



Bizarre suicide by handsaw: A case report

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ABSTRACT

Suicides involving any kind of saw are rare events. The use of handsaws in particular is even more exceptional. Forensic literature indicates that self-inflicted injuries using these instruments are most often found in men, frequently suffering from psychiatric pathologies, and with a history of previous suicidal attempts. Furthermore, the most common locations for such injuries are the head and neck. This paper focuses on the case of a 76-year-old man with a history of psychiatric disease, found dead at home together with a suicide note and a handsaw. Post mortem exam revealed sharp wounds in the anterior face of the neck, with an irregular section of the muscles, thyroid, trachea, and left internal jugular vein. Further satellite wounds were consistent with hesitation injuries. After a thorough investigation of the scene and considering the results of the autopsy as well as other ancillary analysis, the cause of death was determined as traumatic neck injuries and the case classified as a suicide. By reporting this highly unusual case, the authors intend to highlight the complexity associated with diagnosing such occurrences, mainly in determining the mode of death and aim at helping future pathologists when facing similar circumstances.

Introduction

Suicides or suicidal attempts using saws are not frequently reported in forensic literature [1–5]. Deaths associated with this type of instrument are mostly accidental and usually caused by saw kickbacks [5,6]. Its use has also been observed in situations involving dismemberment following a homicide or in cases in which injuries are self-inflicted with fraudulent purposes, targeting insurance companies [1,6].

Furthermore, self-inflicted saw injuries are more often seen in victims suffering from psychiatric pathologies [1,3,5,7] such as schizophrenia [1,7], psychotic states or depression [1] and a history of previous suicidal attempts [1,2,5]. Alcohol or drug abuse may also be a relevant risk factor [5].

The majority of victims tend to resort to more powerful instruments, such as band saws or circular saws [7]. Given the high degree of violence associated with these methods, they are more commonly seen in males [1,2]. Moreover, the head and neck are the preferred injury targets [1–3, 5] and the cause of death is frequently described to be autonomic dysfunction, haemorrhagic shock, aspiration of blood or gas embolism [2,4].

As previously mentioned, forensic literature documenting suicides

by saw is extremely limited. This applies to a wide range of instruments, either manual or electric, such as chainsaws, table saws, bandsaws and circular saws, among others. Published cases of suicides by handsaw are even more infrequent. Only one paper including suicidal attempt involving a handsaw was found in literature [7], in which the victim also stabbed himself with a screwdriver to complete the suicide. Another case of suicide committed exclusively with a handsaw in 1986 is also mentioned in the same paper.

In this report, the authors present a case of suicide by handsaw with self-inflicted injuries on the neck that could help future forensic practise by providing a contribution to overcome the referred absence of literature on this type of events.

Case report

The authors performed a post mortem exam at the South Branch of the Portuguese National Institute of Legal Medicine and Forensic Sciences in Lisbon, of a 76-year-old man, who was found dead at home by his caregiver. The door of the house was locked and a suicide note was visible nearby in which the Portuguese expression "Fui eu, não castiguem ninguém" was written (translating freely to English "it was me,

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don't blame anyone else"). A handsaw stained in blood was also found next to the corpse (Fig. 1). The victim suffered from depressive syndrome and was being followed by a hospital due to his medical history. He had also tried to commit suicide eleven years earlier, using the same method.

An external examination revealed an infra-laryngeal, irregular and sharp wound located in the anterior aspect of the neck (Fig. 1). More specifically, the wound started 9.5 cm below the left jaw's angle and ended 5 cm right of the midline, below the clavicle's proximal end, measuring 13 cm in length with 5 cm diastasis. It was oblique and descendent from left to right. At the right infra-clavicular inferior extremity, a triangular dry abrasion with 4×2 cm was visible (Fig. 1). Moreover, under the laryngeal prominence, over the upper edge of the wound, there was a complex injury ($5 \times 0,5$ cm) composed of an abrasion with several parallel and horizontal superficial wounds (Fig. 1). Finally, tiny round tears were observed on the superior and left border of the wound (Fig. 2). There were no other traumatic injuries on the body's surface.

Internally, the left muscles of neck (platysma, sternocleidomastoid and infrahyoid muscles) presented some irregular sections (Figs. 1–3). The left internal jugular vein was sectioned and surrounded by an extensive blood infiltration of the carotid sheath (Fig. 3), while the homolateral carotid and the vagus nerve remained intact, as well as the hyoid bone and cartilage structures. Furthermore, the left thyroid lobe showed an irregular laceration and the first tracheal ring was sectioned anteriorly, displaying again serrated borders (1.5 cm) (Figs. 1 and 4). A brownish and viscous mucus was also found both in the larynx and oesophagus, with bloody traces in the larynx, trachea, and bronchi. Despite the fact that no other traumatic injuries were diagnosed, generalised pallor of organs and mucous membranes was evident (Fig. 4).

Histopathological analysis confirmed dilated cardiomegaly, mild coronary atherosclerosis and hepatic steatosis.

Toxicological studies revealed the presence of antidepressant trazodone (829 ng/ml) and its metabolite m-CPP (41 ng/ml) together with a metabolite of clonazepam's (benzodiazepine) - 7-amino-clonazepam (50 ng/ml), both in therapeutic concentrations. Alcohol and drugs were not present in the blood.

The cause of death was determined as cut neck injuries – these injuries were compatible with the handsaw found near the corpse – and the manner of death was classified as a suicide.



Fig. 2. Small tiny tears in the skin and in the trachea made by the saw teeth.

