

## CASE REPORT

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# Extensive Petechiae in Attempted Self-Strangulation

**ABSTRACT:** A 29-year-old Korean man reported to have been robbed, bound, and gagged by a stranger in his apartment. Clinical findings included extensive petechiae to his face and tramline patterned abrasions and ligature furrows to his neck and face as well as his wrists. Initially, no other leads in the investigation existed and a robbery was assumed to have taken place. The man eventually confessed to fabricating the story and to having self-induced the ligature marks by sublaxating his jaw at the temporomandibular joint and hooking the rope closest to the back of his neck on the corner of table. The man demonstrated this unsuspected ability to law enforcement officers. As a motive for his unconventional behavior, he confessed to engaging in autoaggressive behavior as punishment for “losing face” after his ex-girlfriend terminated her pregnancy. This case demonstrates that petechiae due to neck compression also may occur in the living and are due to vascular compression and not lethal hypoxia.

**KEYWORDS:** forensic science, clinical forensic medicine, petechiae, strangulation, self-inflicted injuries

Deaths associated with strangulation account for about 10% of all violent deaths in North America (1). Incidences of accidental self-strangulation among children (2,3) and adults (4,5) as well as sex-associated asphyxias among adults (6) have been reported. Nonetheless, cases of self-asphyxia, e.g., suicidal strangulation by ligature, largely remain a challenge to forensic medicine (7). Many of these types of deaths often have complex and bizarre scenes. Individuals who engage in autoerotic practices believe that self-induced asphyxia and the corresponding hypoxia invigorates the sexual response. This case report illustrates a well-documented report of extensive petechiae formation in an individual who attempted ligature strangulation and survived with an escape mechanism of sublaxating his mandible.

### Case Report

A 29-year-old Korean man called police dispatch in the early morning hours. He stated that he had been robbed and bound by a stranger in his apartment. Shortly thereafter, two law enforcement officers arrived at the scene and found the victim with his hands tied behind his back and a gagging-type ligature in his mouth extending around his face and tied at the back of his head. After being freed of his restraints, the victim reported that he was surprised by an attacker at the front door of his apartment building. The attacker was said to have placed a cold instrument against the left side of victim's neck and forced the victim to walk upstairs and enter his apartment. There the victim claimed that the perpetrator ordered him to take off his jacket and to lie down on the living room floor. The victim stated that the perpetrator repeatedly squeezed the victim's genitals from behind and in between his legs, while he continued to apply ligatures to the victim's wrists, around his face, and neck. The victim reported instances of amnesia between the time of the ligature application, the perpetrator leaving, and his attempts at calling the police by using his tongue to dial the number.

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Law enforcement secured the two ropes with which the victim was bound and gagged. These ropes appeared to be the kind used for packaging mail parcels, measured ~0.3 cm in diameter, and were made from hemp-like material (Fig. 1). The victim reported no items missing from his apartment.

### Clinical Presentation

Within the hour, the victim was examined by a medical examiner and the following injuries were noted:

- Multiple, linear patterned areas of erythema, ~0.3 cm in diameter encircling the entire neck repeatedly, crossing over each other and climbing upward towards the back of the neck;
- Multiple, vertical abrasions consistent with nail scratches to the back of the neck at midline to just right of the midline (Fig. 2);
- One horizontal abrasion, up to 3 cm long, consistent with nail scratches to the victim's left anterior neck;
- Multiple areas of scattered pinpoint hemorrhages (petechiae) to the entire face and neck region at the level above the strangulation marks;
- Several areas of hemorrhage within the mucosa of the lower eye lids;
- Petechiae of the conjunctiva of the left eye;
- No petechiae of the buccal mucosa;
- Multiple tramline patterned injuries with areas of central clearing, up to 0.5 cm wide, with partially abraded margins leading from the corners of the victim's mouth to the posterior aspect of the victim's head (Figs. 3 and 4);
- Repeated patterns of circular abrasions around both of the victim's wrists (Fig. 5);
- No acute injuries of torso and lower extremities; and
- The victim declined an anogenital exam and stated that he had no pain, etc. upon urination or defecation.

The victim reported feeling as if his “head was exploding” and as if he was “running out of air.” In this case, the ligature strangulation produced the closure of the jugular veins and led to the pooling of venous blood above the point at which the ligature was



FIG. 1—Rope found with the individual.



FIG. 3—Multiple tramline patterned injuries with central clearing, facial petechiae, and circular abrasions on victim's neck.



FIG. 2—Linear abrasions to back of neck.



