

Forensic Investigations in Cases of Human Rights Violations: Humanitarian and Legal Procedure

Danijela Bubanja-Petrović¹, Mirjana Tanić Slavić², Miroslav B. Milošević³

¹ MD, Health Center "Dr. Nika Labović" Berane, Montenegro, ² MD, Health Center Kosovska Mitrovica, Serbia, ³ Assistant, Faculty of Medicine, University of Priština, with temporary seat in Kosovska Mitrovica.

How to cite this article: Danijela Bubanja-Petrović, Mirjana Tanić Slavić, Miroslav B. Milošević. Forensic Investigations in Cases of Human Rights Violations: Humanitarian and Legal Procedure. Indian Journal of Forensic Medicine and Toxicology/Volume 19 No. 4, October-December 2025.

Abstract

The aim of this paper is to explore the procedures and basic principles of forensic investigations related to mass murders and extrajudicial executions, including forensic medicine and anthropology, as well as the importance of exhumations in the context of human rights violations. Forensic work in these cases is crucial for training young professionals and strengthening justice and transparency in the investigative process. Investigations of mass graves and crimes concern not only the former Yugoslavia but also global examples, including cases in South America, Iraq, and Ukraine. This paper focuses on specific stages of the investigation: preliminary investigation, archaeological excavation, and identification of remains. The investigation must be carefully organized, with adequate protection for witnesses and investigators. Forensic experts must be trained and prepared to deal with the ethical and legal dilemmas that may arise during these complex processes. It concludes that, despite different geopolitical contexts, minimum standards for exhumation must be respected, and the families of missing persons should be provided with accurate information in accordance with human rights.

Keywords: mass murders, mass graves, forensic medicine, exhumation, human rights

Introduction

Forensic investigation, particularly in the context of mass killings and extrajudicial executions, is a critical aspect of investigating war crimes and human rights violations. These investigations serve a dual purpose: to provide justice to the victims and their families, and to identify those responsible for the crimes, thereby contributing to the process of peace and justice in post-conflict societies. Forensic investigations, including forensic medicine and

anthropology, play a key role in these processes, offering objective evidence that is crucial for both legal and humanitarian outcomes.

This paper will discuss the fundamental principles of conducting forensic investigations, as well as the specifics related to the exhumation and examination of human remains. It will also address the challenges that arise during these investigations and emphasize the importance of cooperation between experts from various fields. In this context, the paper will examine

Corresponding Author: Danijela Bubanja-Petrović, MD, Health Center "Dr. Nika Labović" Berane, Montenegro.

E-mail: drdanijelabubanjapetrovic@gmail.com

Submission date: April 17, 2025

Acceptance date: May 18, 2025

Published date: October 13, 2025

This is an Open Access journal, and articles are distributed under a Creative Commons license- CC BY-NC 4.0 DEED. This license permits the use, distribution, and reproduction of the work in any medium, provided that proper citation is given to the original work and its source. It allows for attribution, non-commercial use, and the creation of derivative work.

examples of international forensic investigations and the role of local and international authorities in ensuring the safety and justice of victims.

Forensic Investigations in Mass Murders

Forensic investigations into mass killings during war and armed conflicts should not be limited to the former Yugoslavia. A key example of an international forensic investigation is the investigation into the Katyn Forest massacre during World War II, when Soviet forces executed a large number of captured Polish army officers.^{1,2} After the end of World War II and during the Cold War, international forensic investigations were nearly nonexistent until the 1980s. During this time, a number of organizations emerged, such as the Argentine Forensic Anthropology Team (EAAF) in South American countries, and in the USA under the auspices of Physicians for Human Rights (PHR) and the American Academy for the Advancement of Science (AAAS).³

These and numerous other forensic teams have conducted dozens of international investigations, including exhumations, in regions such as the former Yugoslavia, Croatia, Bosnia and Herzegovina, Kosovo, Iraq, and more recently in Ukraine.^{1,4,5}

Criminal and/or humanitarian investigations commonly begin in one of the following situations:^{6,7}

After the murders have been committed, when it is necessary to send a specialized team to a specific area to carry out an investigation (collecting testimonies, talking to relatives of victims, scouting burial sites, etc.). During this period, it is possible that access to certain areas may be dangerous for team members. Additionally, if the country where the incident occurred has a functioning justice system and forensic experts, an investigation may already be underway in that area.

When a mass grave or a site of hidden burial (disposition of mortal remains) is accidentally discovered, most often in the post-conflict period, and the presumed incident that led to the deaths occurred relatively long ago.

