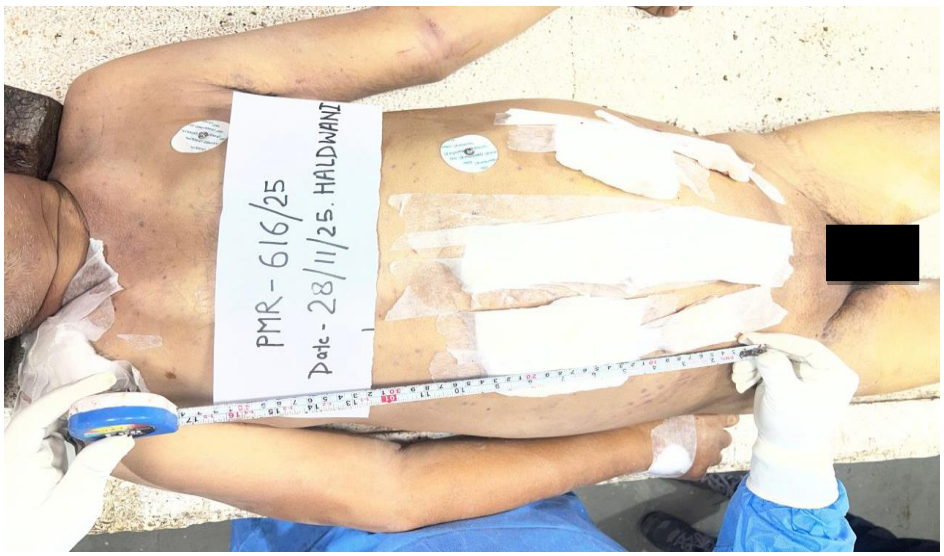

Figure 1: External examination demonstrating bilateral stab wounds over the anterior abdominal wall.

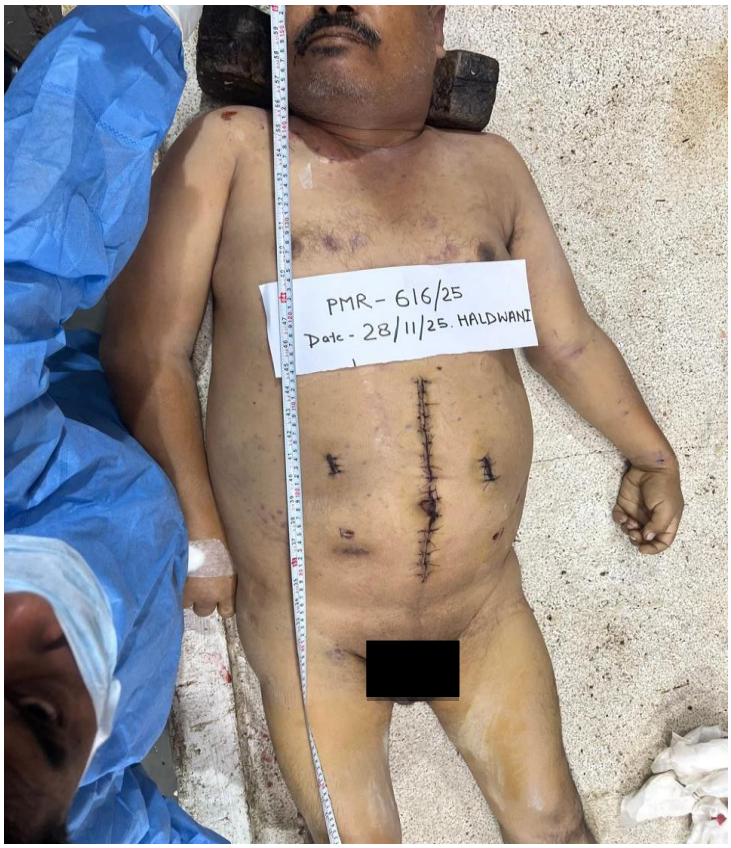

Figure 2: Autopsy photograph demonstrating bilateral stab wounds over the anterior abdominal wall.