FIG. 4—Multiple tramline patterned injuries with central clearing and circular abrasions on victim's neck.

applied. A subsequent stagnant hypoxia developed. This hypoxia caused the victim's decreasing level of consciousness while the accumulating venous compression precipitated the formation of numerous petechiae on the victim's face and neck as well as hemorrhages into the mucosa of the lower eyelids. At the time of the exam, the medical examiner further noted that the victim appeared to be in a state of shock or extreme distress.

#### Law Enforcement Investigation

During the initial interview with police, the victim stated that the perpetrator first tied the victim's left hand, then his right hand multiple times with "some sort" of a knot. The perpetrator then allegedly tied the rope around the victim's neck and tightened it.

The man reported being bound and gagged with another rope and remembered that he, at this point, did not feel the sharp, cold instrument against his neck anymore. Upon arrival at the scene, officers found only two ropes tied to the victim. The victim explained that he believed this incident might be related to the termination of his relationship with his former girlfriend. He reported to have been threatened and assaulted before by someone unknown to him.

Due to the severity and life-threatening nature of the injuries, an "attempted homicide" investigation was initiated. During the course of this investigation, the victim's former girlfriend was interviewed.



FIG. 5—Patterned abrasions to both wrists.

She reported that they had kept their relationship secret as not to upset his Korean family and their traditional beliefs. However, she stated that when she became pregnant, she threatened to abort the pregnancy if he did not inform his family about their relationship. After telling his family about the unborn child, the victim explained to the girlfriend that he had been physically assaulted by his father. The former girlfriend ended their relationship and lawfully terminated the pregnancy.

Once their relationship had ended, the former girlfriend alleged that the victim started stalking her. She reported that he had invented five different personalities who contacted her through email at various times. She further contended that the victim told her that he was a special agent working for the Korean and the United States Governments. He called himself "007."

Upon being questioned about their sexual practices, she informed the officers that they had "toyed" around with some sado-masochistic sexual practices, i.e., hot wax, bondage of wrists and feet as well as blindfolding each other. She stated that they used different types of restraints including packaging rope during their sexual encounters and at one point, had discussed practicing sex-associated asphyxia. She then attested to the fact that the victim had been practicing karate since he was a child and hence, was very flexible. She stated that she believed the victim to have inflicted the injuries upon himself.

## Conclusion

After being confronted with the facts of this case and his former girlfriend's testimony, the victim broke down crying and stated: "I only wanted to hurt myself, I wanted to punish myself." Referring to the abortion, he stated feeling as if he had murdered his own child. He then admitted to applying the rope to his wrists and neck in an effort to punish himself and cause pain.

According to his statement, the man explained that he had first wrapped a rope multiple times around his head and through his mouth. He stated that he tied a knot at the back of his head, thus gagging himself. He then tied a loop with the second rope. Placing his arms behind his back, he stated that he inserted his left hand

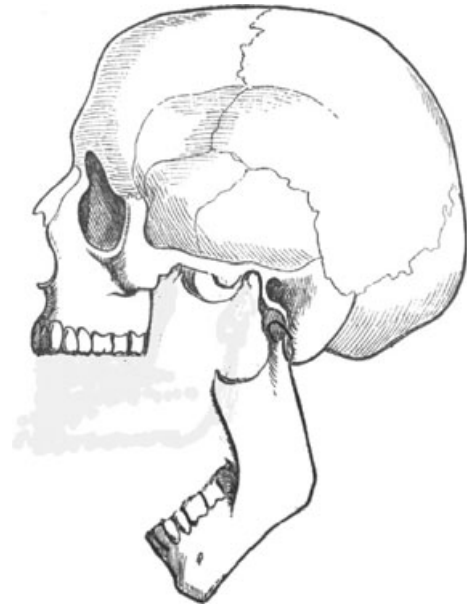


FIG. 6—Simulation of subluxation at the temporomandibular joint.

through the loop multiple times until the rope was sufficiently taut. Upon being questioned of a third rope causing the injuries around his neck, he avowed that the neck injuries were caused by the same ligature in his mouth. The victim reported that he purposefully "dislocated" his jaw and with the aid of a corner of a table was able to slide the rope down to his neck.

To prove his point, the victim demonstrated his ability to dislocate his mandible (jaw) at the temporomandibular joint without the use of his hands, moving the ligature with the help of the corner of a table down to his neck and back up (Fig. 6).

The victim stated that ever since he had been in an automobile accident where he obtained unspecified injuries to his jaw, he was able to subluxate the joint producing an enlarged oral opening. His chin can then be repositioned, set back and appear inline with his neck. Photographic documentation was deferred by the victim because of his fear of "losing face" within his family and culture. However, the aforementioned demonstration occurred in front of the law enforcement officers using a similar type of rope.

