

ANALYSIS OF DEATHS DUE TO HANGING IN VISAKHAPATNAM: A 5-YEAR STUDYRama Krishna Pedada¹, Pedada Venkata Ramana Rao²¹Assistant Professor, Department of Forensic Medicine and Toxicology, Andhra Medical College / King George Hospital, Visakhapatnam, Andhra Pradesh.²Assistant Professor, Department of Forensic Medicine and Toxicology, Andhra Medical College / King George Hospital, Visakhapatnam, Andhra Pradesh.**ABSTRACT****BACKGROUND**

The objective of the study is to analyse and review the incidence of deaths due to hanging at Andhra Medical College mortuary, Visakhapatnam city.

MATERIALS AND METHODS

This is an analytical study of all the deaths due to hanging seen in the department of forensic medicine & toxicology, Andhra Medical College, Visakhapatnam city from January 2011 to December 2015.

RESULTS

A total of 8831 autopsies were done during the period. Seven hundred and sixteen (716) cases received by the mortuary were deaths due to hanging. Among them 377 cases were males and 339 cases were females. Majority of victims (67%) were aged between 21 to 40 years. Depression was the main motive for suicidal hanging accounting for 29%. Atypical hangings attributed for 83% of cases. Soft material was the commonest ligature material. Ligature mark was on and above the level of laryngeal prominence in 706 cases. Marital history, place of hanging, point of suspension, position of tongue and salivary dribbling are also ascertained.

CONCLUSION

This study highlights changing medicolegal scenario of opting hanging as commonest method of suicide and variations in presentation of hanging.

KEYWORDS

Hanging Deaths, Motive, Atypical, Soft Material, Suspension Point, Ligature Mark.

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BACKGROUND

Suicide is also now a major public health problem, as evident by the annual global mortality rate of 16 per 100,000 population or one death for every 40 seconds. It is predicted that by the year 2020 the rate of death will increase to one death for every 20 seconds.¹

There has been a significant increase of 15% in the suicides in the country during last decade (1999 to 2009).²

Persons have been found to resort to various ways and means to commit suicide ranging from ingestion of toxic substances like pesticides, herbicides, or immolation are being the preferred method for committing suicide in rural areas and in semi urban locales of developing countries. In developed countries attempts are by over dosage of prescription drugs and shooting to oneself. Hanging and

drowning being attempted equally among underdeveloped and developed nations.

In India statistics show that hanging is between 1/3rd to 1/2 of suicides among males and 18% of female suicides.³

Asphyxial deaths especially hangings can pose considerable difficulties for the forensic expert and investigator to distinguish between accident, suicide, or homicide, invariably though hanging is taken to be almost always suicidal unless proved contrary.

Failure to find a platform at a scene of hanging by complete suspension, Inaccessible point of suspension and presence of bondages are the occasions that raise suspicion. In these circumstances it is imperative for the autopsy doctor to take into consideration the positive points in favour, the scene proper, the background history or its absence and relevant circumstances while deciding manner of death.

MATERIALS AND METHODS

Study Design: A cross sectional analytical study.

Study Setting: King George Hospital Mortuary, Visakhapatnam, Andhra Pradesh.

Period of Study: January 2011 to December 2015.

Financial or Other, Competing Interest: None.

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Sample Size: All cases of hanging deaths autopsies during the study period i.e. Seven hundred and sixteen (716) cases.

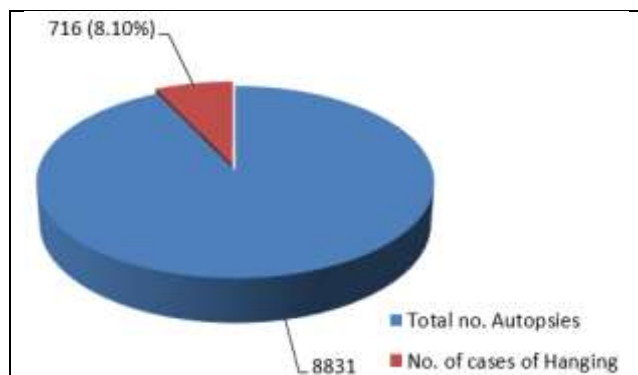
Detailed postmortem examinations were conducted in all cases of hanging, which included external and internal findings. The statistical analysis of these cases of hangings with regard to general incidence of age, sex, marital status, materials used for hanging, motive for suicide, location hanging, suspension point, salivary dribbling etc., were worked out.

