

# Medico-legal Study of Deaths Due to Hanging in Varanasi (India)



**Satish Kumar Khalkho\*** and **Manoj Kumar Pathak**

*Department of Forensic Medicine, Institute of Medical Sciences, India*

**Submission:** November 30, 2018; **Published:** December 13, 2018

**\*Corresponding author:** Satish Kumar Khalkho, Department of Forensic Medicine, Institute of Medical Sciences, India

## Abstract

**Introduction:** Asphyxia is a condition caused by interference with respiration or due to lack of oxygen in inspired air which causes the organs and tissue being deprived of oxygen causing unconsciousness or death. Hanging is one of the leading manners of suicide. In hanging, there is suspension of the body by a ligature material compressing the neck externally. The constricting force is weight of the body or weight of the head.

**Materials and Methods:** The present study was conducted in Department of Forensic Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh. It is a prospective study. Total 86 cases of asphyxial death due to hanging were reported during October 2016 to March 2018. Detailed history from police personnel and eye-witnesses as well as relatives regarding scene of crime, position of body, ligature material used, etc. were taken. Ligature mark was observed meticulously for all parameters.

**Results:** Total 150 out of 2976 medico-legal deaths were identified to be due to violent asphyxia with incidence rate of 5%. Hanging was the most common method of asphyxial death constituting 57.33 % of cases. Most common age group involved was 21-30 years. Majority of the hanging cases took place at the residence with suicide being the preferred manner of death.

**Conclusion:** This study was done with the objective of assessing data on hanging cases and documenting the characteristics of deaths resulting from hanging.

**Keywords:** Mechanical Asphyxia; Violent Asphyxial Death; Suicide; Accidental Hanging

## Introduction

According to Textbook of Forensic Medicine and Toxicology by Viji K, the term "Asphyxia" commonly means "lack of oxygen" and literally means 'defective aeration of blood' due to any cause. However, the term has been translated from the original Greek, implying "pulselessness/ absence of pulsation. [1] Adelson L in his book "The Pathology of Homicide" has defined asphyxia, as "a state in living organism in which there is acute lack of oxygen available for cell metabolism associated with inability of body to eliminate excess of carbon dioxide" [2]. According to Oxford English Dictionary, 2<sup>nd</sup> edition hanging is the suspension of a person by a noose or ligature around the neck. [3] The Oxford English Dictionary states that hanging in this sense is "specifically to put to death by suspension by the neck", though it formerly also referred to crucifixion and death by impalement in which the body would remain "hanging". As mentioned in a reference article, "Hangman's fracture: a historical and biomechanical perspective" of Rays M et al. [4] Hanging has been a common method of capital punishment since medieval times and is the official execution method in numerous countries and regions. The first account of execution by hanging was in Homer's Odyssey (Book XXII).

According to the textbook "The essentials of Forensic Medicine & Toxicology", by Reddy KSN Hanging is a form of mechanical

asphyxia in which the force applied to the neck is derived from a gravitational drag of the weight of the body or part of the body [5]. Hanging is always considered suicidal except accidental hanging in sexual perverts, homicidal hanging in lynching and justifiable judicial hanging. According to "Suicide by hanging: multicentre study based on coroner's records in England" by Benne with O et al. [6] in England and Wales, hanging accounts for about 2000 deaths each year and is considered the most common method of suicide. In USA, 92.3% of all suicides were caused by firearms, hanging and poisoning as per U.S. Suicide Statistics [7] A report from Canada as obtained from Hanging- New World encyclopaedia has also indicated hanging as the second most common method of suicide after suffocation [8]. Also, Kamalakar D in "A new trend of suicide in India", many cultural and socio-economic factors are responsible for the causation of hangings. Rapid urbanization, industrialization and emerging family systems are resulting in social upheaval and distress [9]. Hence death due to hanging is one of the most complex and controversial areas in study of Asphyxial deaths. To ascertain cause and manner of death in cases of hanging, meticulous examination of ligature mark, ligature material, neck dissection and other autopsy findings are much helpful. Also visiting the scene of crime is pertinent in collection of circumstantial evidences and in examining the status of place of incidence.

**Materials and Methods**

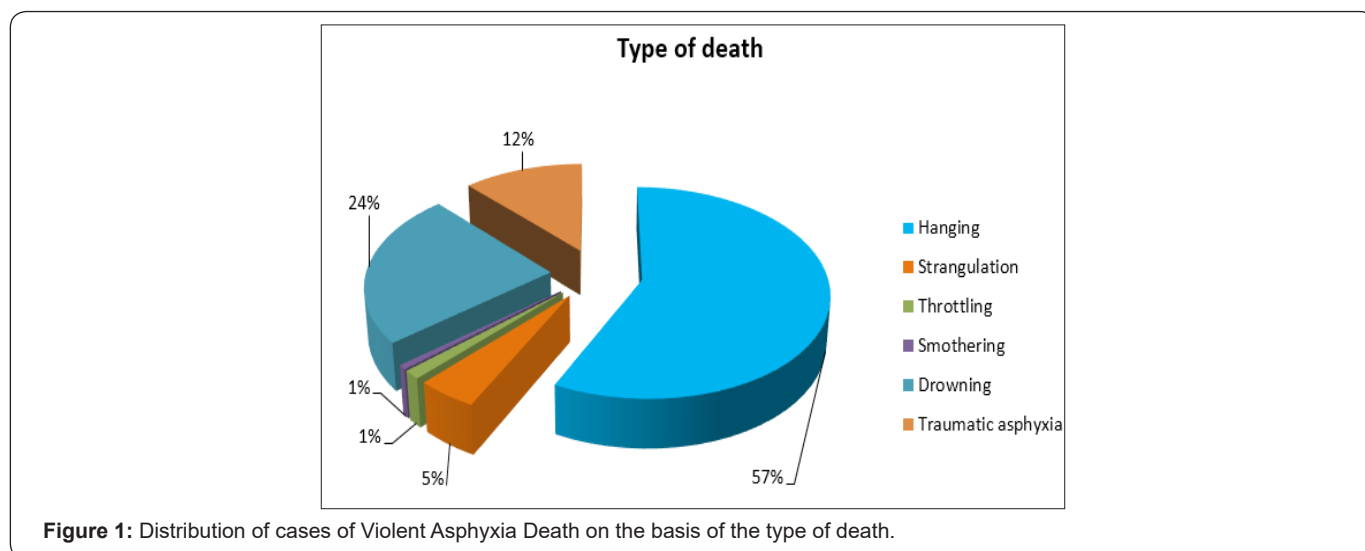
The present study was conducted in Department of Forensic Medicine, Institute of Medical Sciences, Banaras Hindu University; Varanasi (Uttar Pradesh- India) for medico-legal autopsies done on bodies brought from the various Police Stations of Varanasi and surrounding areas. Total 86 cases of asphyxial death due to hanging were studied during October 2016 to March 2018, and percentage study was done on those. For this study those cases were selected in which the victims were died due to violent asphyxial death and were confirmed to be so after the post-mortem examination. Also, those cases which were reported by police as not being the case of violent asphyxial death but came out so after post-mortem examination, were also included in present study.

