

Unusual Incised Stab Wound Produced by a Single Edged Weapon: A Case Report

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ABSTRACT

Stab wound examination yields valuable information about the weapon. Some amount of information about the hilt can also be obtained at times. In this case of murder by stabbing, the cutting edge of the (single edged) blade had a blunt portion (ricasso) adjacent to the handle and the hilt was projecting beyond the cutting edge. The ricasso had modified the sharp cut end of the stab wound and the blunt end of the knife had produced fish tailing. These events had altered the external appearance of the wound in such a way that the end which corresponded with the sharp edge of the knife looked blunt and the other end looked sharp. However, despite the confusing appearance of the skin wound, the actual orientation of the blade could still be determined from the hilt bruise.

Keywords: Boat Mark, Cutting Edge, Fish Tailing, Guard, Hilt, Incised Stab Wound, Penetrating Wound, Ricasso, Single Edged Knife, Square Edge, Stab

INTRODUCTION

Stab wounds contribute a significant portion of trauma deaths.^{1, 2, 3} From careful examination of the external appearance and internal characteristics of the stab wound, the pathologist is usually able to offer opinion upon the dimensions of the weapon (including width of the blade and minimum length); the type of the weapon (whether it was single edged or double edged); the taper of the blade; movement of knife in the wound⁴; the depth of the thrust; the direction of the thrust and the amount of force used. Some information about the guard (hilt) can also be gleaned from the presence of hilt bruises.^{5,6} Accurate information about the type of weapon has special significance in crime investigations.

The type of weapon is determined by examining the margins and ends of the wound. If one end is sharply cut and the other end is either rounded off, square cut or shows splitting of skin (fish tail appearance), we can safely assume that the injury was produced by a single edged weapon.

However, this is an oversimplification. On occasion, both the ends may appear sharply cut even in single edged weapons. This can occur when the skin splits behind the blunt edge to produce a symmetrical

appearance.⁵ This can also happen when the thrust is directed in such a way that, one sharply cut end of the wound is produced by the sharp tip of the knife⁷ and the other end is made by the sharp edge of the blade. In this situation, the blunt edge of the blade does not influence the shape of the wound.

The blade of a single edged knife often has a ricasso (blunt segment of the blade adjacent to the hilt). The significance of the ricasso is that the blade has two blunt edges at this portion. So if the knife is inserted up to the ricasso, the wound may have two blunt ends.⁶

The injuries sustained to deeper tissues (especially cartilage or bone)⁶ can also be helpful in differentiating between the blunt edge and the sharp edge. It is possible that when the skin wounds are ambiguous, the type of the weapon can be determined with ease from a close examination of the deeper structures.

CASE REPORT

A 32 year old male was stabbed to death. The fatal injury was an incised penetrating wound situated on the left half of front of chest which had entered the chest cavity through the 3rd intercostal space, perforated the upper lobe of left lung and had

terminated by entering the chamber of left ventricle (Figure 1). The wound was horizontally placed and showed gaping of edges.

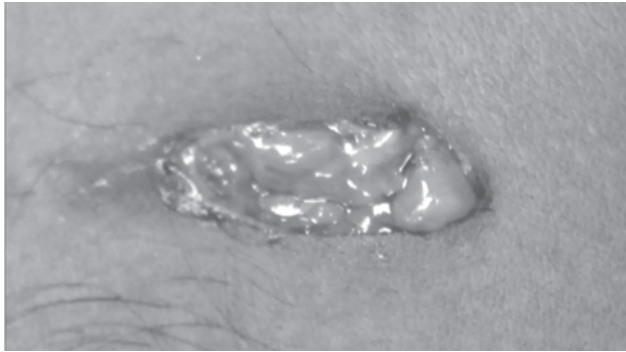


Fig. 1. The stab wound on the left half of front of chest.

The length of the wound (measured after approximating the edges) was 3.6 cm. The medial end was rounded and showed an adjacent contusion measuring 0.5 X 0.4 cm (see Figure 1). The lateral end of the wound showed skin splitting giving the impression that it was sharply cut. On external examination, it appeared as though the wound was made by a single edged weapon and the blunt edge of the weapon corresponded with the medial end and the sharp edge with the lateral end.

Internal examination showed that the intercostal muscles, lung and myocardium along the medial aspect of the wound track were sharply cut (Figure 2). On closer examination, it was noted that the lateral end of the wound showed two skin splits or "fish tailing" (Figure 3) strongly suggesting that the corresponding knife edge was square cut. The edges of gaping wounds need to be approximated⁵ to clearly visualize the shape of the wound and accurately measure the dimensions.

