



Case Series

Exhumation: bridging doubt and justice – A case series on postmortem discoveries in Uttarakhand

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Abstract

Background: Exhumation is a legal process involving the unearthing of a buried body to ascertain the actual cause of death. In India, this practice is rare due to the predominance of cremation. This study examines three forensic exhumation cases, emphasizing their significance in uncovering concealed homicides.

Materials and Methods: A retrospective study was conducted at Government Medical College, Haldwani, analyzing exhumation cases from May 2023 to May 2024. Postmortem findings were reviewed to identify discrepancies in reported causes of death.

Results: The case series includes three instances where exhumation provided crucial forensic insights. In the first case, a 45-year-old woman initially declared dead due to cardiac arrest was exhumed following a family complaint, revealing skull fractures and intracranial hemorrhage consistent with a head injury. The second case involved a 27-year-old woman allegedly murdered and buried by her husband; her child's complaint led to exhumation, which confirmed head trauma and multiple injuries. The third case concerned a 14-year-old girl allegedly killed by her father and brother. Initially claimed to have died by hanging, exhumation revealed neck injuries indicative of throttling. The findings altered the cause-of-death determinations: cardiac arrest was reassessed as head injury and trauma in two cases, while hanging was reclassified as throttling in the third. Notably, all victims were female, differing from prior studies that showed a male predominance.

Conclusion: These cases underscore the critical role of exhumation in forensic investigations, particularly in revealing foul play. However, its effectiveness is hindered by social stigma, inadequate forensic training, and administrative challenges. Strengthening forensic protocols is essential to ensure justice in such cases.

Keywords: Cause of death, Concealed homicide, Cremation, Exhumation, Intracranial hemorrhages, Maggots, Postmortem examination.

Received: 27-05-2025; **Accepted:** 08-07-2025; **Available Online:** 09-09-2025

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1. Introduction

Exhumation is the legally sanctioned process of unearthing a buried body to determine the cause of death, collect crucial evidence, or verify other essential details, such as the deceased's identity or circumstances surrounding their demise.¹ This procedure is rarely conducted in India, primarily due to the widespread cultural tradition of cremation, which leaves little physical remains for forensic analysis. Only certain communities that practice burial are subject to exhumation when necessary.²

Exhumation is generally undertaken when no suspicions were raised at the time of death, leading to burial without a post-mortem examination. However, if new evidence later suggests foul play, authorities may order an autopsy to establish the true cause of death. Additionally, if an initial post-mortem is found to be inadequate, a second autopsy following exhumation may provide further insights.^{1,3}

Unlike some countries, such as France, Germany, and Scotland, where exhumation must be conducted within a specific timeframe, India imposes no statutory time limit for

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this process.⁴ In India, exhumation can only occur through a written directive issued by an executive or judicial magistrate, as per Section 176 of the Criminal procedure code (CrPC)¹ and Section 196 of BNSS.⁸

We present a series of cases involving medicolegal exhumation investigations where the deceased individuals were subjected to postmortem examination following suspicions raised by relatives or investigative authorities. In such instances of exhumation, arriving at a conclusive determination of the cause and manner of death necessitates a meticulous medicolegal investigation conducted by forensic pathologists in collaboration with law enforcement agencies; the importance of this multidisciplinary approach cannot be overemphasized. All cases discussed in this series were retrieved from the autopsy records of the Department of Forensic Medicine at Government Medical College, Haldwani, and its attached mortuary at Sushila Tiwari Hospital, Uttarakhand, India, during a one-year period (May 2023–May 2024). Confidentiality of the deceased and their families was rigorously maintained throughout the study.

2. Case Series

2.1. Case 1

A 45-year-old married female (for the last 22 years) with a history of family disputes for the last 2-3 years allegedly died due to cardiac arrest. She was consequently buried in a nearby graveyard in January 2024 by her husband. Following a complaint by the deceased's relatives, she was exhumed by the Nayab Tehsildar in March 2024 for a medicolegal autopsy.