**Observation and Results**

I. Table 1 shows Incidence of violent asphyxial death in our study was 5%, the total number of autopsies conducted during the study period was 2976, out of which 150 were mechanical Asphyxial death.

**Table 1:** Incidence of Violent Asphyxial Deaths amongst all Autopsied cases (October 2016 to March 2018).

Case	No. of Autopsy	Percentage (%)
Asphyxial deaths	150	5
Other	2826	95
Total	2976	100



**Figure 1:** Distribution of cases of Violent Asphyxia Death on the basis of the type of death.

II. Figure 1 show the cases were distributed on the basis of their type of death. Hanging was commonest in 86 (57.3%) subjects followed by drowning in 36 (24.0%) subjects. 18 (12.0%) died of traumatic asphyxia while for smothering 1 (0.67%) and for throttling 2 (1.33%) cases was reported.

III. Table 2 shows Place of incidence-The cases were distributed on the basis of their place of hanging. 44 (51.16%) subjects were found in locked room from inside while 10 (11.63%) subjects were found to be hanging in locked room from outside. Places of hanging for 29 (33.72%) subjects were open space.

**Table 2:** Status of place of incidence in cases of Hanging.

Place of incidence	No.	%
Locked Room from inside	44	51.16
Locked Room from outside	10	11.63
Open space	29	33.72
Not known	3	3.49

IV. Table 3 shows Basis of the place of incidence-. The cases were distributed on the basis of their place of incidence. Maximum deaths i.e. 57 (66.28%) were found in house followed by hostel and forest in 8 (9.30%) and 7 (8.14%) cases respectively. Place of death of 3 cases was unknown.

**Table 3:** Distribution of cases of hanging on the basis of the place of incidence.

Places	Frequency	Percentage (%)
House	57	66.28
Hostel	8	9.30
Hotel	3	3.49
Working place	5	5.81
Farm	3	3.49
Forest	7	8.14
Any other/ Unknown	3	3.49
Total	86	100.00

**Table 4:** Distribution of hanging cases on the basis of suspension of body.

Body was suspended from	Frequency	Percentage (%)
Ceiling of room	21	24.42
Ceiling fan	35	40.70
Hook of door	12	13.95
Window	3	3.49
Beam	5	5.81
Trees	10	11.63
Total	86	100.00

V. Table 4 shows Distribution of hanging cases in the form of body suspended is shown. Among hanging cases, 35 (40.70%) subjects were suspended from ceiling fan followed by hook of door and trees in 12 (13.95%) and 10 (11.63%) respectively.

VI. Table 5 shows Basis of the ligature material- Material used for hanging was soft material 45 (52.33%) followed by hard 41 (47.67%) quality.

Table 5: Distribution of hanging cases on the basis of ligature material:

Material	No.	%
Soft	45	52.33
Hard	41	47.67
Total	86	100

VII. Table 6 Shows Basis of Ligature Material and its Types: The cases were distributed on the basis of their ligature material. Among the asphyxial deaths in hanging cases, 37 (43.02%) subjects used rope as a ligature material. This was commonest to be followed by Saree 14 (16.28%) and bed sheet 12(13.96%) respectively.

Table 6: Distribution of hanging cases on the basis of ligature material and its types.

Material	Frequency	Percentage (%)
Soft Material	Saree	14
	Dupatta (Chunni)	10
	Bed Sheet	12
	Lungi	5
Hard Material	Rope	37
	Electrical were	4
Total	86	100.00

VIII. Table 7 Shows Gender-Wise Distribution of Types of Hanging Cases on The Basis of Position of Knot: According to position of knot in hanging, our study reported, maximum hanging cases presented with atypical 42 (48.84%) type followed by complete 32 (37.21%) and typical 7 (8.14%) type.

Table 7: Gender-wise distribution of types of hanging cases on the basis of position of knot.

Position of knot	Male		Female		Cases	
	No.	%	No.	%	No.	%
Complete	19	59.38	13	40.62	32	37.21
Partial	3	60.00	2	40.00	5	5.81
Typical	4	57.14	3	42.86	7	8.14
Atypical	25	59.52	17	40.48	42	48.84
Total	51	59.30	35	40.70	86	100.00

IX. Table 8 Shows Distribution of Hanging Cases on the Basis of Feet Touching the Ground: Maximum victims of hanging cases 61(70.93%) were found fully suspended, followed by feet touching the ground in 22 (25.59%) cases and sitting 2 (2.32%) cases and kneeling 1(1.16%) case.

