

## ORIGINAL ARTICLE

## EXHUMATION: SOLVING MYSTERIES IN THE ABSENCE OF INITIAL POSTMORTEM

Omair Khan Jadoon<sup>1</sup>, Salma Shazia<sup>1✉</sup>, Maimoona Haroon<sup>2</sup>, Zainab Haroon<sup>2</sup><sup>1</sup>Department of Forensic Medicine, Ayub Medical College, Abbottabad-Pakistan<sup>2</sup>Women Medical College, Abbottabad, BBS Hospital Abbottabad-Pakistan

**Background:** Stories of lives lived, unsolved mysteries, and undiscovered history are all hidden beneath the surface of the ground. Exhuming human remains is a voyage into the core of human existence, where the buried whisper their truths to the present. It is more than just a scientific procedure. This study was conducted to assess the reason of exhumation in cases where the initial postmortem was not performed. **Methods:** This retrospective study was conducted from August 2021 to August 2024. A total of 27 cases were studied at Ayub Teaching Hospital and Benazir Bhutto Shaheed Hospital, Abbottabad, under the supervision of the Forensic Medicine Department, Ayub Medical College. Data were collected and analyzed using Microsoft Excel. The findings were tabulated as frequencies and percentages. **Result:** Among 27 autopsy cases, the majority involved individuals aged 21–30 years. Most of the autopsies were of male. Determining the cause of death was the primary reason (47%), while the absence of an initial postmortem accounted for 19% of cases, highlighting procedural gaps. Three out of nine cases were confirmed as a natural death, while the remaining six involved unnatural causes. **Conclusion:** Exhumation serves as a vital tool in forensic investigations, particularly in cases where initial postmortems were not conducted.

**Keywords:** Exhumation; Postmortem; Forensic investigations

**Citation:** Jadoon OK, Shazia S, Haroon M, Haroon Z. Exhumation: Solving Mysteries in the Absence of Initial Postmortem. J Ayub Med Coll Abbottabad 2024;36(4 Suppl 1):944–7.

**DOI:** 10.55519/JAMC-S4-14152

## INTRODUCTION

The term ‘exhumation’ is derived from the Latin ‘ex’, meaning ‘out of,’ and ‘humus’, meaning ‘earth.’ Exhumation literally refers to the act of “taking out of the earth.” It typically involves the removal of human remains for various purposes.<sup>1,2</sup>

Exhumation refers to the process of retrieving a corpse from its resting place, whether to reinter it elsewhere or to dispose of it differently, such as through cremation. The remains could belong to a deceased person, a stillborn child, or a fetus. Exhumation may also be performed to determine the cause of death, identify the deceased, or fulfill a request by family members when the earlier postmortem was not conducted.<sup>3,4</sup>

In some cases, either the court or the deceased’s close relatives may request an exhumation. Legal challenges may arise when relatives seek to exhume a body as per court instructions. Exhumation is more than a scientific procedure; it reveals hidden truths about lives, mysteries, and histories.

Stories of lives lived, unsolved mysteries, and undiscovered history are all hidden beneath the surface of the ground. Exhuming human remains is a voyage into the core of human existence, where the buried whisper their truths to the present. It is

more than just a scientific procedure.<sup>5,6</sup> Even in mass disasters, where multiple bodies are buried, exhumation is used to collect relevant data for comparison with available antemortem records to establish individual identities.<sup>7</sup>

Exhumation is a powerful forensic tool for uncovering hidden details. It frequently plays a crucial role in resolving complex legal and medical issues. Whether revisiting unresolved cases, probing suspected foul play, or confirming identities, forensic professionals rely on exhumation to obtain critical evidence that stands the test of both science and law

When no initial postmortem is conducted, exhumation becomes essential for determining the cause of death, resolving legal queries, or establishing identity. Advances in forensic science, such as DNA analysis and isotopic profiling, have further enhanced the utility of exhumation, allowing investigators to extract meaningful data from remains even decades after burial.

Exhumation is a painstaking process that calls for accuracy, knowledge, and adherence to legal and ethical restrictions. The importance of this approach has increased due to advancements in forensic science, such as DNA analysis and isotopic profiling, which allow investigators to glean

important information from remains even decades after they have been buried.

