

A Retrospective Study of Pattern of Hanging Cases in Minors Brought for Autopsy at Silchar Medical College and Hospital, Silchar, Assam

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Abstract

This study reviewed 75 hanging deaths among minors brought for autopsy at Silchar Medical College and Hospital from January 2023 to December 2025 and found a clear predominance of suicidal hanging in older adolescent girls. Most victims were 15–16 years old, females formed 70.7% of cases, and all deaths were suicidal, with atypical hanging more common than typical hanging.

Nylon rope was the most frequent ligature material, followed by bed sheet, scarf, dupatta, and plastic rope, suggesting that readily available household materials were commonly used. Ligature marks were usually found below the thyroid cartilage, internal neck injuries were uncommon, and hyoid bone fracture was absent, while thyroid cartilage fracture and associated external injuries were seen only in a small proportion of cases.

The study shows that hanging among minors in this setting mainly affected older adolescents, especially females, and was usually a suicide using easily accessible materials. These findings highlight the need for targeted adolescent mental health support, early risk detection, and stronger preventive strategies in schools, families, and communities.

Keywords: Hanging, minors, suicidal death, adolescents, autopsy

Introduction

Hanging is one of the most common methods of suicide worldwide and represents a major public health concern, particularly among minors. It is a form of violent asphyxial death caused by constriction of the neck with a ligature, leading to compression of vital neck structures and interruption of cerebral circulation and respiration. Adolescence is a vulnerable period marked by significant physical, emotional, and psychological changes, during which factors such as academic stress, family conflicts, bullying, and mental health disorders may increase the risk of suicidal behaviour. In India, hanging is consistently reported as the most common method of suicide among children and adolescents. Epidemiological studies of hanging deaths provide valuable information on demographic patterns and risk factors, which are essential for developing effective preventive strategies. As limited data are available from Southern

Assam, the present study was undertaken to analyze the epidemiological profile and pattern of hanging deaths among minors undergoing medico-legal autopsy at Silchar Medical College and Hospital.

Aim

To study the pattern of hanging cases in minors brought for medico-legal autopsy at Silchar Medical College and Hospital.

Objectives

1. To study the age and sex distribution of minors dying due to hanging.
2. To analyze the manner of death (suicidal, accidental or homicidal).
3. To determine the type of hanging (complete or partial).
4. To evaluate the ligature materials used.
5. To study the pattern, level and nature of ligature marks.

Material & Methods

This retrospective descriptive study was conducted at Silchar Medical College and Hospital, Assam, from January 2023 to December 2025. It included all autopsy-confirmed hanging deaths among minors below 18 years with complete records, while decomposed bodies, incomplete records, and deaths due to strangulation or other asphyxial causes were excluded. Data were taken from post-mortem reports, police inquest reports, and departmental medico-legal records for descriptive analysis of the cases.

Data were entered in Microsoft Excel and analyzed using R software. Descriptive statistics were used, and associations were tested with Chi-square or Fisher's exact test, with p value less than 0.05 taken as significant. Results were shown in tables, charts, and graphs.

Results

A total of 75 cases of hanging among minors were included in the study. The age of the victims ranged from 9 to 17 years, with a mean age of 14.96 ± 1.80 years and a median age of 15 years.

Age Distribution

The majority of victims belonged to the 15–16 years age group (42.7%), followed by the 13–14 years age group (25.3%). Victims aged ≤ 12 years constituted only 9.3% of the study population.

