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Case Report

A crossbow suicide

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ABSTRACT

The crossbow is an ancient ranged weapon originally conceived for war and hunting. Although nowadays its use in warfare has been surpassed by firearms, it continues to be used in hunting, sports and recreation. The authors present the case of a 40-year-old man who suffered from severe depression. When his condition further deteriorated, doctors ordered a forced hospitalization but, just a few hours before the measure became effective, the man committed suicide using a crossbow.

The autopsy and police investigation showed possession of the crossbow darts which the man used to shoot himself in the head.

The forensic pathologist found the dart stuck in the skull: the entry wound was in the suprahyoid region while the arrow tip emerged in the left parietal region meaning the arrow crossed the tongue, the middle fossa, the brain and the cranial wall. All the wounds presented a three-pointed star shape consistent with the three sharp blades of the dart. An extensive blood infiltration affected the subdural and subarachnoid space, particularly where the dart had passed.

The severe brain injury, extensive subdural and subarachnoid bleeding and brain swelling following the trauma caused the death.

Even though the use of the crossbow is only permitted in sporting/hunting contexts, the reported case highlights the sharp contrast between its potential for harm and the easy access to this kind of weapon, even for those affected by mental illness.

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1. Introduction

The crossbow is a ranged weapon which can use arrows, darts, projectiles or stones. Compared to the bow, it has a better grasp, a wider range and it is considerably easier to use; there is no need for training or strength, although its weight can affect the weapon handling and accuracy [1,2]. It continued to be used in military settings until the 16th century, when it was replaced by firearms. Today, the only remaining uses are for hunting, sports and recreation [3,4].

Lethal crossbow injuries are a rarity in the forensic field today despite being common in the past [5,6]. There are very few reported cases in forensic literature and those which exist refer mainly to suicides or accidental deaths rather than homicide cases. Similarly to firearm suicides, the chest or the head are often the favoured areas in self-harm cases and the subject often suffers

from a mental illness or a drug/alcohol dependence. The characteristic morphological effects depend on the type of arrows and particularly the tips used rather than on the type of weapon. Entrance wounds from a field-tipped arrow are often virtually indistinguishable from gunshot wounds. The V-shaped broadhead has two or more (often three) cutting edges and therefore produces an entry wound which corresponds to the arrowhead geometry (a two or three-pointed star shape).

In many countries, crossbows can be easily acquired via mail order/internet without the need for a permit or background check [5]. For example, in Italy, the government only allows crossbow use for sporting purposes. For this reason, it is considered by law to be “sports equipment” rather than a “weapon”, meaning that anyone over the age of 18 can freely buy and own one without needing a licence.

There are very few reported cases of crossbow death worldwide [7–9]. We present a suicide committed by a self-inflicted crossbow shot. The thorough inspection, autopsy, X-ray study and toxicological examination all helped to rule out the involvement of a third party.

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2. Case report

The decedent of a 40-year-old man was found lying in a field in the countryside near his house, with a crossbow arrow stuck in his skull.

Investigations revealed that he had a difficult relationship with his partner and he consequently developed a depressive disorder treated with benzodiazepines (alprazolam, triazolam), antidepressants (escitalopram) and herbal supplements. The doctor ordered a forced hospitalization the same day of death given that the man was showing signs of suicidal ideation. Unfortunately it was already too late.

When sweeping the area, police officers found a compound crossbow (Fig. 1) next to the corpse. On initial inspection, the forensic pathologist established that the arrow had entered the suprahyoid region and remained stuck in the skull with the sharp tip sticking out of the left parietal region by 2 mm.

An autopsy was demanded by the magistrate. Before beginning the autopsy, an X-ray was taken which showed a leftward oblique direction of the arrow, which passed through the skull for a length of 27 cm (Fig. 2). The arrow had entered the suprahyoid region and remained stuck in the skull with the sharp tip sticking out of the left parietal region by 2 mm.

The crossbow used in the presented case was a Barnett, Commando II, with a telescopic sight Konus 7227–magnifying power 3–7 × 20.

Before opening the skull and examining the damage to the brain, we removed the arrow by unscrewing the tip and extracting the remaining part of the arrow from the suprahyoid region.

The dart was 56 cm long and had a three-blade tip (Figs. 10 and 11), rather than the field-tipped type which is allowed in Italy.

The subsequent entry wound examination revealed a three-pointed star shape, consistent with the three sharp blades of the

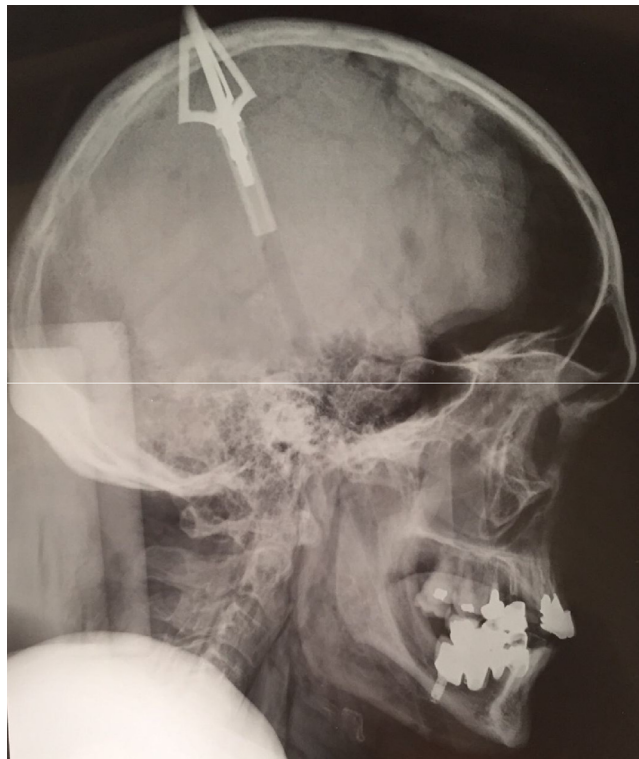


Fig. 2. X-ray showing the three-bladed arrow stuck in the skull.

dart with clear cut and blood-infiltrated edges (Figs. 3 and 4). The tongue presented a similar injury in the middle-posterior region (Fig. 5), as well as the scalp, where the exit wound was located (Fig. 6). The skull dissection showed several fractures originating from the bone lesion, where the arrow tip was stuck, both in the left parietal region (Figs. 7 and 8) and in the middle fossa. The dura mater presented a wound in shape of a three-pointed star (Fig. 9). There was an extensive subdural and subarachnoid haemorrhage, particularly where the dart crossed this area. The arrow passed through the entire brain, from the inferior area of the left temporal lobe to the left parietal region.

The post-mortem examination did not reveal any other significant findings, beyond the arrow-related cranial injuries.

Histopathological analysis highlighted extensive subdural and subarachnoid bleeding and brain swelling, in addition to a



Fig. 1. The crossbow used in the presented case.



Fig. 3. Entry wound.

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