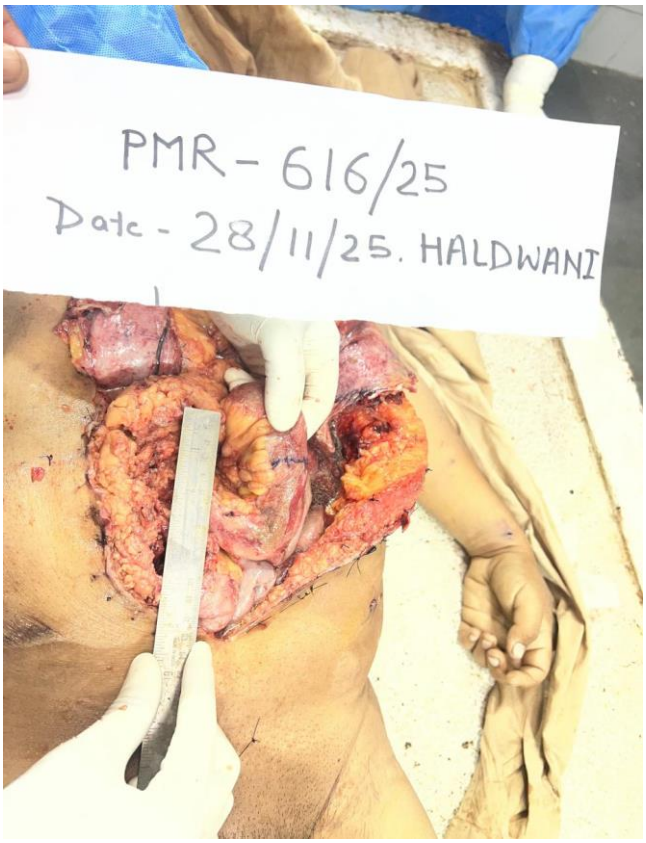

Figure 3: Internal examination autopsy photograph showing penetrating abdominal injuries with bowel perforation.

DISCUSSION

Sharp force injuries continue to represent a significant proportion of violent deaths encountered during medicolegal autopsies. Among these, stab wounds constitute one of the commonest forms of penetrating trauma and may occur in homicidal, suicidal, accidental, or rarely undetermined circumstances.[14,15] Establishing the manner of death in fatal stab injuries is often straightforward when the circumstantial evidence and autopsy findings are concordant. However, cases presenting with conflicting history and atypical injury patterns remain among the most challenging situations encountered by forensic pathologists. The present case exemplifies such a diagnostic dilemma, where the initial clinical history suggested self-inflicted injuries, whereas the medicolegal autopsy demonstrated findings more consistent with homicidal assault.[16,17,18]

Abdominal stab wounds are frequently encountered in trauma centres because the anterior abdominal wall is relatively unprotected and readily accessible to sharp-edged weapons. The severity of these injuries depends upon the site of penetration, force applied, weapon characteristics, and the organs involved. Perforation of the colon carries a particularly high risk of faecal contamination, generalized peritonitis, septicemia, and delayed mortality despite prompt surgical intervention. In the present case, the victim survived the initial assault following emergency exploratory laparotomy and repair of perforations involving the ascending and transverse colon. Nevertheless, progressive perforation peritonitis and septicemia resulted in death five days after injury, illustrating that delayed deaths following penetrating abdominal trauma continue to represent an important medicolegal entity.[19]

The distinction between suicidal and homicidal stab wounds has traditionally been based upon a combination of morphological and circumstantial findings rather than any single diagnostic feature. Classical descriptions indicate that suicidal stab wounds are usually solitary or few in number, situated over accessible areas of the body such as the precordium, epigastrium, or neck, and are frequently accompanied by hesitation or tentative injuries.[20] Defence injuries are generally absent, and the direction of the wound is compatible with the natural movements of the dominant hand. In contrast, homicidal stab wounds are more often multiple, variable in direction and depth, associated with defence injuries, and may involve relatively inaccessible anatomical regions.[20,21] Modern forensic literature, however, emphasizes that these features should be interpreted collectively, as considerable overlap may occur between suicidal and homicidal injuries.