Demonstrating the procedure, the man confirmed the medical examiner's physical findings at the time of the exam: "multiple patterned areas of linear erythema encircling the entire neck repeatedly, crossing over each other and climbing upward towards the back of the neck" and "wide tramline patterned injuries with partially abraded margins leading from the corners of the victim's mouth to the posterior aspect of the victim's head." Gagging the victim, the tight ligature produced a pattern of central clearing due to an indentation of the skin. Blood vessels at the margins of the indentation tend to rupture whereas compressed vessels within the area of central clearing remain unscathed (8).

The victim remembered gagging himself, then moving the ligature with the help of the corner of the table, from just anterior of his left ear down to his neck. He reported feeling immediate pain and not being able to determine if he was conscious or not. After that he stated that he "regained" consciousness, he remembered lying on the floor and being unable to untie himself. Again, he used the corner of the table to pull the ligature back up to his mouth and fixated his jaw in its correct anatomical position. The victim reported having felt too embarrassed to call a friend for help and hence, called police to free him of his restraints.

In doing so, the victim displaced the receiver with his chin and then dialed the emergency number with his tongue and put on the speakerphone. He confessed to conjecturing the robbery and assault.

The man was referred to the psychiatrist on staff for a complete psychiatric evaluation and charged with making a false criminal allegation.

## Discussion

Ligature strangulation may cause lethal hypoxemia/ischemia by airway, arterial, and/or venous obstruction. A supralaryngeal positioning of the ligature will produce a complete occlusion of the airway passage (9). However a laryngeal positioning of the ligature, as seen in this case, will most likely compress the larynx posteriorly and only lead to a partially occluded airway.

Strangulation asphyxias, particularly bondage-type paraphilic activities performed during autoerotic practices (10), may be lethal if the compression is not released within seconds resulting in a total loss of consciousness (11). To produce this loss of consciousness, a mere 11 pounds (or 5 to 10 kg) of compression on the carotid arteries are applied for ~10 sec (12,13). After losing consciousness, the individual may have a generalized seizure, have decorticate posturing, and/or urinate/defecate. If the compression is released shortly after unconsciousness, the individual gradually may regain consciousness and recover (9). In our case, a partial or an intermittent complete arterial occlusion due to compression and influenced by vessel diameter may have played a contributing factor to this man's reduced level of consciousness. This individual purposefully compressed his neck as well as gagged himself with the ligature hung on the corner of a coffee table (~30 cm of the floor). Due to the compression force to his neck, the individual may have remained in this position until he eventually succumbed to the oxygen deprivation, lost consciousness, and slid to the floor. Some short, yet unknown time later, he must have regained consciousness and attempted to call for help.

Physical evidence of massive venous congestion caused by ligature strangulation manifests itself in petechiae and scleral hemorrhage. The increase in venous compression from ligature strangulation in the presence of continued arterial input will damage the venous endothelium and tunics, resulting in minute points of bleeding (14). The petechiae will become visible above the ligature marks, predominantly in the eyes, face, and neck. Only 4 to 4.5 pounds of compression are required to occlude the jugular veins (12–14). In our case, the Korean man most likely applied a sufficient amount of force (>4 lbs) to sustain the extensive and massive petechiae in his eyes, face, and neck. He would have been unable to loosen the ligature and call for help, if not for his ability to subluxate his mandible at the temporomandibular joint. Although accidental ligature strangulations have been described in the literature, to our knowledge, this is the first case of an individual being able to dislocate the temporomandibular joint in such a situation and survive this massive venous congestion.

In this case, the man reported having injured his jaw as a result of an accident. Mandibular fractures are often associated with

assaults (15). However, specific injuries obtained during a high-velocity impact such as in a motor-vehicle accident, may also produce fractures of the jaw. In this case, the man was able to subluxate his jaw, a state that is defined as a "self-reducing, incomplete dislocation of a joint in which the patient is able to close his or her mouth without assistance" (16). This repositing has been demonstrated in other case studies of individuals who, after subluxation "wiggled" the mandible back in place (16). Due to the man's impressive demonstration in front of two law enforcement officers in conjunction with the medical examiner's findings, the stated history of events and the mechanism of injury appear to be plausible. Hence, a diligent and meticulous description of all injuries by the medical examiner, as well as a thorough law enforcement investigation are necessary to distinguish self-induced ligature compression from injuries inflicted by a third party: no matter how extraordinary the case findings might appear.

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