Table 8: Distribution of hanging cases on the basis of Feet touching the ground

Feature of Suspension	Cases	Percentage (%)
Fully Suspended	61	70.93
Feet touching the ground	22	25.59
Sitting	2	2.32
Kneeling	1	1.16
Not known	0	0
Total	86	100.00

X. Figure 2 Shows Incidences of Hanging Cases on the Basis of Noose of the Ligature Used (n= 86): The cases were observed on the basis of their presence of position of knot. Among 86 hanging frequencies, the position of knot was observed at the occiput in 48 (55.81%) fixed knot 34 (39.53%) running noose 61(70.93%) subjects. This was commonest to be followed by positions at right and left side of neck among 32 (37.20%) and 30(34.89%) subjects respectively.

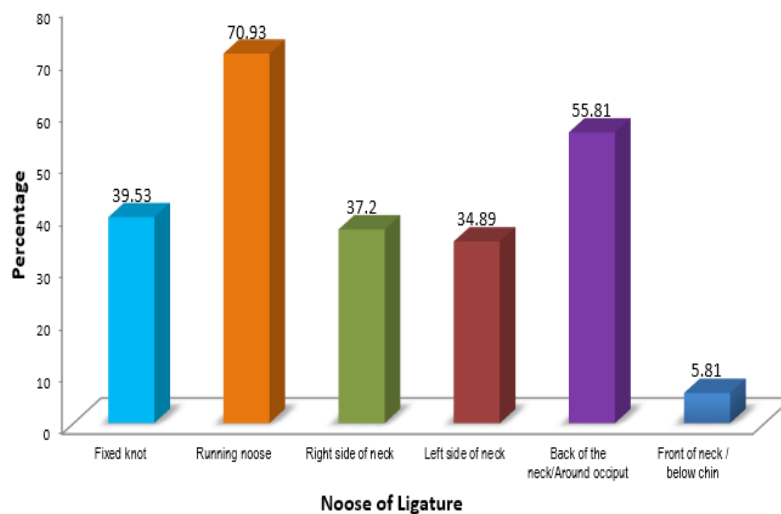


Figure 2: Incidences of hanging cases on the basis of noose of the ligature used (n= 86).

**XI. Table 9 Shows Various Features of Ligature Mark in Hanging:** The cases were distributed according to the direction of ligature mark. Among 79 (91.86%) cases discontinuous, however continuous ligature mark was present in remaining 7 (8.14%) cases. 78 (56.0%) subjects, the mark as directed obliquely and horizontal mark was seen in 8(9.30%) subjects. In 70 (81.40%) subjects, ligature mark was observed above thyroid cartilage, 12 (13.95%) subjects had the mark over thyroid cartilage while, 4 (4.65%) subjects had the mark below thyroid cartilage. Ligature marks were found sharply grooved in 26 (30.23%) and shallow grooved 31 (36.05%) of cases however they were found faint and just visible in 28 (32.56%) and not visible in 1 (1.16%) cases. Parchmentization of skin beneath ligature mark, ecchymosed margins and white glistening appearance of underneath tissue had been present in 47 (54.65%), 54 (62.80%) and 39 (45.35%) cases respectively.

**Table 9:** Various features of ligature mark in Hanging.

Feature	Number	%
Continuous	7	8.14
Discontinuous	79	91.86
Oblique	78	90.69
Horizontal	8	9.30
Above thyroid cartilage	70	81.40
At. Thyroid cartilage	12	13.95
Below thyroid cartilage	4	4.65
Single ligature mark	80	93.02
Multiple ligature marks	6	6.98
Sharply grooved	26	30.23
Shallow grooved	31	36.05
Just visible	28	32.56
Not visible	1	1.16
White Glistening appearance	39	45.35
Parchmentisation	47	54.65
Ecchymosis	54	62.80

**XII. Table 10 Shows External Examination of Victims of Violent Asphyxial Deaths:** Features of external findings of hanging subjects were observed. Among 86 hanging deaths, 77(89.53%) subjects presented with cyanosis, 69 (80.23%) subjects presented congestion of face, 58 (67.44%) subjects had protruded tongue, post-mortem staining in lower limb was seen in 59 (68.6%) subjects and 64 (74.42%) subjects presented with dribbling of saliva, seminal emission in 27(31.40%) cases, urinary incontinence in 37(43.02%) cases, faecal incontinence in 4(4.65%) cases. Sub-conjunctival haemorrhage 10 (55.81%) cases, La facie sympathies in 2 (2.32%) cases, suicidal note 7 (8.13%) cases, Hesitation mark in 3(3.49%) cases.

**Table 10:** External examination of victims of Violent Asphyxial Deaths.

Features	Number	Percentage
Bilateral closed eye.	23	26.74
Both partially open eye	40	46.51
Unilateral partially open eye	5	5.81
Bilateral open eye	18	20.93
Congested eye	75	87.21
Sub- conjunctival haemorrhages	10	11.63
Post-mortem Staining in lower limbs	59	68.60
Cyanosis	77	89.53
Petechial haemorrhage	48	55.81
Mouth closed	6	6.98
Partially open	55	63.95
Complete open	25	29.07
Tongue tip protruded	58	67.44
Oral dribbling of saliva	64	74.42
Oral bloody discharge	32	37.21
Nasal bloody discharge	29	33.72
Ear bleeding	0	0
Congestion of face	69	80.23
Pale face	17	19.77
La facie sympathique	2	2.32
Seminal emission	27	31.40
Urinary incontinence	37	43.02
Faecal incontinence	4	4.65
Hesitation (struggle mark)	3	3.49
Suicide note	7	8.13

**XIII. Table 11 Shows Observation of Neck Structures:** Internal examinations of neck structures were carried out and noted.81(94.19%) subjects in hanging presented congestion in their larynx and trachea while sternocleidomastoid muscle contusion was observed in 5 (5.81%) subjects of the same group.

