

A Study of Postmortem Findings of Asphyxial Deaths Due to Hanging in a Semi Urban Region of Karnataka

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ABSTRACT

Hanging, a method of deliberate & intentional self-harm amounts for a major proportion of autopsies which medicolegal experts encounter in their clinical tenure at various hospitals pan India. A retrospective study was conducted in the Department of Forensic Medicine and Toxicology, Kanachur Institute of Medical Sciences, Mangalore from Jan 2016 to June 2022, with an objective to study the post mortem findings in autopsy cases of hanging. Out of 306 autopsies, 14.38 % cases were that of hanging with a female to male ratio being 3:1. Most cases were atypical (81.81%,36) and partial hanging (72.72%, 32) with the ligature mark situated above the thyroid cartilage. 86.36 % of cases (38) had dried salivary stain at the angle of mouth and one case showed involuntary discharge. The incidence of fracture of hyoid bone and thyroid cartilage not observed in any cases.

Keywords: Violent asphyxia, Hanging, Autopsy, salivary stains, thyroid cartilage, hyoid bone.

INTRODUCTION

Hanging is a type of violent asphyxial death in which the neck is constricted with a ligature and the body is suspended wherein the weight of the body acts as the constricting force. According to the literature, there are two types of hanging that are documented i.e., hanging with complete suspension of the body without the feet touching the ground (complete hanging); and hanging with incomplete suspension, with parts of the body or feet touching the ground (incomplete or partial hanging). Based on the position of the

knot, hanging is described under 2 headings – Typical hanging where the knot is present at the occiput and atypical hanging where the knot is at any other position.

At autopsy, the classical signs of asphyxia observed are cyanosis, congestion, petechial haemorrhage, pulmonary edema and postmortem fluidity of the blood.^{1,8}

A detailed assessment of various post-mortem findings is always deemed mandatory especially in a few cases where the ligature mark produced due to the variable amount of pressure on the neck may create ambiguity.

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In the current study it is attempted to get an insight into the post mortem features of deaths due to hanging in Mangalore region.

MATERIALS AND METHODS

The study consisted of 44 hanging victims out of 306 medico-legal autopsies performed in the Department of Forensic Medicine, Kanachur Institute of Medical Sciences, Mangalore, Karnataka during the period of 5.5 years (from January 2016 to June 2022).

Necessary information for the study was gathered from inquest report by the Police and treatment records of hospital. Discussion with relatives, friends, and neighbours of the victims were also obtained separately for additional data. In certain cases, crime scene visits and review of the photographs were utilized for supplementary information.

A detailed proforma was used to record the details of observation made in the cases of hanging in the present study. The information thus collected, was tabulated using Statistical Package for Social Sciences (SPSS) software, IBM manufacturer, Chicago, USA, version 21.0 and results were thereby drawn.

RESULTS

During this study period, 306 cases were brought for post-mortem examination out of which 44 (14.38 %) deaths were due to hanging. 3/4th of the victims were females.

Out of 306 cases, typical hanging was found only in 8 cases (18.19 %) whereas most of the cases 36 (81.81%) were atypical hanging. Knot was on the left side of neck in 23 cases (52.27%) (Table 1).

In the present study partial hanging was seen in almost 3/4th of the deaths. Complete hanging was accounted for 12(27.28%) deaths (Table 2).

In our study, the level of ligature mark was above the thyroid cartilage in 38 cases, overriding the thyroid cartilage in 4 cases and below the thyroid cartilage in 2 cases (Table 3).

86.36 % of cases (38) had dried salivary stain at the angle of mouth and 2.27 % of total case showed involuntary discharge.

No incidence of hyoid bone and thyroid cartilage fracture were observed in any of the cases.

Postmortem lividity was seen over the back of the body in 41 (93.18%) cases.

In present study, Peri ligature injuries like rope burns (93.18% of cases) followed by Cyanosis of fingertips and nail beds of both hands (88.63 % cases) were one of the commonest findings. Petechial haemorrhage on face were observed in all partial hanging case. Pale, white, hard and glistening subcutaneous tissue underneath the ligature marks were noticed at autopsy in all cases. Pulmonary edema was observed in 42 cases

Table 1: Typical and Atypical hanging

Typical / Atypical	Position of knot			Total (n=44)
	Back	Left	Right	
Typical	8	-	-	8(18.19%)
Atypical	-	23	13	36(81.81%)
	8(18.19%)	23(52.27%)	13(29.54%)	44

Table 2: Type of Hanging (Complete / Partial)

Type of Hanging	Number	Percentage
Complete	12	27.28
Partial	32	72.72
Total	44	100.0

Table 3: According to the Level of the Ligature Mark

Level of ligature mark	Cases	Percentage
Above the thyroid cartilage	38	86.36
Below the thyroid cartilage	2	4.55
Overriding the thyroid cartilage	4	9.09
Total	44	100

and congestion of lungs were noticed in all the cases. Other classic signs of asphyxia were absent in majority of complete suspension of victims' bodies.

DISCUSSION

During this study period, 306 cases were brought for post-mortem examination out of which 44 (14.38 %) deaths were due to hanging. 75% of the victims were females. Domestic and work-related issues, bereavement, failure in love along with easy accessibility of ligature material in a private setting may be the cause for the female predominance.

In our study, atypical hanging (81.81%) was commonly noticed over typical hanging (18.19 %). In over half of the victims' cases, Knot was on the left side of neck. Similar findings were observed in the studies conducted by other authors.^{1, 2,11} The form of knot and completeness of hanging are important in determining the ligature mark over the neck.

In the present study, partial hanging was more commonly observed in comparison to complete hanging which was reported in approximately 1/4th of the deaths. This is in concurrence with studies by some authors^{1,2} but not in agreement with a few others.^{3,4,12,15} This could be due to regional influence, multiple medical colleges being under the same jurisdiction of the police stations, dynamics of hanging with regards to the residence.

In our study, the level of ligature mark was above the thyroid cartilage in majority of the cases followed by those overriding the thyroid cartilage and the least below the thyroid cartilage. This was also observed in few other studies.^{1,4,13} This observation is suggestive of a greater force acting of in the elastic soft tissue over a small area of the neck between bony margin of the jaw and the thyroid cartilage.

Majority of cases (38) had dried salivary stain at the angle of mouth and a single case presented with involuntary discharge at autopsy. The findings are consistent with a few north Indian studies^{5,12} who observed

32.31% cases with dribbling of saliva. Absence of hyoid bone and thyroid cartilage fracture in any of the cases was inconsistent with a few studies.^{2,6,7,8,9,10,12}

Postmortem lividity was seen over the back of the body in majority of the victims' points to the fact that the body was removed from suspension within a few hours and placed in a prone position.

These internal findings at autopsy with regards to signs of asphyxia was found to be consistent with a few literature studies.^{13,14}

CONCLUSION

Precise understanding and interpreting of autopsy findings in hanging cases is of utmost importance in making an assertive diagnosis of death owing to hanging. Our current study showed that the findings in different types of hanging could differ, from time to time with exceptions to the largely accepted. Awareness of these combinations of findings are of vital importance in coming to an inference in a suspected case of hanging to avoid any inaccurate opinion.

Conflict of Interest: Nil

Ethical Clearance: Obtained

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