Figure 1: The exhumed mummified body of case no. 1



Figure 2: Two linear fractures were noted over the right occipital region case 1

2.1.1. External general appearance

Mummification changes (Yellow-brown discolouration of the skin due to burial in hot and humid conditions for a long time) all over the body with skin stretched over the bony prominences. Skeletonization was present over the head, neck, face and left radius and ulna bones with overlying skin completely peeled off exposing underlying bones. A foul smell was perceived from the body with multiple adult-sized dead maggots and live maggots of varying sizes along with adult cockroaches, crawling all over the body.

External examination revealed multiple abrasions and contusions over the back and right thigh region, whose exact age could not be ascertained because of advanced decomposition and mummification changes.

On internal examination, an underscalp hematoma over the right occipital region along with 2 linear fractures over the right occipital region, placed horizontally was discovered, with infiltration of slight blood over fractured margins.

Brain matter showed reddish pink staining of greyish pultaceous material suggestive of antemortem intracranial hemorrhage, prominently over the right occipital region which thus established the evidence of Head injury.

2.2. Case 2

A 27 years old married female with a history of family disputes for the last 8-9 years was allegedly killed by her husband and buried roadside near their residence by her husband in May 2023. 2 months later, her child escaped and went to the police and filed a complaint against his father, following which the victim's body was exhumed by the Nayab Tehsildar in July 2023 for medicolegal autopsy.

2.2.1. External general appearance

The body was recovered in semi prone, right lateral position with both the knees and both the hip joints fully flexed suggestive of Postmortem flexing of the dead body to accommodate the dead body in a Bori (Sac) in which the body was recovered after exhumation. Adipocere formation was noted all over the body with whitish yellow crumbly fatty

mass present over the skin at places. Skeletonization was present over the head, neck, face and left lower humerus. The left ulna, left radius and left hand were absent. Right hand fingers, right foot and left foot showed liquefaction/ melting/ pulping due to excessive flexion. Sweetish ammoniacal smell was perceived from the body with scalp hairs peeled off with only a bunch of long hairs present loosely attached to the occipital region where slight scalp tissue was present.

External examination revealed multiple abrasions and lacerations over the right elbow, bilateral thighs and bilateral leg region, whose exact ages and dimensions could not be ascertained because of advanced decomposition and mummification changes.

On internal examination, an Underscalp hematoma over the left parieto-occipital and right frontal region suggestive of Antemortem overlying injury was discovered (exact dimensions, and type of injury could not be ascertained due to the absence of an overlying scalp).

Brain matter showed reddish pink staining of greyish pultaceous material, predominantly basal in distribution suggestive of Antemortem intracranial haemorrhage, which thus established the evidence of Head injury.

Multiple diffuse hematomas were observed over bilateral intercostal muscles and the mesentery corresponding to the right lobe of the liver.

2.3. Case 3

A 14-year-old girl with alleged history of murder by her father and brother was buried in May 2023 in a graveyard nearby. The body was exhumed a week later by the order of the magistrate following a complaint by the victim's uncle.

2.3.1. External general appearance

Blackish discolouration with skin slippage noted all over the body at places exposing pale areas. A foul smell was perceived from the body with live small maggots noted over the dead body over the neck, chest and external genitalia at places.

On external examination, a pale area over the front and lateral aspects of the neck on both sides was noted along with an abrasion over the frontal aspect of the neck and a contused swelling over the fronto-medial aspect of the left thigh region.

Internal examination revealed a hematoma of size 2cm x 1cm over strap muscles on the right side and a hematoma of size 3cm x 3cm over the left thyroid cartilage. On further dissection, hypermobility of hyoid bone at the junction of the body of hyoid bone and lesser cornu was noted bilaterally in an inwards direction and hypermobility of greater cornu of thyroid cartilage was noted over the left side in an inwards direction, with extravasation of hemolysed blood around

margins noted, thus implying on the fact that death was due to compression of neck (Most likely due to throttling).