**Table 11:** Observation of neck structures.

Feature	Number	%
Laryngeal Congestion	81	94.19
Tracheal Congestion	81	94.19
Fracture of hyoid bone	0	0
Sterno-cleidomastoid muscle contusion	5	5.81
Laryngeal contusion	0	0
Tracheal contusion	0	0
Fracture of tracheal rings	0	0
Nail marks / Abrasion	2	2.32
Contusion / Laceration wound	2	2.32

**Discussion**

**I. Table 1:** comprises the data about the incidence of violent asphyxial death in our study which was 5%, the total



number of autopsies conducted during the study period was 2976, out of which 150 were mechanical asphyxial death. Similar observations were reported by Sharma et al. (5%) [10], Amandeep et al. (5.26%) [11], Patel Ankur et al (5.63%) [12] Mariam Arif (5.9%) [13], Tirmizi S Z et al. (7.08%) [14], Murty OP et al. (0%) [15] and Ajay Kumar S et al (10.50%) [16]. But in studies done by Reddy SP et al. [17] and Azmac D et al. [18] the incidences were 19.15% and 15.7% respectively.

**II. Figure 1:** indicates the incidences of various types of violent asphyxial deaths which were recorded, out of 150 asphyxial death cases, hanging was found to be the commonest of all, 86 cases (57.3%), followed by drowning 36 (24.0%), strangulation 7(4.67%), throttling 2(1.33%), smothering 1 (0.67%) respectively and accidental finding of relatively higher proportion of traumatic asphyxia, 18 (12%) number of cases. Similar findings were observed in hanging deaths the study done by Sharma et al. (69%) [10], Reddy SP et al. (61.19%) [17] and Chaurasia N et al. (52.21%) [19], Tirmizi SZ et al. (36.48%) [14] and Patel Ankur P et al. (82.48%) [12].

**III. Table 2:** concludes the states about the status of Place of Incidence: Most cases happened in places locked room from inside 44 (51.16%), looked room from outside 10 (11.63%), places of hanging for 29 (33.72%) subjects were open space. The findings of present study are similar to study by Punitha R et al. indoor in 27 cases (79.4%) and outdoor in 04 cases (11.7%) [20], Rawat VE J reported 72(71.29%) indoor & outdoor sites 29 (28.71%) [21]. Similar with the done by Ankur P et al. [12], Uzun et al. [22] Ambade et al. [23], Mohanty et al. [24]. It can be seen that majority people from urban population of Gujarat State committed suicide by hanging within the closed secure places i.e. at their home rather than at open place like hanging from a branch of tree.

**IV. Table 3:** highlights in the present study about the place of incidence that in maximum deaths due to hanging, 57 (66.28%) were found in home followed by hostel 8 (9.30%) and forest in 7 (8.14%) cases respectively. The findings of present study are similar with the study done by SH Bhosle et al. most common place of hanging was home in 69.88% [25], by Cooke et al. (1995) (71%) [26], Uzun et al. (83.33%) [22], Elfawal et al. (95.08%) [27]and Bowen DA [28]. Usually person prefers any secluded place which suit for his/her purpose. The victim being very well aware of the home and its surroundings, it suits his or her needs for hanging.

**V. Table 4 Compiles the Stats about Suspension Points Used:** In our study, the suspension point used by victims most commonly was, ceiling fan 35(40.70%), followed by ceiling of room 21 (24.42%), hook of door 12 (13.95%) and trees in 10 (11.63%) respectively. Vijyakumari N [29] who reported ceiling fans, beams and grills as the common ligature points in hanging deaths. Pal SK et al. [29] studies by, iron guider was the commonest ligature point in 23.77% cases followed by ceiling fan in 22.95% and trees in 18.55% cases [30]. Ambade et al. where trees were the commonest ligature points in hanging deaths followed by beams and ceiling fans [23].

**VI. Table 5:** highlights that the type of material used for hanging was soft material in 45 (52.33%) cases; followed by hard material in 41 (47.67%) cases. These observations are consistent with the study of Sharma BR et al. (soft material 56.36% & hard 43.64%) [10], Naik SK (soft 59.97% & hard 46.03%) [31] and Patel AP et al. (soft 80% & hard 20%) [12].

**VII. Table 6:** includes the data in our study that the most common material used was Rope 37 (43.02%), followed by Saree 14 (16.28%), Bed Sheet 12 (13.96%), Dupatta 10 (11.63%); least used was Electric Wire in just 4 (4.65%) cases. These observations are more or less similar to the studies of Elfawalet et al. (85.41%) [27], Sheikh et al. (53.02%) [32], SH Bhosle et al. (53.01%) [25], Dixit et al. [33], Uzun et al. [22] and Cooke et al. [26]. reported rope as most common ligature material Dupatta was the most common used ligature material in a study by Momin et al (2012)31.96% cases and Sharma et al. [30]. in 30.90% cases [10].

**VIII. Table 7:** includes the stats in our study about the position of knot in hanging in maximum hanging cases presented with atypical type in 42 (48.84%) cases and typical type in 7 (8.14%) cases while complete hanging occurred in 32 (37.21%) cases. These observations are similar to the studies of and Naik SK et al. [31], Jignesh B Patel et al. [34].

**IX. Table 8:** compiles in our study that the maximum victims of hanging cases 61(70.93%) were found fully suspended, followed by feet touching the ground in 22 (25.59%) cases and sitting 2 (2.32%) case sand kneeling 1(1.16%) case. The observations are similar to the study by Vijay Nath [33]. has reported 5.88% victims hanging partially and rest 94.12% were completely suspended These incidences were found lower for complete hanging by Suárez-Peñaranda et al. i.e., 62.4% [34-37] but slightly higher by Sharma et al. [10]. i.e., 68% Similarly, higher incidences of complete hanging were found in a study conducted by Naik et al. [31]. In 217 cases out of 232 cases of hanging.

