

## An Unusual Presence of Atypical Ligature Mark in a Case of Complete Hanging

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Sir,

The pressure abrasions caused by the ligature mark play an important role in understanding and investigating the mode and mechanism of injury in hanging.<sup>1</sup> Here, we report an atypical pressure abrasion consistent with a ligature mark that occurred as a result of complete hanging of a suicidal nature. We obtained consent from the patient for the publication of this important finding.

A 48-year-old male, following an attempted suicidal hanging from the ceiling using a rope, presented to the emergency department with loss of consciousness [Glasgow Coma Scale (GCS): E1V1M3]. He was rescued by family members within 4 minutes of the hanging being noticed. The investigation revealed findings of complete hanging, with the body fully suspended in the air when discovered. On external examination, the ligature mark was noted below the thyroid cartilage, running obliquely upwards and backwards, completely encircling the neck, with the knot positioned in the midline of the neck posteriorly (Figs 1A to C). The

airway was secured by immediate tracheal intubation, and vitals were stabilized. He was later transferred to the critical care unit. Within 90 minutes of oxygenation and ventilation, his GCS improved to E2V1M5. He was then sedated and mechanically ventilated overnight. X-ray of the cervical spine did not reveal any fracture or displacement of the cervical vertebrae. On the following day, his GCS improved to E4V1M6, after which tracheal extubation was performed. Upon 24 hours of observation, he remained stable and was subsequently discharged for psychiatric evaluation and psychological counseling.

Complete hanging leads to early unconsciousness and accelerates death due to nonperfusion of the brain.<sup>2</sup> The entire body is suspended by the ligature, with no part of the body touching the ground. In suicidal hanging, the ligature mark is usually situated above the thyroid cartilage and below the chin, directed obliquely upwards on both sides of the neck. In typical hanging, the knot is situated in the midline of the neck posteriorly, causing symmetrical bilateral occlusion of the large neck vessels. On the contrary, in atypical hanging, the knot is placed elsewhere other than the posterior midline, causing unilateral compression of blood vessels, which is less commonly observed.<sup>1</sup> We reviewed an autopsy study ( $n = 634$ ) of suicidal hangings, where 92% of cases of complete hanging ( $n = 456$ ) had the ligature mark situated above the thyroid cartilage and oblique in shape; only 8% of cases had the ligature mark situated across the thyroid cartilage, whereas none of the cases had the ligature mark situated below the thyroid cartilage.<sup>3</sup> Our case is unique because the

ligature mark was situated below the thyroid cartilage, though directed obliquely upward and backward, with the knot positioned in the midline of the neck posteriorly. Initially, the pattern of the ligature mark raised the suspicion of homicide. However, the self-admittance of suicide by the patient clarified the investigation. Thus, our report highlights an important finding of an atypical ligature mark following complete hanging. Furthermore, not all cases suffer irreversible brain damage after complete hanging if rescue is performed as early as possible. Timely resuscitation by securing the airway, maintaining oxygenation and ventilation, and ensuring stable hemodynamics with frequent neurological examinations is key.

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Figs 1A to C: Ligature mark from the front placed above the thyroid cartilage (A), directed obliquely upward and backward [left lateral—(B); right lateral—(C)]