Inquest reports, deceased relatives' statements, crime scene photographs and videos were also considered in some cases for ascertaining cause of death.

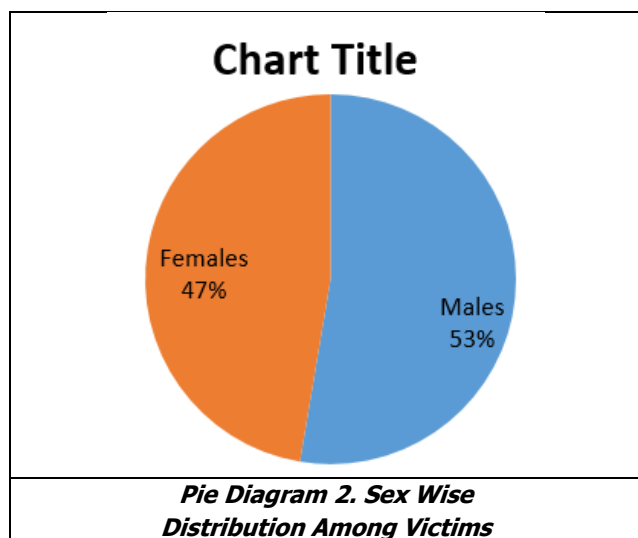
RESULTS

Year	No. of Autopsies	Hanging Deaths
2011	1670	135
2012	1780	142
2013	1848	146
2014	1786	144
2015	1747	149
Total	8831	716

Table 1. Total Autopsies vs. Hanging Deaths



Pie Diagram 1. Cases of Hanging Autopsied during Study Period



Pie Diagram 2. Sex Wise Distribution Among Victims

Age Range	No. of Cases	Percentage
1 to 10	0	0
11 to 20	107	14.94
21 to 30	315	43.99
31 to 40	168	23.46
41 to 50	88	12.29
51 to 60	36	5.03
61 to 70	2	0.28
Total	716	100

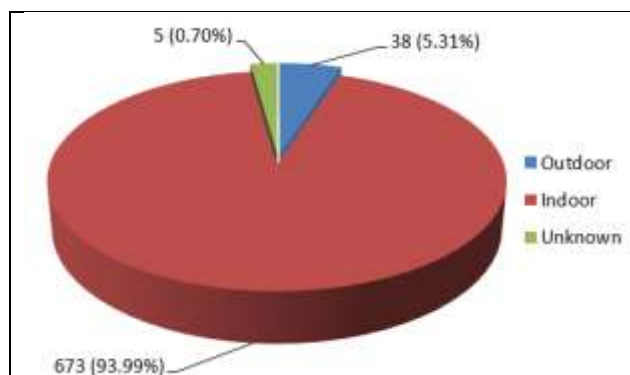
Table 2. Age Wise Distribution Among the Victims

Marital Status	Total	Percentage
Married	522	72.9%
Unmarried	171	23.88%
Unknown	23	3.21%

Table 3. Marital Status

Motive of Hanging	Total	Percentage
Depression	207	28.91%
Health Problems	164	22.90%
Family Problems Including Dowry Related Matters	150	20.94%
Financial Problems	114	15.92%
Others	32	4.47%
Unknown	49	6.84%
Total	716	100%