Figure 3: Pale area over the neck of case no. 3



Figure 4: Hypermobility of hyoid bone in case no. 3.

Table 1: Showing difference of cause of death before exhumation

Case	Cause of death before exhumation	Cause of death after exhumation
45 y/o Female	Cardiac Arrest	Head injury
27 y/o Female	Cardiac Arrest	Head injury associated with Multiple injuries
14 y/o Female	Hanging	Throttling

3. Discussion

The present study observed a unique trend in gender distribution, with all three cases (100%) involving female victims. This contrasts with the findings of Suresh et al.⁵ and Gitanjali et al.,⁶ where male predominance was reported at 76% (28 cases) and 63.16% (12 cases), respectively. Similarly, Mohan MC et al. also reported a higher incidence among males. This discrepancy may be attributed to the limited sample size in our study, which was constrained by the shorter duration of data collection (one year).

Regarding age distribution, the cases in this study were evenly spread across different age groups: one case each (33.3%) in the 10–19 years, 20–29 years, and 40–49 years categories. In contrast, previous studies by Suresh et al. (32.4%, 12 cases), Gitanjali et al. (47.3%, 9 cases), and Mohan MC et al.⁷ reported the highest prevalence in the 20–29 years age group. This suggests a possible variation in the demographic profile of exhumed cases across different study settings.

Religious background also differed from prior studies. In our study, all three cases involved Muslim individuals, whereas studies by Suresh et al. (83.8%, 31 cases) and Gitanjali et al. (73.68%, 14 cases) reported Hindu predominance among exhumed individuals. This variation may reflect regional or cultural differences in burial practices, as exhumation is only applicable to communities that practice burial.⁶

In terms of burial location, 66.6% (two cases) were buried in a designated burial ground, while 33.3% (one case) was buried roadside. This is consistent with findings from Suresh et al., where the majority of cases (62.1%, 23 cases) were buried in burial grounds. The presence of roadside burials highlights the need for further investigation into unauthorized or unregistered burial practices, which may have forensic and legal implications.

Overall, while the findings of this study align with some aspects of previous research, the variations observed may be influenced by sample size limitations, geographic factors, and socio-cultural practices. Further large-scale studies are necessary to establish broader trends and enhance our understanding of exhumation cases in different regions.

4. Conclusion

The findings of this study highlight the critical role of exhumation in uncovering the true cause of death, emphasizing the need for thorough investigations into unusual deaths and burials by local authorities. In hilly rural regions, postmortem examinations often carry a social stigma, and the limited accessibility of police forces to remote areas allows many such cases to remain concealed. Furthermore, the widespread issuance of Medical certificates of cause of death (MCCDs) by inexperienced homeopaths and local doctors, along with the practice of assigning postmortem duties to inexperienced MBBS graduates, leads to many unnatural deaths being falsely classified as natural. The responsibility of overseeing exhumation cases is placed on Naib Tehsildars and Tehsildars, who are already burdened with administrative duties, making it difficult for them to ensure thorough investigations. Despite these challenges,

exhumation has proven to be a crucial tool in revealing the truth behind suspicious deaths. While societal stigma remains a barrier, the process of exhumation serves as a beacon of hope for victims and their families, ensuring justice and holding perpetrators accountable.

5. Study Limitations

1. It was a retrospective study for a span of only 1 year, so only 3 cases were included.
2. No comment on forensic entomology.

6. Recommendations

1. The government should implement strict rules to prevent fake MCCD which are commonly issued by quacks.
2. In hilly regions, the police should be given the authority to carry out exhumation due to less accessibility in such remote regions by the Magistrate.

7. Source of Funding

None.

8. Conflict of Interest

None.

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Cite this article: Khurana S, Dode PS, Hatwal P, Rawat V, Harsh. Exhumation: bridging doubt and justice – A case series on postmortem discoveries in Uttarakhand. *Indian J Forensic Community Med*. 2025;12(3):220–223.