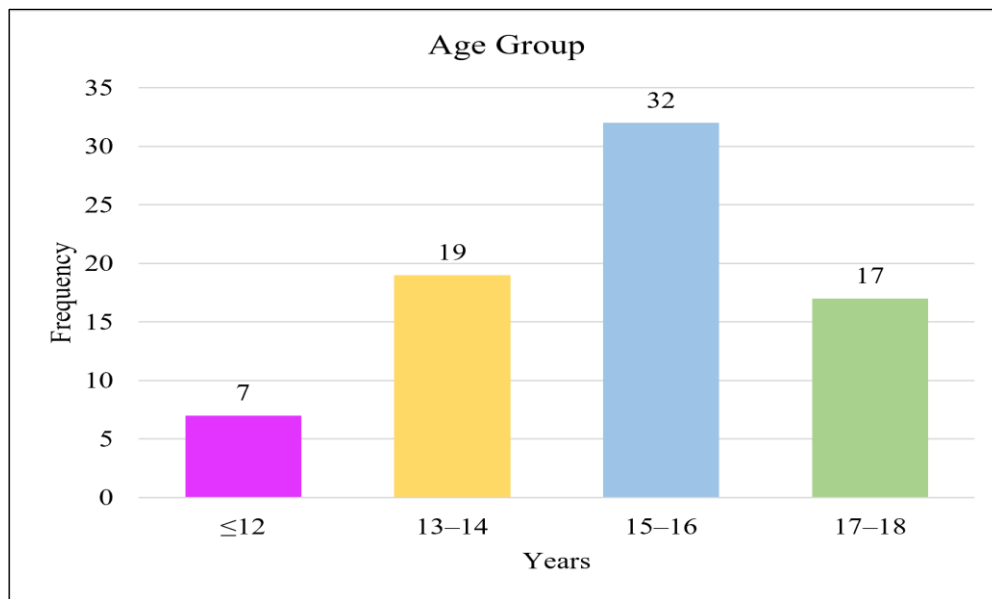


Figure 1: Age Group Distribution

Sex Distribution

Females constituted the majority of the victims, accounting for 70.7% of cases, while males represented 29.3%.

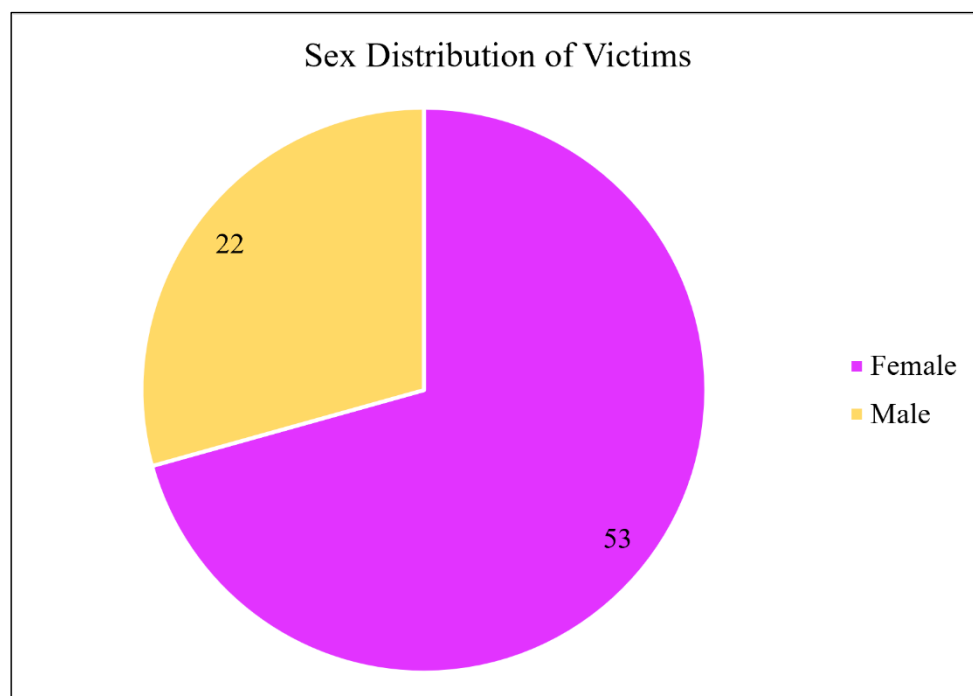


Figure 2: Sex Distribution

Religion-wise Distribution

Among the victims, Hindus constituted 53.3%, Muslims 44.0%, and Christians 2.7%.