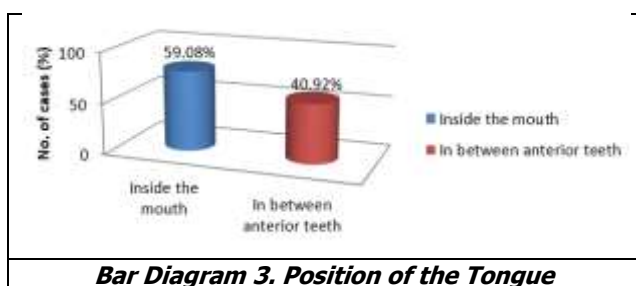
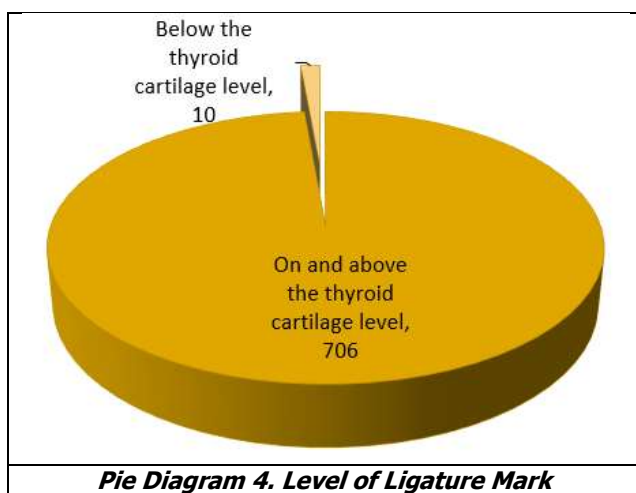
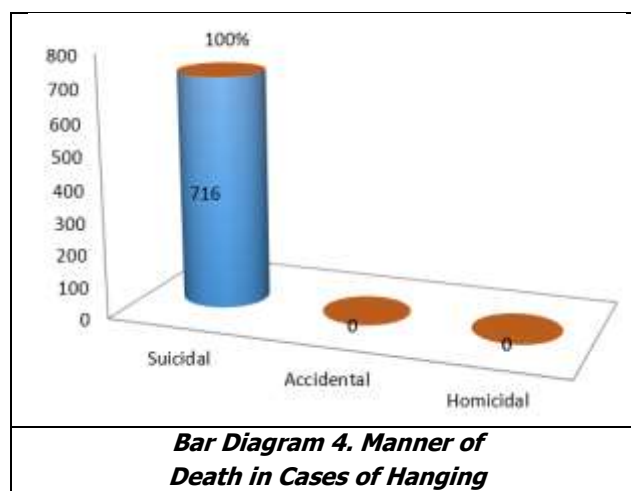
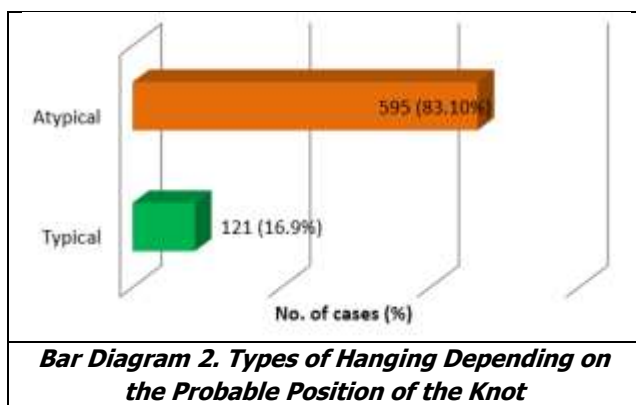
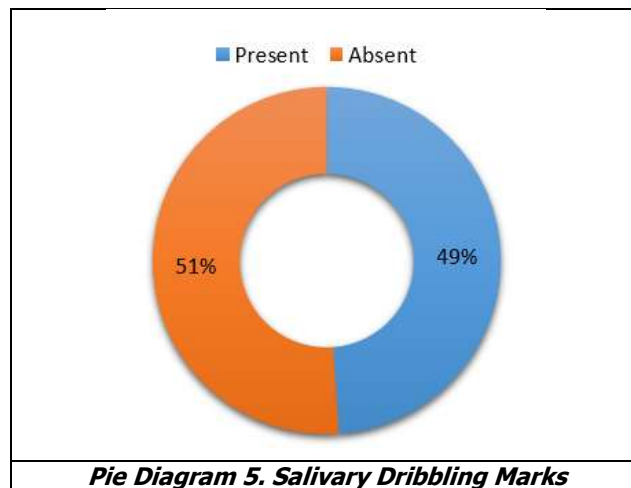
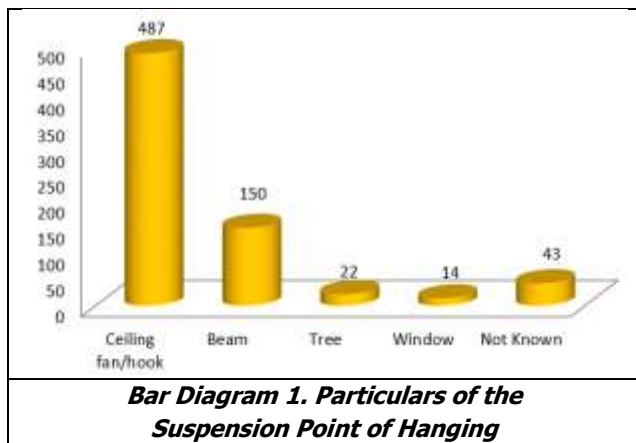
Table 4. Motive of Hanging