Exhumation is a process that combines forensic accuracy, historical interest, and a deep regard for the deceased, whether it is used to solve cold cases, rewrite historical accounts, or unearth lost identities. This technique connects the domains of science and humanity, providing solutions to issues that time sought to bury in everything from ancient burial sites to the courts of justice.

The time limit in which exhumation is done is different for different countries depending on their respective laws. For example, the exhumation time limit in France is 10 years after that they do not allow exhumation of any human body irrespective of the cause of exhumation, similarly the time limit for exhumation in Germany is 30 years. Adding to these there is no time limit of exhumation in India and Pakistan. In Pakistan exhumation is performed by the order of magistrate under the Criminal Procedure Code (Cr.P.C) under section 176 clause 2 and Police rules 1934.<sup>8</sup>

Legally exhumation is needed to be done when there is a need of medico-legal investigation or if postmortem of the deceased is not performed early. Modern forensic techniques, such as stable isotope analysis, advanced DNA testing, and digital forensic reconstruction, have improved the success rates of exhumation-based investigations.<sup>9</sup>

These tools can sometimes compensate for the limitations posed by decomposition. Dictates of law says that any medical officer of designated government hospital is authorized but still it needs careful precaution that he should know the details of the exhumation and has some prior knowledge of the event.<sup>10</sup> In many cases the 1st autopsy is challenged and the relatives of the deceased were not satisfied with the initial postmortem findings that warrants the need of the 2nd autopsy or re autopsy in the form of exhumation.<sup>11</sup> There are several reasons why an initial postmortem examination might not be performed which include Natural Death Assumption, due to Cultural or Religious Sensitivities that prevented initial postmortem, Administrative Oversight and or New Evidence or Allegations.<sup>12</sup>

The process is made by the authorized medical officer and the doctor conducting the process is supposed to know the procedure of conducting the exhumation, method to collect the specimens distinguishing the putrefactive process and artifacts from normal natural process and medico legal important findings. The doctor must follow ethical limits and can manage the dead body and dispose off as per norms and religious values.<sup>13-15</sup> This study was conducted to assess the reason of exhumation in cases where the initial postmortem was not performed.

## MATERIAL AND METHODS

This cross-sectional study was conducted between August 2021 to August 2024 and total of 27 cases were studied in Ayub Teaching Hospital and Benazir Bhutto Shaheed Hospital, Abbottabad under supervision of Forensic Medicine Department, Ayub Medical College. Permission and ethical approval were taken from the hospital and the concerned authorities. Data were collected on the performer's from the autopsy records. Initial inquest/investigations by police, autopsy/exhumation document, demographic data, conflict with police report, and conclusion of exhumation were studied in detail. Data was recorded and analyzed on Microsoft excel. Data were tabulated as frequency and percentage were calculated.

## RESULTS

The mean age of the deceased at the time of death was 22.34±4.81 years. Most of the deceased were between the age groups of 21–30 years 16 (59.3%). Out of the 27 autopsies, 19 (70.4%) were male and 8 (29.6%) were females. As shown in the table 1, the major cause of death was firearm in 8 (29.6%) followed by strangulation in 7 (25.9%).

Of the total 27 exhumations done, majority 11 (47%) exhumations were done to know the cause of death whereas, 9(33.3%) bodies were exhumed as they had no initial autopsy done. The major 5 (55.5%) cause of the 9 bodies with previously no autopsies done was due to cultural or religious reasons followed by 4 (44.5%) new evidence that were presented to court of law which ordered exhumation. Three out of nine cases that were exhumed and in which initial autopsy was not performed, were confirmed as a natural death, while the remaining six involved unnatural causes

**Table-1:**

Cause of Death	Frequency	Percent
Firearm	8	29.6
Sharp weapon	5	18.5
Blunt weapon	3	11.1
Poisoning	2	7.4
Hanging	2	7.4
Strangulation	7	25.9
Total	27	100.0

