

An Unusual Death in an Unattended Child Due to Accidental Hanging: A Case Report

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Abstract

Accidental hanging is a rare phenomenon in all age groups. In adults, intoxication and autoerotic activities are of main concern in accidental hanging. However, in children, it ranks fourth in the unintentional causes of injury leading to death. In India, accidental hanging in children is claimed to be under-reported.

This report presents an unusual death by accidental hanging that occurred to a six-year-old child while playing with her siblings on a swing made inside the house using a saree. The child slipped and fell while swinging, and with her neck caught between the winding arms of the swing, she went unconscious and limp. She was rushed to the nearby Health Center where she was declared as brought dead. Autopsy revealed a ligature mark with minimal contusions in the underlying musculature.

The report reveals how a contraption deemed as harmless by the parents resulted in the death of their child and highlights the need for spreading awareness in the society regarding safety measures to be followed in a household with children.

Keywords: accidental hanging, accident, asphyxia, case report, hanging, ligature, paediatric death

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Introduction:

The human neck is an unguarded conduit for the passage of vital structures like trachea, esophagus, carotid arteries and veins, the disruption of which could prove fatal. Compression of these vital structures using a ligature material can cause asphyxiation, which subsequently leads to death. Such use of ligature as a popular means to commit suicide as well as homicide makes the task of distinguishing the accidental manner from the other two quite challenging. The victims are usually unwary children who find themselves

caught off-guard in compromising situations while engaged in frolic.

In India, accidental hanging in children is claimed to be under-reported (1). They are more frequent in the younger children, where curiosity to explore the immediate environment beats their precautions thinking. The ligatures involved are usually window blind cords (2) and shades (3), homemade hammocks (4), indigenous rocking cradles (5), slipping of restraining straps in toddlers (6), necklaces and religious ties (7), etc. Accidental hangings in older children may occur during mock-plays where they imitate judicial hanging or while engaging in games. This case report presents death by accidental hanging in a child while playing with her siblings on a swing tied inside the house using a soft, non-yielding fabric.

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Case Report:

A 6 year-old female child was brought dead to the Health Center by her parents after she was found entangled in a swing made of *saree*. A saree is a traditional Indian garment worn by women and is made of natural or synthetic fabrics usually 4.5 to 8 meters long. This fabric was slung into a makeshift swing, which was suspended from the iron rafter of their home (as shown in Fig. 1). Whilst standing on the swing and rotating it along with her siblings, she slipped and fell, entangling her neck among the winding arms of the fabric with her body weight thrown upon the ligature. By the time her siblings ushered the parents to the scene, she had become limp and non-responsive.

Fig. 1 The makeshift swing that formed the ligature material

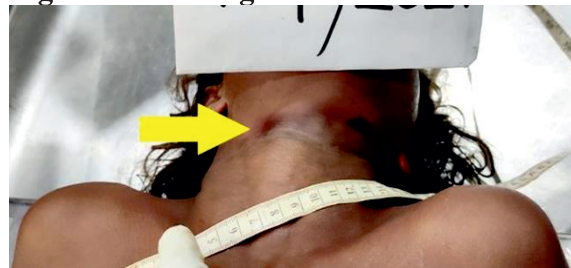


The autopsy was done 6 hours after the incident. The decedent was moderately built and poorly nourished. Her hair showed

brownish discoloration, with abdomen distended in a “potbelly” fashion, typical to the children of lower socio-economic class where protein-energy malnutrition disorders are commonly seen. Her eyes showed congestive features with petechial hemorrhages on the sclera. Fingernail beds as well as the tips of fingers of both the hands revealed bluish discoloration. No other external injuries other than the ligature mark on the neck was appreciable on the deceased girl.

The ligature mark was a reddish brown pressure abrasion, obliquely placed on the front and right side of the neck (Fig. 2). The mark was situated at the level of thyroid cartilage; its upper border was 3.5 centimeter below the chin in the midline and lower border 6.5 centimeter above the suprasternal notch. The same measured 6 centimeters in length and 1.5 centimeters in width. On bloodless layered dissection of the neck, a hemorrhage of 2.5 cm x 1 cm was noted on the right thyrohyoid muscle underlying the ligature mark (Fig. 3). No fracture of thyroid cartilage or hyoid bone was detected. Both larynx and trachea were intact and unremarkable.