Several findings in the present case were inconsistent with the classical features of self-inflicted abdominal stab wounds. First, two separate stab wounds were present on opposite sides of the abdomen, involving both the right and left abdominal regions. Bilateral distribution of stab wounds with comparable dimensions and depth is uncommon in suicidal injuries because self-inflicted wounds generally occur within a limited accessible area and are frequently directed towards a single anatomical target. Secondly, both wounds exhibited similar morphology, depth, and trajectory, indicating application of comparable force. Thirdly, meticulous external examination failed to demonstrate hesitation cuts or tentative injuries, which, although not universally present, are frequently encountered in suicidal sharp force injuries. Collectively, these findings reduced the likelihood of self-infliction.[23,24,25]

An additional challenge in this case was the alteration of the original wound characteristics by emergency surgical intervention. Exploratory laparotomy, bowel repair, drain placement, and postoperative inflammatory changes inevitably modified the appearance of the external and internal injuries. Such operative alterations may obscure the original wound dimensions, interfere with interpretation of wound tracks, and complicate reconstruction of the

mechanism of injury. Consequently, forensic interpretation in surgically managed trauma should never rely solely upon postoperative wound appearance. Correlation of hospital records, operative findings, autopsy observations, and investigative information is essential to reconstruct the original injury pattern accurately.[25]

Another important aspect of this case was the discrepancy between the alleged history and the objective forensic findings. Initial clinical history may occasionally be inaccurate because of misinformation, deliberate concealment, confusion at the scene, or lack of eyewitnesses. Acceptance of such history without independent forensic evaluation may lead to erroneous conclusions regarding the manner of death. In the present case, systematic autopsy examination demonstrated features that were incompatible with the alleged history of self-inflicted injury. Subsequent police investigation corroborated the forensic opinion, ultimately establishing the case as homicide. This sequence illustrates the fundamental role of medicolegal autopsy as an independent scientific investigation rather than a mere confirmation of the clinical diagnosis or police version.[13,17]

The present case also highlights the importance of evaluating stab wounds within the broader context of forensic reconstruction. No individual feature—including wound location, depth, direction, or multiplicity—should be interpreted in isolation. Instead, every observation must be integrated with the circumstances of the incident, scene findings, operative records, autopsy examination, and investigative evidence before expressing an opinion regarding the manner of death.[16] Such a multidisciplinary approach minimizes diagnostic error and strengthens the evidentiary value of the forensic opinion.

Reports describing bilateral abdominal stab wounds initially alleged to be self-inflicted but subsequently established as homicidal following comprehensive forensic evaluation remain uncommon in the published literature. The present case therefore contributes to the existing body of forensic evidence by illustrating how meticulous autopsy examination, careful clinical, investigative, and autopsy correlation, and objective interpretation of injury characteristics can resolve a complex medicolegal dilemma. It further reinforces the principle that the forensic pathologist must maintain an independent and unbiased approach, irrespective of the history provided by relatives, clinicians, or investigating agencies.[18]

CONCLUSION

Determining the manner of death in fatal stab injuries remains one of the most demanding tasks in forensic pathology, particularly when the alleged history is inconsistent with the objective medical evidence. The present case demonstrates that bilateral abdominal stab wounds, especially following surgical intervention, may pose significant diagnostic challenges in differentiating suicidal from homicidal injuries.

The bilateral distribution of stab wounds, comparable wound morphology and depth, absence of hesitation injuries, and involvement of separate segments of the colon were inconsistent with the classical characteristics of self-inflicted abdominal stab wounds. Comprehensive medicolegal autopsy, together with careful evaluation of the clinical records and investigative findings, proved crucial in establishing the homicidal nature of the injuries.

This case reinforces the principle that the determination of the manner of death should never rely solely on the history provided by relatives, witnesses, or treating clinicians. Instead, meticulous autopsy examination, clinicopathological correlation, and integration of all available investigative evidence remain the cornerstone of accurate forensic opinion.

The present report contributes to the limited literature on bilateral abdominal stab wounds presenting as an apparent self-inflicted injury and highlights the indispensable role of forensic pathology in ensuring accurate medicolegal reconstruction and administration of justice.

DECLARATIONS

Ethical Approval

The present case report is based on a medico-legal autopsy conducted in accordance with the institutional protocol and applicable legal provisions. The manuscript has been prepared exclusively for academic and scientific purposes while maintaining complete anonymity of the deceased.

Consent for Publication

Patient identifiers and all personally identifiable information have been removed. As this is a medico-legal autopsy case reported in anonymized form for scientific publication, separate consent for publication was not applicable in accordance with institutional practice.

Conflict of Interest

The authors declare that there is no conflict of interest.

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