**Table-2: Purpose for doing Exhumation**

S.NO	REASON	Cases (%)
1	Initial Postmortem not done	9 (19%)
2	Re autopsy	3 (15%)
3	Establish identity of the victim	4 (19%)
4	To know Cause of death	11 (47%)

## DISCUSSION

Most human civilizations consider exhumation a highly undesirable practice. However, it is usually

carried out in cases where the cause of death is unknown, a postmortem of the deceased was not performed, there is suspicion of foul play, or to identify the body. Determining the cause of death is the leading reason for exhumation. The second most common reason is the absence or delay of a postmortem examination. In such instances, the family of the deceased may later seek answers about what their loved one experienced, prompting an exhumation for a postmortem to be conducted.<sup>16</sup>

Despite being viewed as offensive and objectionable in many cultures and religions, exhumation is still performed. Globally, medico-legal purposes remain the most common reason for exhumation. Studies indicate that determining the cause of death accounts for a significant proportion of cases. In this study, it was found to be the leading reason, comprising 47% of cases, consistent with findings from another research.<sup>17</sup>

The second most common cause of exhumation in this study involved cases where an initial postmortem was not conducted which was 19%, necessitating an exhumation later. Historically, notable individuals have occasionally been exhumed to provide historical context. Numerous mummies from Ancient Egypt, for instance, have been removed for research and public exhibition. Additionally, archaeologists use exhumation to gain insights into past human societies.<sup>18</sup>

On the other hand, some cultures strictly prohibit exhumation. For example, Jewish law forbids the practice. In the present study, the highest frequency of exhumation cases occurred in individuals aged 21–30s years, similar to a study in Lahore, which reported the majority of cases in individuals aged 21–30 years.<sup>19</sup> However, this study differs in findings by Khan *et al.*, where the most common age group was 31–45 years.<sup>20</sup>

In Pakistan, the second most common reason for exhumation is the absence of a postmortem examination before burial. In many suspicious death cases, exhumation is ordered to investigate the cause of death, as seen in a writ petition in the Lahore High Court. In that instance, the exhumation revealed the death to be homicidal. One particular case involved the exhumation of a 19-year-old girl following complaints by villagers about a suspicious death.<sup>21,22</sup> The investigation determined the cause of death to be a homicidal cut throat, later confessed by the assailant. This highlights that while exhumation is sometimes necessary, it underscores the importance of conducting proper investigations and procedures at the outset.<sup>23</sup>

## CONCLUSION

Exhumation in cases where no initial postmortem was conducted serves as a critical tool in the justice system.

While fraught with scientific, legal, and emotional challenges, it underscores the importance of thorough initial investigations. Proper protocols, timely intervention, and advanced forensic tools can ensure that the deceased's voice is heard, even years after their death, offering closure to families and ensuring justice prevails.

## AUTHORS' CONTRIBUTION

OK, SS, MH, ZH: Concept, write-up, proof reading.  
OK, SH, MH: Data collection, data analysis, data interpretation...