**X. Figure 2:** depicts in our study that in 86 hanging cases, the position of knot was observed at the occiput in 48 (55.81%) cases. This was commonest to be followed by positions of knot at right and left side of neck among 32 (37.20%) and 30 (34.89%) subjects respectively, while fixed noose in 34 (39.53%) cases and running noose 61(70.93%) cases. These observations are similar to the studies of Patel Ankur et al. [12] (46.25%) of hanging in present study had fixed knot and 172 cases (53.75%) had running noose. Vijay Nath V et al. [33] 4.45% fixed knot and 52.94% cases with running noose. Sharma BR et al. [10] 58.78% cases with fixed knot and 41.22% cases with slip knot.

**XI. Table 9:** highlights that the cases were distributed according to the direction of ligature mark in hanging, among 86 cases discontinuous ligature mark was seen in 79 (91.86%) cases, however continuous ligature mark was present in remaining 7 (8.14%) cases. In 78 (56.0%) subjects, the Smirk as directed obliquely and horizontal mark was seen in 8 (9.30%) subjects. In 70 (81.40%) subjects, ligature mark was observed above thyroid cartilage, 12 (13.95%) subjects had the mark over thyroid cartilage

while, 4 (4.65%) subjects had the mark below thyroid cartilage. Ligature marks were found sharply grooved in 26 (30.23%) and shallow grooved 31 (36.05%) of cases, however they were found faint and just visible in 28 (32.56%) cases and not visible in 1 (1.16%) case. Parchmentization of skin beneath ligature mark, ecchymosed margins and white glistening appearance of underneath tissue had been present in 47 (54.65%), 54 (62.80%) and 39 (45.35%) cases respectively. The similar findings above the level of thyroid cartilage were reported by Rawat VE J [21] (91.09%), Sharma et al. 20 (84.62%) [10] and Mukherjee JB [38]. (80%), Lower incidence ligature mark above level of thyroid cartilage was reported by Elfawalet et al. [27], (65.57%) and Dixit et al. [35]. (77%), Ligature mark below the level of thyroid cartilage in significant percent was reported by Davidson et al. [39] (6.66%), Elfawalet et al. [27] (24.59%) and Dixit et al. [35]. (23%) The high reporting may be because that, they had not differentiated mark at the level of thyroid cartilage or below it; but clubbed both as below the level of thyroid cartilage.

**XII. Table 10 Features of External Findings:** Features of external findings of hanging cases observed were- Among 86 deaths due to hanging, 77(89.53%) subjects presented with cyanosis, 69 (80.23%) subjects presented with congestion of face, 58 (67.44%) subjects had protruded tongue, post-mortem staining in lower limb was seen in 59 (68.6%) subjects and 64 (74.42%) subjects presented with dribbling of saliva, seminal emission in 27(31.40%) cases, urinary incontinence in 37(43.02%) cases, faecal incontinence in 4(4.65%) cases, Sub-conjunctival haemorrhage in 10 (55.81%) cases. 'La-facie sympathies' 'was observed in 2 (2.32%) cases, suicide note in 7 (8.13%) cases and hesitation cut mark in 3(3.49%) cases. Similar findings were observed in the study done by 'La facie sympathies'-originally described by Etienne Martin (1950) [40] cited by Polson and Gee was not seen in any of the cases of hanging under present study might be due to manual alteration by relatives or police at the time of inquest preparation. In our study, cyanosis (evident as bluish discoloration of nails, mouth and lips), was seen in 77(89.53%) cases with 69 (80.23%) congestion of face similar findings were observed by Saiyed and Modi 94.59% [41], Rawat

and Rodrigues [21], 66.33% and Pal SK et al. [30]. 63(51.63%), Petechial haemorrhages, visceral congestion and dark fluid blood were noticed in 100% cases as also by Gambhir Patel et al. [12], Singh et al. [42] and Sarangi et al. [43]. In our study, dribbling of saliva was reported 64 (74.42%) cases similar findings were observed by Ankur P et al. [12], Dribbling of saliva is considered an important finding of ante mortem hanging, was recorded in 228 out of 320 cases (71.25%), Pal SK et al. [30] 79 (64.75%) and Sheikh et al. [34] 38.37% cases. In our study protrusion of tongue was observed in 59 (68.6%) cases. similar findings were observed by Pal SK et al. 79(64.75%) [30], Rawat and Rodrigues [21] (50.49%) and Shaoo et al. 31%. [44]. In the present study, the seminal fluids discharge was seen in 27 (31.40%) cases. These observations are similar to the studies of to Pal SK et al. 37 (30.32%) cases [30], Sahoo et al. 17% cases [44], Patel et al. 17.5% cases [12] and Rawat and Rodrigues 10.89% cases [21]. In our study, urinary incontinence was seen in 37(43.02%) cases. Similar findings were observed by Pal SK et al. 52 (42.62%) cases [30], Patel et al. 13.75% [12] and Rawat and Rodrigues [21] noticed only 0.99% cases. In our study, faecal incontinence was seen in 4(4.65%) cases. Sengupta observed faecal discharge in 14.85%cases, [45] while faecal discharge was not seen by Rawat and Rodrigues [21].

**XIII. Table 11 Observation of Neck Structures:** In our study, 81 (94.19%) cases in hanging presented with congestion in their larynx and trachea while sternocleidomastoids muscle contusion was observed in 5 (5.81%) cases. Hyoid and thyroid bone fracture was not found in our study. Similar findings were observed in the study done by Vijay Nath et al. [33]. Internal Post-mortem Findings of hanging the subcutaneous tissue below the mark was white glistening because of continuous pressure of ligature. 20 cases (6.25%) were showing haemorrhages in the neck muscles compared to 23.52% [44] and Chand et al. [46,47] muscle haemorrhage was seen only in 3 (5.76%) cases of hanging.