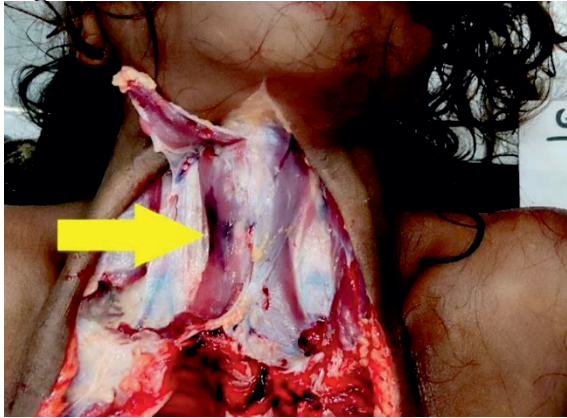
Fig. 2 External ligature mark



On internal examination, brain appeared to be congested and edematous. Cut sections of the same revealed petechial hemorrhages scattered throughout the white matter. The lungs appeared to be congested and edematous with surface showing multiple petechial hemorrhages. Bloodstained fluid was seen oozing out on cut section. Liver and kidneys were congested. Finally, the cause of death was furnished as “cerebral and pulmonary edema consequent to

external compression of neck by a ligature in a case of accidental hanging.”

Fig. 3 Bloodless field dissection of neck



Discussion:

Accidental hangings are rare and more often than not, the circumstances of death are uncanny and peculiar. In the pediatric age group, death occurs in circumstances that are deemed potentially harmless by the parents. Toddlers have died hanging against a structure of the bed or the pram, a cord attaching a dummy to the baby’s neck and which is caught by an element of the bed, as well as entanglement in clothing (8, 9). Even something as trivial as the mother’s long hair has been implicated as a ligature material, although here the causation of death pertains to strangulation than hanging (10). Accidental hanging of children against the electric window of a car have also been reported (11). In some pediatric fatalities, the seat belt forms a ligature against which the body hangs consequent to positioning of the shoulder belt over the neck (due to short stature), and incapacitation from other injuries (12). In the present case, death occurred in a makeshift swing installed within the house for entertaining the children.

According to Davison’s study, 5% of the total hangings were accidental in nature (13) whereas in Verma’s study of hanging in the pediatric age group, such cases formed 7% of the study pool (14). A five-year study conducted in Ohio revealed that only 12 children died due to asphyxia resulting from

hanging, and five of them (41.7%) were accidental in nature (15). A report on accidental hanging by Nouma *et al.* discusses on various studies conducted in Tunisia and Sfax, revealing that the accidental hangings represent 2% of the 250 cases of hanging autopsied at the Department of Legal Medicine of Sousse for 15 years, and 3% out of 200 cases of hanging autopsied at Department of Legal Medicine of Sfax (16).

The victims of accidental hanging are usually from extremes of age group, or inebriated adults. Among toddlers, hanging ranks fourth among the causes of unintentional injury, preceded by other forms of accidents like drowning, burns, and motor vehicle accidents (17). A 14-year study conducted among children between 1 month and 8 year-old in the United States documented 183 fatal window cords hangings. Of this, ninety-three percent of the victims were below the age of 3 years (2). Hanging as well as entanglement occurs mostly in children older than 6 months (18), as seen in the present case.

Among Indian adults, the likelihood of accidental asphyxiation appears to be more in females, especially since the traditional Indian attire involves long scarf-like fabric worn around neck. In Northern India, thick woolen scarves are also worn by men during the winters, which has also caused accidental hanging (19). Accidents at workplace cause death among younger adults due to their shawls/clothing entangled in machineries, for example, the rolling shaft of a crane (20). Multiple publications have described cases of fatal accidental strangulation that revolves around this premise (21), with very few cases of reported survivors (22). In case of survival, the victim suffers from neurological deficits or other disabilities which are often permanent.

A common cause of accidental hanging in adults is reported to be autoerotic asphyxiation. It is a voluntary, non-suicidal method of self-asphyxiation to invoke a

heightened sense of sexual arousal, and usually involves complicated and elaborate methods of inducing partial asphyxiation. Frequently, pornographic material and other aids to masturbation are found nearby in such deaths (23, 24). In the United States alone, around 250-1000 deaths per year are attributed to autoerotic asphyxiation, majority involving the use of a ligature (25). A higher frequency of accidental hanging were reported in relation to professional or leisure activities that includes parachuting, mountaineering, etc. In old age, accidental hanging occurs mainly due to inability of the self to recover from a compromising position. Dhiab *et al.* reported a death wherein an elderly female fell against the chain of her door and died as a result of partial hanging (26). Cases have also been reported wherein compression of the neck between the sidebars of a bed in elderly subjects affected by neuropsychiatric pathologies (27).

Conclusion:

Hanging is considered suicidal unless proved otherwise. Accidental hanging is a rare entity across all age groups. In children, this is usually consequent to unsupervised day-to-day activities. The circumstances revolving around death along with crime scene inspection and autopsy findings corroborated with toxicological analysis can shed more light on the manner of death. Proper awareness should be disseminated among the parents, especially among lower socio-economic class. The government may also implement policies facilitating such awareness through posters or mass media, encouraging the working lower class to send their children to a crèche or playschool, thereby promoting supervision of their children.

Conflict of Interest: None

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