## REFERENCES

- Mansegosa DA, Giannotti PS, Marchiori JI, Jofré FN, Aballay FH, Fernandez Aisa C. The story of a homicide: the location, exhumation, and multidisciplinary analysis of a clandestine burial. *Forensic Sci Int Rep* 2021;3:100165.
- Klepinger LL. *Fundamentals of Forensic Anthropology*. John Wiley & Sons. 2006; p.1–185.
- Jilala W, Russa D, Ng'walali P, Balandya E, Lwoga N. Forensic exhumation and human remains identification: A gap between the Inquest Act 1980 and medico legal education in Tanzania. *Forensic Sci Int Synerg* 2022;5:100276.
- Exhumation: Legal and Practical Aspects. In: Baldwin HB, May CP, editors. *Encyclopedia of Forensic and Legal Medicine*. 2<sup>nd</sup> ed. 2016; p.453–5.
- Blau S, Hill A, Briggs CA, Cordner SM. Missing persons-missing data: the need to collect antemortem dental records of missing persons. *J Forensic Sci* 2006;51(2):386–9.
- Adams BJ, Byrd JE, editors. *Recovery, analysis, and identification of commingled human remains*. Springer Science & Business Media. 2008; p.1–374.
- Gonzales AR, Henke TA, Hart S V. *Mass Fatality Incidents: A Guide for Human Forensic Identification*. U.S Department of Justice office of Justice Programs. 810 Seventh Street N.W Washington, DC 20531. 2005; p.1–71.
- Javed MW, Karem N. Exhumation and Its Procedural Aspects in Pakistan. *J Law Soc Stud* 2021;3(1):19–27.
- Ammani J, Sudheer S, Roopesh T. Analytical study of exhumations and its medico-legal importance. *Int J Contemp Med Res* 2016;3(4):972–5.
- Jilala WA. A Scientific investigation report on exhumation, postmortem and identification of the murdered pastor. *Forensic Sci Int Rep* 2021;3:100203.
- Bardale R, Ambade V, Dixit P. Exhumation: a 10-year retrospective study. *J Indian Acad Forensic Med* 2012;34(2):143–5.
- Exhumation of human remains. [Internet]. [cited 2024 Aug 1]. Available from: <https://www.health.nsw.gov.au/environment/factsheets/Pages/exhumation.aspx>.
- Jilala W. Challenges in identification of exhumed commingled human remains in Tanzania: a case of three missing children. *Forensic Sci Int Rep* 2021;4:100230.
- Guimarães MA, Francisco RA, Evison M, Iwamura ESM, Machado CEP, da Silva RHA, *et al*. Procedural and political aspects of forensic exhumation in Brazil. *Hum Remains Violence Interdiscip J*. 2017;3(1):37–51.
- Busuttill A, Keeling J. *Paediatric Forensic Medicine and Pathology*, 2nd ed. Hoboken: Taylor and Francis. 2008; p.485.
- Albano GD, Zerbo S, La Spina C, Midiri M, Guadagnino D, D'Anna T, *et al*. Toxicological Analysis in Tissues Following Exhumation More Than Two Years after Death (948 Days): A Forensic Perspective in a Fatal Case. *Toxics* 2023;11(6):485.

- 17 Humayun M, Khichi ZH, Chand H, Khan O. Exhumation--A Key To Provide Justice To Victims Of Homicide: Situation In Larkana And Sukkur Divisions . J Ayub Med Coll Abbottabad 2010;22(1):168–70.
- 18 Akhiwu WO, Nwafor CC. Exhumations: rarely done procedure but useful in many circumstances—a review of 47 cases in Nigeria. Egypt J Forensic Sci 2019;9:1–9.
- 19 Butt MK, Mariam Arif M. Exhumation-Can Dead Tell Tales?. J Fatima Jinnah Med Univ 2018;7(4):421.
- 20 Khan MY, Jan A, Munawar AZ, Mughal MI. Frequency of Negative Autopsy and their Demographic Evaluation at Khyber Medical College, Peshawar. J Ppstgrad Med Inst 2007;21(2):132–5.
- 21 Hc Jd A 38 Judgment Sheet In The Lahore High Court, Bahawalpur Bench, Bahawalpur. Judicial Department Writ Petition No.2628 Of 2022 Uzma Saeed. Vs. The State And Eight Others. [Internet]. [cited 2024 Aug 1]. Available from: <https://sys.lhc.gov.pk/appjudgments/2022LHC5138.pdf>
- 22 Khurshid A, Ahmad H, Jaffry AA, Khurshid M, Ali G. A homicide in disguise: How the autopsy dug up clues. Cureus 2022;14(5)e24691.
- 23 De Matteis M, Giorgetti A, Viel G, Giraudo C, Terranova C, Lupi A, *et al.* Homicide and concealment of the corpse. Autopsy case series and review of the literature. Int J Legal Med 2021;135:193–205.

*Submitted: March 6, 2024*

*Revised: October 14, 2024*

*Accepted: November 2, 2024*

**Address for Correspondence:**

**Dr. Salma Shazia**, Department of Forensic Medicine, Ayub Medical College, Abbottabad-Pakistan

**Email:** [salmahrn@yahoo.com](mailto:salmahrn@yahoo.com)