**External Features of Hanging**

(Figures 3-5)



Figure 3: The Photographs showing "La FascisSympathique".



**Figure 4:** Photograph Showing Dried Stain of dribbling of saliva from the left angle of mouth with direction up to chin.



**Figure 5:** Photograph showing protrusion of tongue found clenched between both jaw and bluish cyanosed lips.

### Photographs of Hanging Taken at The Scene of Crime

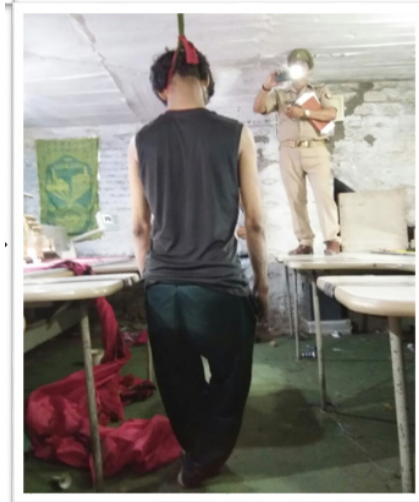
#### An Indoor Suicidal Case:

(Figures 6,7)



**Figure 6:** Photograph showing anterior view of partially hanged victim, touching feet, hyper stretched neck, and ligature material used is cloth piece hanged with ceiling Fan.





**Figure 7:** Photograph showing posterior view of partially hanged victim, feet touching the ground with partially bent knee. The place of ligature knot found at back showing their presence at alignment of posterior mid line with evident features of typical hanging.

**Various patterns of ligature marks based on type of ligating material used for hanging**

(Figures 8-12)



**Figure 8:** Photograph showing double ligature mark caused due to use of nylon rope. Parchmentisation and grooves formed mostly at front and right side of neck also the lower placed ligature mark has evidence of upwards slipping effect.



**Figure 9:** Photograph showing double ligature mark found parchmented and grooves formed progressing left side of neck upward and back which is gradually fainting up to nape of neck.





**Figure 10:** Photograph showing the broad, prominent and parchmented ligature mark at mid line- front and adjacent both side of neck, Ligature material used: Cloth (Dupatta), Impression of knot: evidently seen at high up neck left side in the alignment of left ear.



**Figure 11:** Photograph showing the Conjunctival Congestion of both eyes along with petechial hemorrhagic patches over adjacent face.



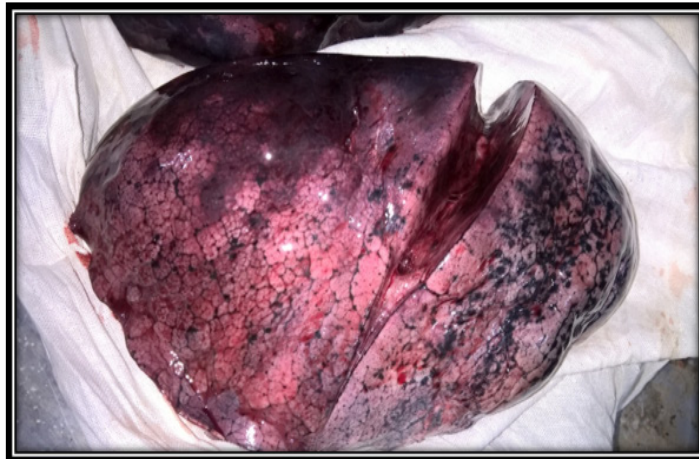
**Figure 12:** Photograph showing cyanosed nails

**Internal features of hanging:**

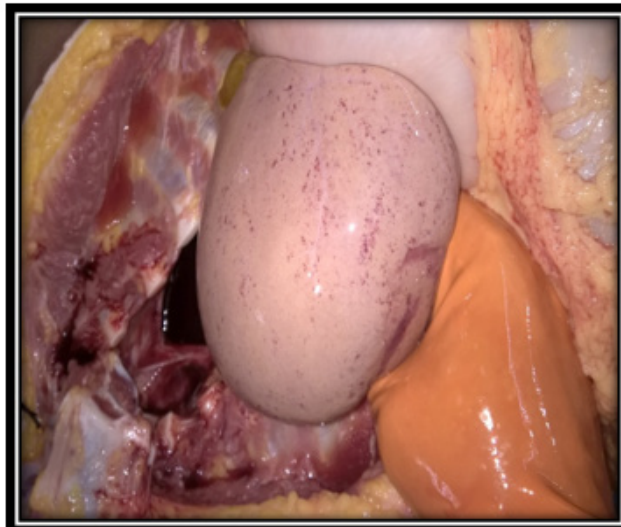
(Figures 13-18)



**Figure 13:** Photograph shows dissected skull with evidence of congested scalp, duramatter and brain with prominent fine blood vessels.



**Figure 14:** Photograph shows presence of multiple Tardieu's spots on the surface of congested lungs, cut portion of lung with congested parenchymal layer.



**Figure 15:** Thin petechial hemorrhage present on the surface of Liver.



Figure 16: Internal hypostasis due to hanging more than 8 Hours.



Figure 17: Photograph showing Ecchymosis present at places subjacent to ligature mark.