Pie Diagram 3. Place Wide Occurrence of Hanging

Ligature Material	Total	Percentage
Saree	288	40.22%
Chunni	193	26.95%
Rope	101	14.11%
Lungi	34	4.75%
Bed Sheet	24	3.35%
Others	33	4.61%
Unknown	43	6%
Total	716	100%

Table 5. Nature of Ligature Material Used



DISCUSSION

As shown in Table 1, During the 5-year study period a total of 8831 cases were reported of which 716 cases were deaths due to hanging. There is progressive rise in number of cases from 2011 to 2015.

Pie diagram 1 shows Out of a total of 8831 cases that had been autopsied in mortuary during study period, 716 cases (8.10%) were deaths due to hanging.

On sexual differentiation, males are 377 (52.65%) in number and females contributed for 339 (47.35%).

Table 2 depicts the details of age wise distribution of hanging cases. The outcome of this division highlights that maximum number of cases of hanging were reported in 21-30-year age group i.e. almost 44%, followed by 23% in 31-40 age group, 15% in 11-20 years and 12% in 41-50 age group. The least percentage of 5% was reported in 51-60 age group. The table also highlights that no hanging cases were reported between 1-10 age group and only 2 cases after 60 years. Similar data was also recorded and has corresponded with our study.^{4,5,6,7}

Analysis of Table 3 points that 72.9% of persons were married; 23.88% cases were unmarried and in 23 cases marital status remained unknown because of non-establishment of identity.

The statement named table 4 tries to bring out the various observations during this study to arrive at exact motive to end one's life. Various psychiatric disturbances

propelling the person towards suicide is dominated by depression, followed by emotional trauma, mental distress, helplessness & occasionally hysteria and it accounted for 29% of deaths followed by health, family and financial problems.

Pie diagram 3 details the place of occurrence of hanging deaths. It is exposed that majority of cases of hanging occurred in the confines of his/her home or any other place which is secluded or hidden from public view.

Table 5 demonstrates actual number of hanging deaths that have occurred with various ligature materials. In our study we have observed that saree is the main culprit amounting to 40% of the cases, followed by chunni and rope, which accounted to 27% and 14% respectively. Others column of 33 cases includes towel, door curtain, metal chain, shirt and muffler as ligature material.