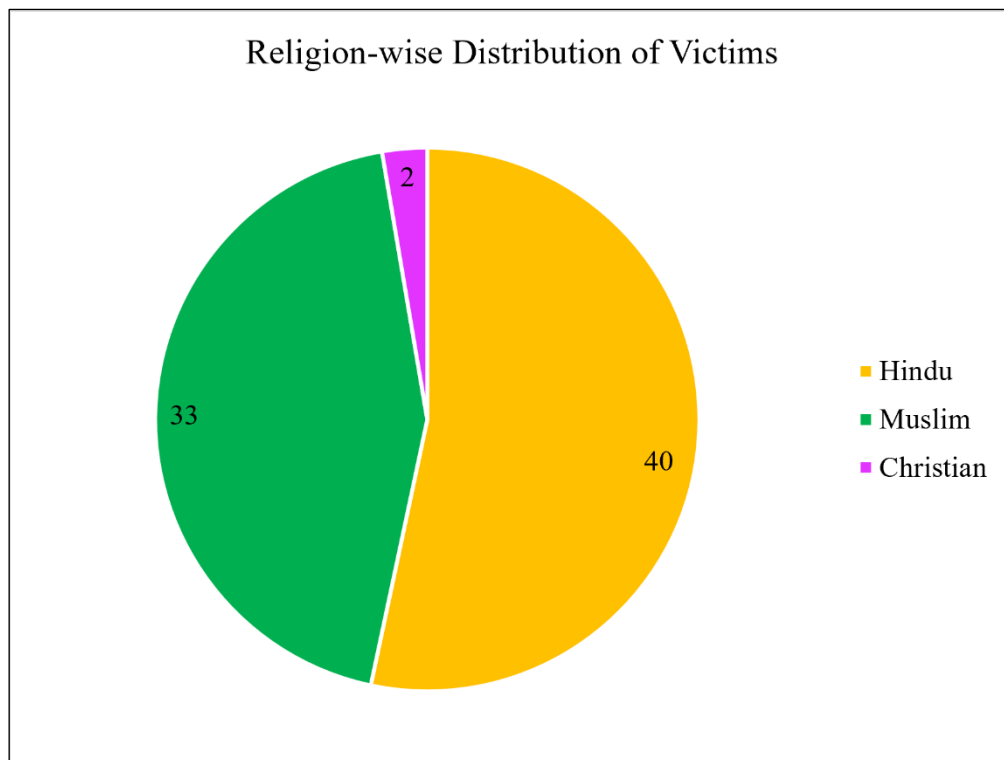


Figure 3: Religion-wise Distribution

Month-wise Distribution

The highest number of cases was observed in April (17.3%), followed by October (12.0%). The lowest number of cases occurred in July (1.3%).