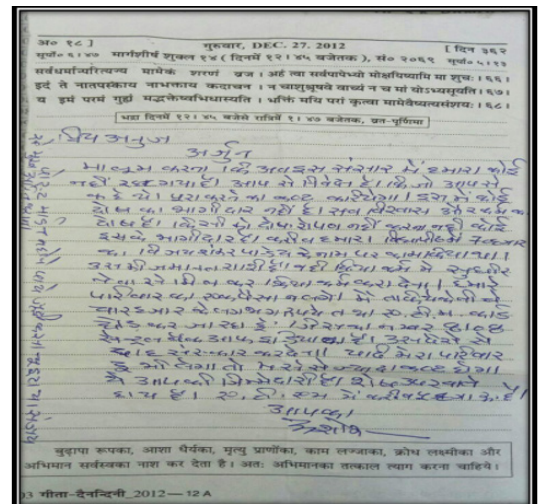
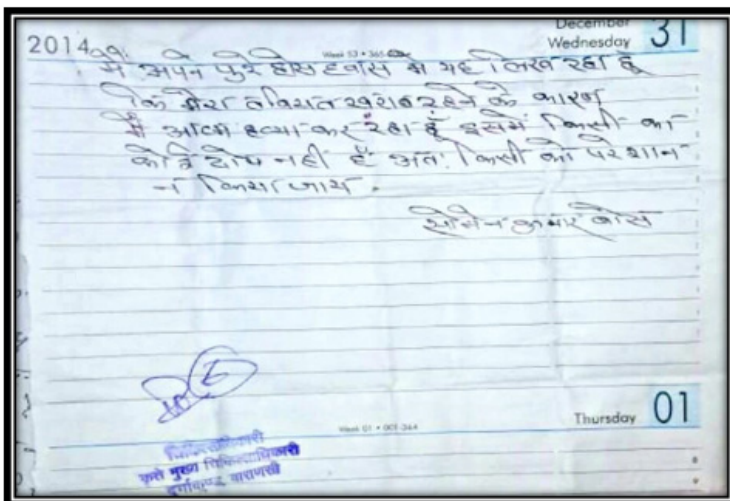


Figure 18: Photographs showing Suicide Notes written by two deceased (incorporated in this study).

**Conclusion**

According to NCRB statistics (2014), distribution of suicide by means of hanging was 41.8%, by drowning was 5.6% out of

all suicide cases reported all over India. At the same time, NCRB statistics [47] also showed that in Uttar Pradesh hanging as a means of suicide, accounted for 1585 cases out of 53026 cases all over India while drowning accounted for 162 cases out of total



7401 cases. In our study, suicide by means of hanging was 57.33% while by drowning was 24% out of all Asphyxial deaths. Hanging is being viewed as giving swift and painless death, with easily available ligature material & ligature points in secluded places without arising much suspicion. This mode is increasingly adopted to commit suicide. Peak incidence of mortality due to hanging is in young age group 21-30 years. The present study highlights on the emerging trends that nylon rope is being increasingly used for committing suicidal hanging. Attempt to commit suicide; under section 309 of IPC viz shooting, hanging and stabbing are a 'hard' way of committing suicide and typically a male choice; poisoning and drowning are 'soft' ways of committing suicide. Previously there was punishment for attempt to suicide which was imprisonment which may extend to one year, with or without fine. Now according to Mental Health Act, 2017, Chapter XVI, Section 115, notwithstanding anything contained in Section 309 of the Indian penal Code any person who attempts to commit suicide shall be presumed, unless proved otherwise, to have severe stress and shall not be tried and punished under the said Code. Now the study concludes that, Hanging and Drowning are one of the commonest methods for committing suicides (under Section 309 IPC) and (under Section 306 of IPC) abetment of suicide, are preferred methods for committing/attempting suicide after Poisoning and Thermal burn.