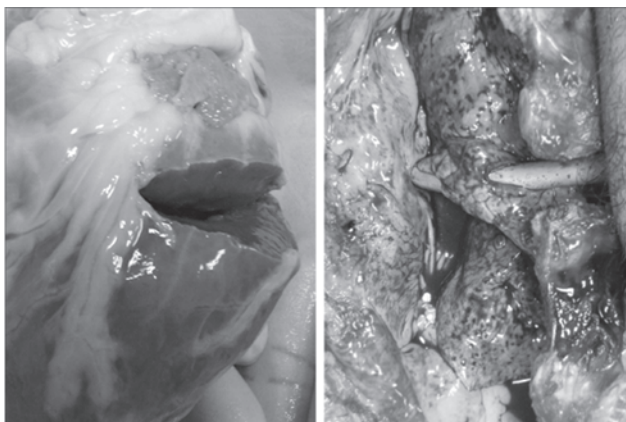


Fig. 2. The picture on the left shows the myocardial injury. The picture on the right shows the injured left lung with a probe passed through the wound track.

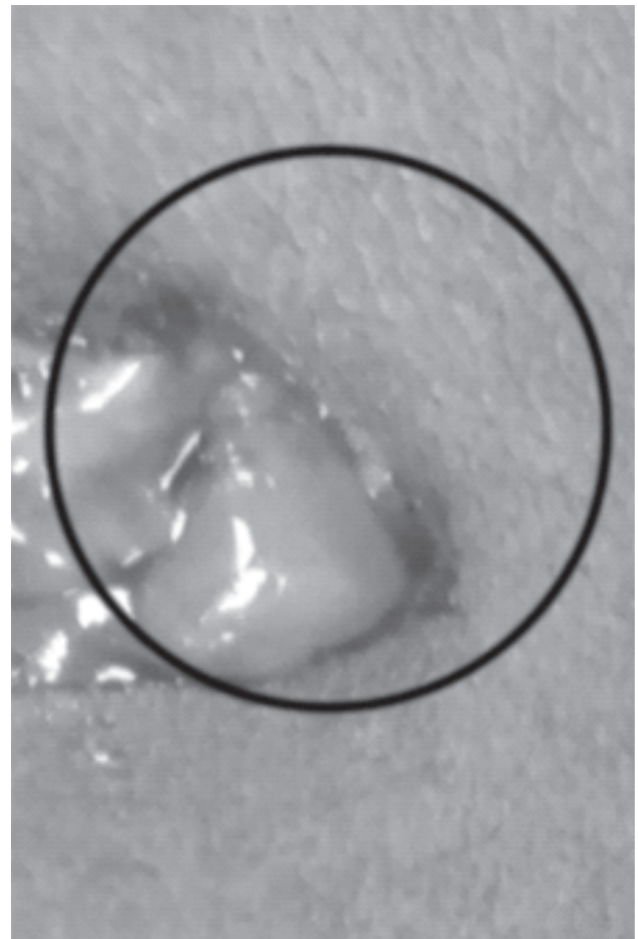


Fig. 3. The circled portion of the magnified photograph shows "fish tailing". The lower "tail" could easily be confused as sharp end of the wound and the upper "tail" is easily misinterpreted as a side cut or overlooked.

WEAPON

The weapon recovered by the investigating agency was of a peculiar design (Figure 4). The maximum width of the sharp portion of the blade was 3.4 cm just above the ricasso. The ricasso was projecting beyond the cutting edge but was continuous with the spine of the knife (the square edge). The blade was 3.6 cm broad at the level of the ricasso. The hilt was seen to be projecting another 5mm beyond the ricasso. The shape and placement of the contusion (hilt mark) adjacent to the medial end of the stab wound corresponded well with the hilt of the suspected knife. The width of the blade (at the level of the ricasso) corresponded with the length of the wound.

The spine of the blade had a thickness of 0.3 cm and had a square cross section which corresponded with the presence of fish tailing.



Fig. 4. The Knife recovered. Note the rounded and prominent ricasso below the cutting edge. The hilt which projected beyond the cutting edge corresponded well with the contusion adjacent to the medial end of the skin wound.

DISCUSSION

From a careful analysis of the findings, it was possible to deduce which end of the wound corresponded with the sharp edge of the knife and which end corresponded with the blunt edge even though cursory examination suggests the opposite. Rounded end of a wound does not necessarily mean that it was produced by the blunt edge of a blade; the rounded ricasso may well be the reason why the end is rounded. It should also be kept in mind by that skin splitting produced by the blunt edge of a knife may cause the wound to appear like sharply cut.

Clues like hilt marks and internal injuries are important and must be weighed carefully before an opinion about the type of weapon is furnished.

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Conflict of interest

We confirm that there are no known conflicts of interests associated with the publication of the article.

Ethics clearance:

Clearance has been obtained from the Ethics Committee, General Hospital, Ernakulam.

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