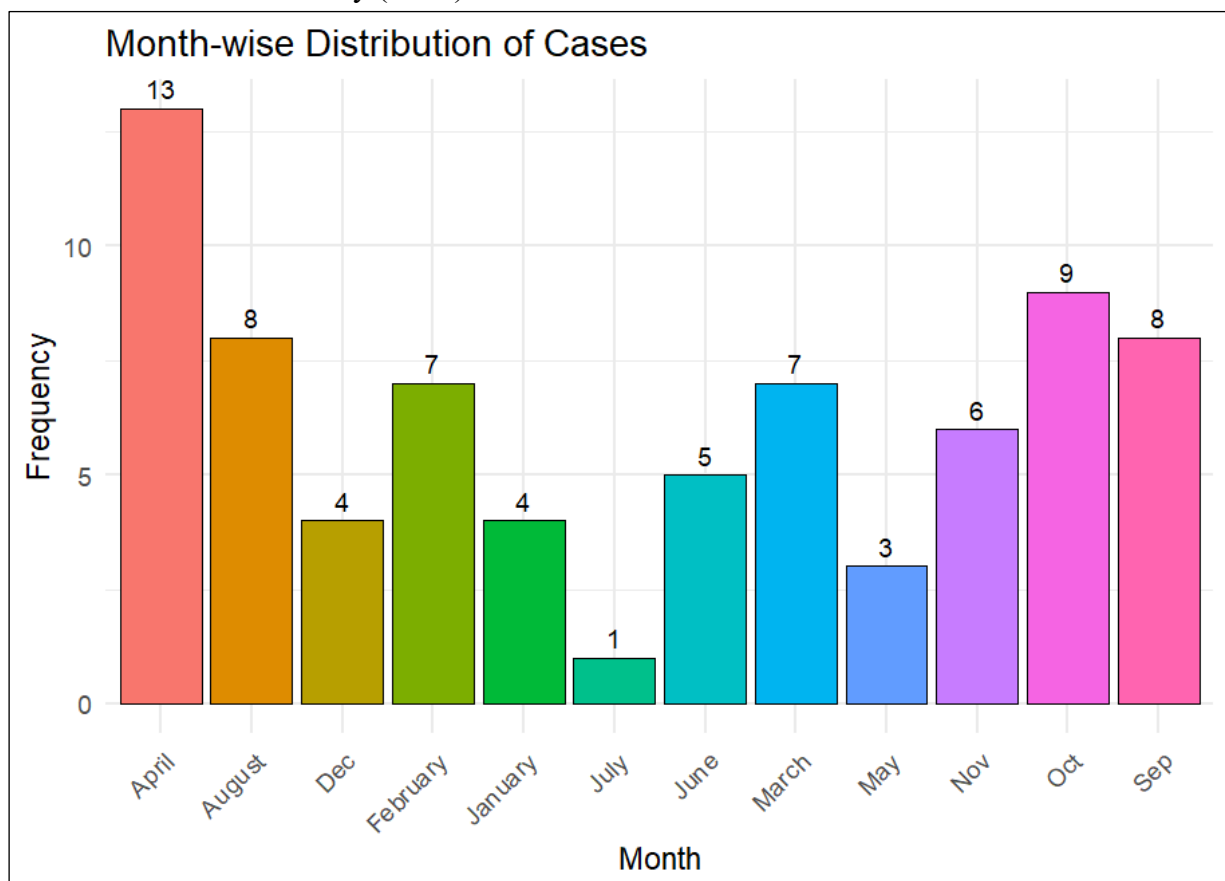


Figure 4: Month-wise Distribution

Distribution According to Manner of Death

All 75 cases (100%) were suicidal in nature. No accidental or homicidal hanging was observed among the study population.

Distribution of Pattern of Hanging

All ligature marks are non-continuous, obliquely upward above the thyroid cartilage

Type of Hanging

Atypical hanging was more common than typical hanging. A total of 49 (65.3%) cases were atypical, whereas 26 (34.7%) cases were typical.

Information regarding completeness of hanging was available for 41 cases. Among them, 40 (97.6%) were complete hanging and 1 (2.4%) was incomplete hanging.

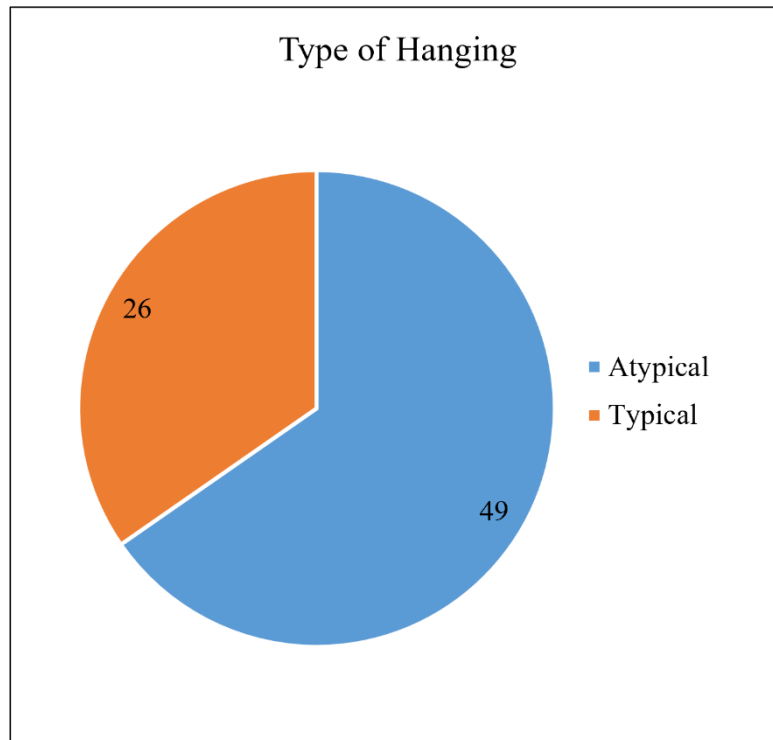


Figure 5: Typical vs Atypical Hanging

Association Between Sex and Type of Hanging

Among females, 71.7% of cases were atypical hanging, whereas among males, atypical and typical hanging each accounted for 50.0% of cases. However, the association between sex and type of hanging was not statistically significant ($\chi^2 = 2.345$, $p = 0.126$).