Bar diagram 1 shows the particulars of suspension point of hanging. It was observed that commonly used suspension point of hanging was ceiling fan or fan hook amounting to 68% (487 cases) followed by beam of roof 21% (150 cases), both accounting for 89%. Other suspension peaks used are tree (22 cases) and window (14 cases).

Bar diagram 2 shows the types of hangings depending on the position of the knot of the neck. Out of 716 cases of hanging in this study, 121 cases showed that the knot was placed over the nape of neck i.e., 17% of cases were 'typical' hangings. The rest of the cases were atypical hangings as the knot was present at other locations other than the nape of neck. The results are tallying with other studies.^{5,8,9,10}

As shown in pie diagram 4, most frequent level at which ligature mark was found on front of neck in our study was on and above the thyroid cartilage level, amounting to 98.6%. In 1.4% cases it is below the thyroid cartilage level which is similar with other studies.^{6,11}

In bar diagram 3, it was noted that the tongue was found to be protruded at its tip and bitten or placed in between anterior/incisor teeth in 293 cases i.e., 40.92% and the tongue remained inside the mouth in 423 cases i.e., 59.08%. The 293 cases with protruded tongue included 21 decomposed cases where combined effect of hanging as well as decomposition can be considered.

Of the 716 cases, 51.12% (366 cases) did not show shows dribbling of salivary stains on the body of victim or his clothing and 48.88% (350 cases) show salivary stains. This shows deviation from other studies as presence of salivary dribbling marks is major percentage.

All cases reported during the study period are suicides. No other manners are reported.

CONCLUSION

There is a progressive rise in the number of hanging deaths year by year. Hanging deaths accounted for 8.10% of total autopsies.

Male, female ratio is 1.1:1. Most affected age group is 21-30 followed by 31-40.

Depression is the major contributor as motive for hanging.

Majority of cases confined to indoor place.

Soft ligature material is the main source of which saree dominated among all.

Commonly used point of suspension is ceiling fan/hook.

Atypical hangings are common types of hanging.

Level of ligature mark is on and above thyroid cartilage in most of the cases.

No protrusion of tongue in majority of cases.

Salivary dribbling marks/stains absent in majority of cases.

REFERENCES

- [1] World Health Organization. Mental health: suicide statistics. Suicide prevention and special programmes. WHO 2011.
- [2] National Crime Records Bureau- statistics. Ministry of Home Affairs, India.
- [3] Lyon IB, Gour SN. Lyons medical jurisprudence for India: with illustrative cases. 10th edn. Law Publishers 1953.
- [4] Meel BL. A study on the incidence of suicide by hanging in the sub-region of Transkei, South Africa. *J Clin Forensic Med* 2003;10(3):153-157.
- [5] Saini OP, Saini PK, Jain R, et al. Position of Knot in neck & relation with working hand in Cases of Hanging. *IJFMT* 2005;3(1).
- [6] Sharma BR, Harish D, Singh VP, et al. Ligature mark on neck: how informative? *JIAFM* 200;527(1):10-15.
- [7] Wyatt JP, Wyatt PW, Squires TJ, et al. Hanging deaths in children. *Am J Forensic Med Pathol* 1998;19(4):343-346.
- [8] Sharma BR, Sing VP, Harish D. Neck structure injuries in hanging--comparing retrospective and prospective studies. *Med Sci Law* 2005;45(4):321-330.
- [9] Naik SK, Patil DY. Fracture of hyoid bone in cases of asphyxial deaths resulting from constricting force round the neck. *JIAFM* 2005;27(3):149-153.
- [10] Sharma BR, Harish D, Sharma A, et al. Injuries to neck structures in deaths due to constriction of neck, with a special reference to hanging. *J Forensic Leg Med* 2008;15(5):298-305.
- [11] Naik SK. Obliquity vs. discontinuity of ligature mark in diagnosis of hanging - a comparative study. Anil Aggrawal's Internet Journal of Forensic Medicine and Toxicology 2006;7(1).