### References

1. Vijik (2011), Textbook of Forensic Medicine and Toxicology. (5<sup>th</sup> edn), Reed Elsevier India Pvt. Ltd, New Delhi, India, p. 71-72.
2. Adelson L (1974) The Pathology of Homicide. Springfield: Charles C Thomas p. 555-557.
3. Oxford English Dictionary, Hanging as method of execution is unknown, as method of suicide from. (2<sup>nd</sup> edn), pp. 1325.
4. Rayes M, Mittal M, Setti S, Mittal S (2011) Hangman's fracture: a historical and biomechanical perspective. *J Neurosurg Spine* 14(2): 198-208.
5. Reddy KSN (2000) The essentials of Forensic Medicine & Toxicology, (19<sup>th</sup> edn), pp. c283-c295
6. Benne with O, Gunnell D, Kapoor N, Turnbull P, Simkin S, et al. (2005) Suicide by hanging: multicenter study based on coroner's records in England. *The Brit J Psychiatry* 186: 260-261.
7. US Suicide Statistics (2001) Suicide. Org. Suicide Prevention, Awareness and Support.
8. Hanging- New World encyclopedia.
9. Kamalakar D (2016) A new trend of suicide in India, Counter currents. Org.
10. Sharma BR, Harish D, Sharma A, Sharma S, Singh H (2008) Injuries to neck structures in deaths due to constriction of neck, with a special reference to hanging. *J Forensic Leg Med* 15: 298-305.
11. Singh Amandeep (2003) A study of demographic variables of violent asphyxial death: *Journal of Punjab Academy of Forensic Medicine and Toxicology* 3: 32-34.
12. Patel Ankur P, Bhoot Rajesh R, Patel Dhaval J, Patel Khushbu A (2013) Study of Violent Asphyxial Death. *International Journal of Medical Toxicology and Forensic Medicine* 3(2): 48-57.
13. Arif M (2015) Ligature mark on the neck; How elucidative? *Professional Med J* 22: 798-803.
14. Trimizi SZ, Mirza FH, Paryar HA (2012) Medico-legal investigation of violent asphyxial deaths - an autopsy-based study, *J Dow Uni Health Sci* 6: 86-90.
15. Murty OP, Agnihotri AK (2000) Homicidal Deaths in South Delhi. *J Ind Acad Forensic Med* 22: 9-11.
16. Ajay Kumar S, Handan V, Rudresh YC, Govindarajan HC, Gouda S (2013) Study of violent asphyxial deaths in Chitra Durga district of Karnataka *IJBAR* 4(12): 868-871.
17. Reddy SP, Kumar R, Rudramurthy (2012) Asphyxial deaths at district hospital, Tumkur a retrospective study. *J Indian Acad Forensic Med* 34(2): 146-147.
18. Azmak D (2006) Asphyxial deaths: a retrospective study and review of the literature. *AM j Forensic Med Pathol* 27(2): 134-144.
19. Chaurasia N, Pandey SK, Mishra A (2012) An Epidemiological Study of Violent Asphyxial Death in Varanasi Region (India) a Killing Tool. *J Forensic Res* 3(10.6): 174.
20. Punitha R, Pradeep Kumar MV, Jagadeesh NH, Jayaprakash (2017) A cross sectional study on homicidal asphyxial deaths *JKAMLS* 26(1).
21. Rawat V, Rodrigues EJ (2015) Medico-legal study of hanging case in North Goa. *Int J Forensic Sci Pathol* 3(5): 110-118.
22. Uzun I, BuYuk Y, Griner K (2007) Suicidal hanging: Fatalities in Istanbul Retrospective analysis of 761 autopsies. *J Forensic Leg Med* 14(7): 406-409
23. Ambade VN, Godbole HV, Kukde HG (2007) Suicidal and homicidal deaths: A comparative and circumstantial approach. *J Forensic Leg Med* 14(5): 253-260.
24. Mohanty S, Shu G, Kumar M, Patnaik M (2007), Suicide in India - A four year retrospective study. *J Forensic Leg Med* 14(4): 185-189.
25. Bhosle SH, Batra AK, Kuchewer SV (2014) Violent asphyxia death due to hanging: a prospective study. *J Forensic Med Sci Law* 23(1): 1-8.
26. Cooke CT, Cadden GA, Margolius KA (1995) Death by hanging in Western Australia. *Pathology* 27(3): 268-272.
27. Elfawalet MA, Awed OA (1994) Death from hanging in the eastern province of Saudi Arabia. *Med Sci Law* 34(4): 307-312.
28. Bowen DA (1982) Hanging - a review. *Journal of Forensic Science international* 20(3): 247-249.
29. Vijayakumar N (2011) Suicidal Hanging: A Prospective Study. *J Indian Accad Forensic Med* 33(4): 355-357.
30. Pal SK, Sharma A, Sehgal A, Kaushik N, Rana A (2016) Hanging Suicides in Himachal Pradesh: An Analysis of Forensic Case. *Int J Forensic Sci Pathol* 4(11): 297-304.
31. Naik SK (2005) A study of fracture of hyoid bone in cases of asphyxial deaths resulting from constricting force around neck. *Journal of Indian Academy of Forensic Medicine* 27(3): 149-153.
32. Shaikh MMM, Chotaliya HJ, Modi AD, Parmar AP, Kalele SD (2013) A study of gross post-mortem findings in cases of hanging and ligature strangulation. *J Indian Acad Forensic Med* 35(1): 63-65.
33. Dixit PG, Mohite PM, Ambade VN (2001) Study of Histopathological changes in thyroid, salivary gland and lymph nodes in hanging. *Journal of forensic medicine and toxicology* 18(2): 1-4.
34. Jignesh B Patel, Alpesh B Bambhaniya, Kalpesh R Chaudhari, Mehul C Upadhyay (2015) *International Journal of Health Sciences & Research* 5(8).
35. Vijaynath V, Anitha MR, Rajan KA (2009) Study of autopsy profile in cases of hanging. *Journal of Forensic Medicine and Toxicology* 26(1): 34-36.
36. Momin SG, Mangal HM, Kyada HC, Vijapur MT, Bhuna SD (2012)



- Pattern of ligature mark in case of compressed neck in Rajkot region: A prospective study. *J Indian Acad Forensic Med* 34(1): 40-43.
37. Suárez Peñaranda JM, Alvarez T, Miguéns X, Rodríguez Calvo MS, de Abajo BL, et al. (2008) Characterization of lesions in hanging deaths. *J Forensic Sci* 53(3): 720-723.
38. Mukherjee JB (2007) *Forensic Medicine and Toxicology*. RN Carmaker editor. (3<sup>rd</sup> edn), Arnold Associates, New Delhi, India, pp. 571-617.
39. Davidson A, Marshall TK (1986) Hanging in Northern Ireland-a survey. *Med Sci Law* 26(1): 23-28.
40. Polson CJ, Hanging. In: Polson CJ, Gee DJ, Knight B (1985) *The Essentials of Forensic Medicine*. New York, Pergamon, NY, USA, pp. 357-388.
41. Saiyed MZG, Modi KK (2013) Retrospective study of post-mortem cases of hanging-a method of suicide. *NHL J Med Sci* 2(2): 48-50.
42. Singh Gambhir O (2008) A study of violent mechanical asphyxial deaths in homicide; *Journal of Forensic Medicine and Toxicology* 25(2): 34-35.
43. Sarangi MP (1998) Ligature marks in Forensic Pathologist's Perspective. *Journal of Forensic Medicine and Toxicology* 15(1): 99-102.
44. Sahoo N, Kumar N, Panda BB, Datta (2016) A Significance of external findings in hanging cases during autopsy. *IJBAR* 7(3): 119-122.
45. Sen Gupta BK (1965) Studies on 101 cases of death due to hanging. *J Indian Medical Assoc* 45(3): 135-139.
46. Suresh Chand, Rishi S, Aggrawal A, Dikshit PC, Ranjan R (2017) Neck structures post mortem finding in asphyxial death. *International Journal of Scientific Study* 5(4).
47. National Crime Records Bureau (NCRB) Ministry of Home Affairs (2014) Govt. Of India New Delhi.



This work is licensed under Creative Commons Attribution 4.0 License  
DOI: [10.19080/JFSCI.2018.11.555807](https://doi.org/10.19080/JFSCI.2018.11.555807)

**Your next submission with Juniper Publishers  
will reach you the below assets**

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats  
**( Pdf, E-pub, Full Text, Audio )**
- Unceasing customer service

**Track the below URL for one-step submission**  
<https://juniperpublishers.com/online-submission.php>