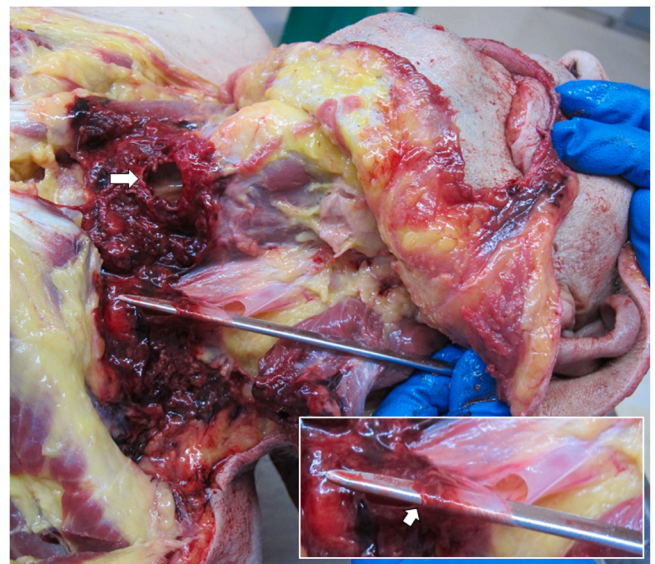


Fig. 3. Section of the left muscles and jugular vein (small arrow) embraced by a substantial blood infiltration of the carotid sheath. Section of the anterior trachea is also visible surrounded by blood (big arrow).

Discussion

The fact that documented suicides or suicidal attempts involving saws are rare combined with both the uncommon pattern of the associated lesions and the difficulties in correctly interpreting the death scene in such situations, make the circumstances of the reported case a relevant forensic topic [2]. Despite the small number of cases described in previous literature, many characteristics described in these reports are common to the presented case. Firstly, the deceased was a man [2,5], with psychiatric pathology [1,2,5], information supported by the type of medication found in the toxicological analysis. Secondly, there were records of a previous suicidal attempt [1,2,5]. Finally, the injuries were located in the neck, following what had been observed in the majority of the cases previously documented [1,2,5,8].

Furthermore, the pattern of cuts associated with a handsaw is distinct from other traumatic injuries. It is characterised by a cut wound with serrated margins and ragged tissue edges, as described in the case report. The triangular dry abrasion, probably caused by the saw handle, as well as the tiny round tears of the superior and left border (Fig. 2), certainly caused by the movement of the teeth while sawing, results in

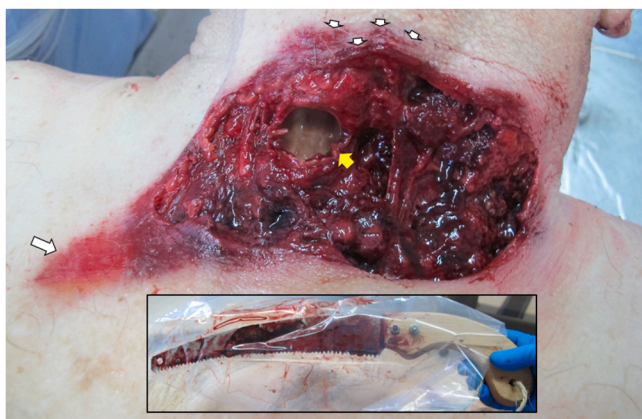


Fig. 1. Infra-laryngeal irregular cut wound and dry abrasion at the right inferior extremity (big arrow) and the handsaw collected at the scene. Note the parallel and horizontal superficial wounds (small arrows), compatible with hesitation injuries and the serrated section of the proximal trachea (yellow arrow). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)



Fig. 4. Irregular laceration of the inner aspect of the first tracheal ring, with blood.

an appearance that reproduces the instrument's morphology [1,7].

The type of superficial injuries associated with hesitation described in the literature [7] were also observed. This was seen over the upper edge of the wound (Fig. 1). They consist of parallel wounds reproducing the different saw teeth [7]. Such wounds are particularly important for distinguishing between suicidal and accidental deaths [4,9]. Other factors including the existence of a suicide note, the death scene investigation (door locked at home and no evidence of a third-party intervention), the absence of defensive injuries, the wound pattern consistent with self-inflicted injury, and a previous suicide attempt with same method, were additional evidence that strongly pointed to a suicide.

The toxicological level of psychotropics detected was low, and considered to be within the range of therapeutic concentrations, therefore compatible with self-perpetration of the injuries.

As also referred in literature, these uncommon cases of self-inflicted injuries often conceal major psychiatric disorders. This is particularly evident in the case of schizophrenia. Experimental studies have shown decreased levels of pain sensitivity in these patients, which could partially explain the use of such violent methods [4,7].

The lack of a radiological examination prior to the autopsy, which could support the exclusion of gas embolism as the cause of death was a

limitation of this case report. Nevertheless, there were no signs of gas embolism present in the autopsy.

Moreover, despite the absence of subendocardial haemorrhages, when considering the section of the jugular vein showing signs of profuse haemorrhage and the general pallor of the organs, evidence points to haemorrhagic shock as the most likely mode of death, which could have been favoured by pre-existent cardiac pathologies.

Conclusion

A suicide following traumatic injuries resulting from the use of a handsaw is highly unusual and bizarre. Evaluating such death scenes can be challenging and often involves answering a multitude of difficult questions regarding the manner of death.

The presentation of this unique case highlights the importance of the pathologist's role in determining whether the traumatic injuries observed are compatible with suicide, ruling out an accident or, more importantly, a murder. A proper diagnosis of such situations is only possible by correctly interpreting all data available. The authors also emphasise the significance of toxicological studies for this purpose.

In conclusion, only full access to all available evidence can enable the pathologist to correctly diagnose the cause and manner of death in such bizarre suicides.

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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