Table 1: Association Between Sex and Type of Hanging

Sex	Atypical n (%)	Typical n (%)	Total
Female	38 (71.7)	15 (28.3)	53
Male	11 (50.0)	11 (50.0)	22

Total	49	26	75
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Chi-square = 2.345, df = 1, p = 0.126

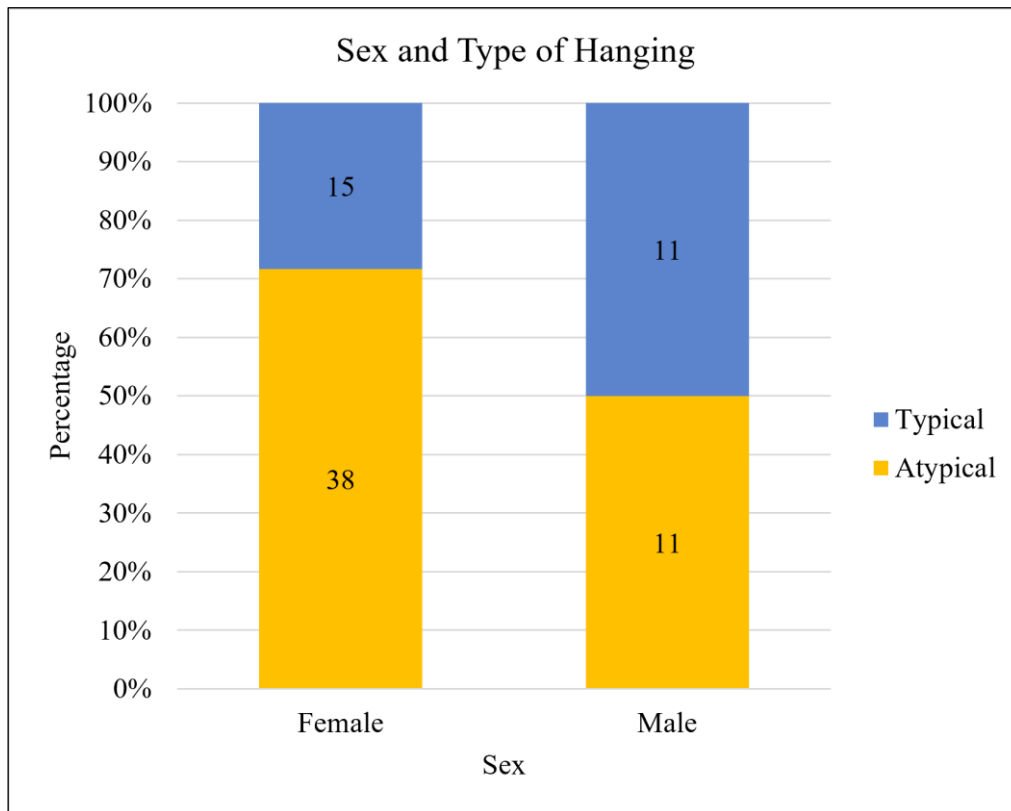


Figure 6: Sex vs Type of Hanging

Association Between Religion and Type of Hanging

No statistically significant association was observed between religion and type of hanging ($\chi^2 = 1.841$, df = 2, p = 0.398).

Association Between Age Group and Type of Hanging

No statistically significant association was found between age group and type of hanging ($\chi^2 = 5.028$, df = 3, p = 0.170).

Distribution According to Ligature Material Used

Nylon rope was the most commonly used ligature material (26.7%), followed by bed sheet (20.0%), scarf (20.0%), dupatta (18.7%), and plastic rope (14.7%).

Table 2: Distribution According to Ligature Material Used

Ligature Material	Frequency	Percentage (%)
Nylon Rope	20	26.7
Bed Sheet	15	20.0
Scarf	15	20.0
Dupatta	14	18.7
Plastic Rope	11	14.7

Total	75	100.0
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Association Between Sex and Ligature Material

No statistically significant association was observed between sex and ligature material used ($\chi^2 = 4.12$, df = 4, $p = 0.39$).

Table 3: Association Between Sex and Ligature Material

Material	Female	Male	Total
Nylon Rope	12	8	20
Bed Sheet	13	2	15
Scarf	12	3	15
Dupatta	9	5	14
Plastic Rope	7	4	11

Chi-square = 4.12, df = 4, $p = 0.39$

Discussion

The present retrospective study analyzed 75 cases of hanging among minors brought for medico-legal autopsy at Silchar Medical College and Hospital. The study provides important insights into the epidemiological and forensic profile of hanging deaths among minors in Southern Assam.

The mean age of the victims was 14.96 ± 1.80 years, with the majority of cases belonging to the 15–16 years age group (42.7%). This finding is consistent with the observations of Bhosle et al. (2015), who reported that hanging deaths were more common among older adolescents.

Female victims constituted 70.7% of the study population, indicating a marked female predominance. This finding differs from several studies conducted in the general population where males predominated among hanging victims.

Religion-wise analysis revealed that Hindus constituted 53.3% of cases, followed by Muslims (44.0%) and Christians (2.7%). The observed distribution is likely reflective of the demographic composition of the study region rather than indicating any specific religious predisposition.

Month-wise analysis showed that the highest number of cases occurred during April (17.3%), followed by October (12.0%). Seasonal variation in suicide has been reported in several studies, although the exact mechanisms remain unclear. Climatic factors, examination-related stress, socio-cultural events, and environmental influences may contribute to fluctuations in suicide rates across different months.

In the present study, all cases were suicidal in nature. No accidental or homicidal hanging was observed. This finding is consistent with previous forensic studies reporting suicide as the predominant manner of death in hanging among adolescents and young individuals. The finding highlights the growing burden of mental health issues and psychosocial stressors among minors and emphasizes the need for early identification of vulnerable individuals and implementation of suicide prevention strategies.

Atypical hanging constituted 65.3% of cases, whereas typical hanging accounted for 34.7%. This finding is comparable to the observations of Ambade et al. (2015), who reported that atypical hanging was more common than typical hanging in their study population. The predominance of atypical hanging may be explained by the practical difficulty of achieving classical suspension and knot placement during suicidal acts.

Among the cases where information regarding complete v/s incomplete of hanging was available, complete hanging was observed in 97.6% of cases. This finding is in agreement with previous studies that have reported complete hanging as the predominant form in suicidal deaths.

Analysis of ligature materials revealed that nylon rope was the most commonly used material (26.7%), followed by bed sheet (20.0%), scarf (20.0%), dupatta (18.7%), and plastic rope (14.7%). The predominance of readily available household materials is consistent with previous studies, which have reported rope, cloth materials, saree, and dupatta as common ligature materials in suicidal hanging. The choice of ligature material is largely influenced by availability and accessibility within the victim's environment.

The association between sex and type of hanging was examined using the Chi-square test. Although atypical hanging was more common among females (71.7%) than males (50.0%), the association was not statistically significant ($\chi^2 = 2.345$, $p = 0.126$). Similarly, no statistically significant association was observed between religion and type of hanging ($\chi^2 = 1.841$, $p = 0.398$) or between age group and type of hanging ($\chi^2 = 5.028$, $p = 0.170$). These findings suggest that the pattern of hanging was independent of demographic characteristics in the present study population.

The present study contributes valuable information regarding the epidemiological and forensic characteristics of hanging deaths among minors in Southern Assam. The findings highlight the predominance of female victims, greater vulnerability among older adolescents, the predominance of suicidal and atypical hanging, frequent use of readily available ligature materials, low prevalence of skeletal neck injuries, and absence of significant associated trauma. These observations may help forensic experts in medico-legal interpretation and assist public health authorities, mental health professionals, educators, and policymakers in developing targeted suicide prevention strategies for adolescents.

Conclusion

The present study analyzed 75 cases of hanging among minors brought for medico-legal autopsy at Silchar Medical College and Hospital. The mean age of the victims was 14.96 ± 1.80 years, with the majority belonging to the 15–16 years age group. Female victims constituted more than two-thirds of the study population, indicating a higher burden among adolescent females.

All cases were suicidal in nature, highlighting suicide as the predominant manner of death among minors in the present study. Atypical hanging was the most common pattern observed, and complete hanging constituted the majority of cases where completeness could be assessed.

Nylon rope was the most commonly used ligature material, followed by bed sheet, scarf, dupatta and plastic rope, indicating that readily available household materials were frequently utilized. All ligature marks were located above the thyroid cartilage, obliquely goes upward.

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