When a Truth (and Reconciliation) Commission or investigative and judicial bodies initiate an investigation, usually after the establishment of new authorities following the end of the conflict.

Finally, much less frequently, the families of missing persons themselves initiate the exhumation without the help of authorities or the support of experts.

In any of the above situations, forensic medicine specialists, anthropologists, and archaeologists assist with exhumations and the examination of remains. This ensures the adequate collection of objective evidence in the investigation process, which, among other things, contributes to the realization of the right of families of missing persons to find out, that is, to receive appropriate information about their missing relatives.⁸

However, very often such incidents occur in underdeveloped countries and remote areas, which makes forensic investigations extremely difficult. Therefore, there is no single approach to these investigations (for example, the areas of the former Yugoslavia and the Democratic Republic of Congo or Rwanda), but each investigation needs to be defined in accordance with the specific circumstances and context.

Nevertheless, it is essential to adhere to certain minimum standards when exhuming and examining human remains. Ideally, archaeologists should be engaged for the exhumation. In other cases, when the excavation of human remains is assisted by, for example, firefighters, police officers, or volunteers, there is a risk that certain evidence will be destroyed, or that its collection and preservation will be missed. In such situations, when archaeologists are unavailable, it is necessary to provide those carrying out the excavation with basic information about the process and working methods.^{9,10}

It is much more dangerous to leave the examination of exhumed remains to insufficiently trained, and especially unqualified, individuals. Therefore, the general recommendation is not to perform exhumations or, if possible, to preserve the bodies until appropriate experts are available.

Considering the psychological, legal, political, economic, and humanitarian aspects of exhumations, the identification of human remains, if possible, is an indispensable starting point for any investigation. What may, at first glance, appear to be a purely scientific and technical undertaking can often take

on ambiguous dimensions, frequently involving unexpected ethical dilemmas. It is therefore essential to raise these issues with the authorities (local or international) conducting the exhumation process before it even begins.¹¹

In many situations, especially when United Nations missions request investigations, it is not clear from the outset whether the process will be part of a judicial investigation in accordance with criminal law, or whether it is simply a humanitarian operation to exhume remains. It is also important to remember that if exhumations are carried out in a territory under the mandate and activities of international organizations, local authorities and investigative bodies should always be involved, especially if these cases are to be prosecuted before domestic courts. It is essential that the UN mission takes these issues into account before sending a team of forensic experts to a particular area. Additionally, it is necessary to define other vital aspects of the investigation, such as securing evidence and ensuring its continuity, controlling the areas where the remains are buried, and determining whose jurisdiction the remains fall under after exhumation.^{8,12}

It is not always the case that the goals of the investigation align with the expectations and wishes of the families of missing persons. Therefore, it is very important to understand the wishes of the families of missing persons, and it is unacceptable to support unrealistic expectations, especially regarding the possibility of identifying all exhumed remains, or that all responsible individuals will be identified and brought to justice.

It is also important to remember that sometimes it is not possible to fully apply all phases of conventional criminal investigations in contexts where human rights violations have occurred, and that certain cultural and religious specificities often need to be taken into account.

Stages in the investigation

Every investigation necessarily consists of the following three phases:^{7,9,10,11}

1. Preliminary investigation: Interviews with witnesses, family members of missing persons, government officials, etc. The aim is to collect and analyze any available

documents related to the specific event being investigated. It is also crucial to understand the relevant local context (e.g., ethnic, religious, and political relations in the community) and the dynamics of the conflict itself. A database is usually created at this stage to facilitate later verification of the data and to develop certain hypotheses about the case.

2. Archaeological investigation: This phase includes a visit to the possible burial site of the remains, interviews with witnesses to the burial, the actual excavation of the remains and other associated evidence, and the preparation of appropriate documentation.
3. Immediate examination of exhumed remains and necessary laboratory analysis to determine the cause of death and make an identification.

It is important that the individual phases take place in the specified order, namely, before the excavation itself, appropriate assumptions for identification must be made, because remains cannot be identified if relevant information is missing. This is sometimes, even very obviously, not sufficiently addressed by the authorities ordering the exhumation.^{13,14}

Before a team of forensic experts is sent to the field, these three aspects need to be clearly defined, especially with regard to the following:

Time: Carrying out a preliminary or detailed forensic investigation requires time and good organization. Therefore, it is not advisable to send forensic experts to the field for only a few days, as such results will not be satisfactory.

Security: The safety of witnesses, the investigation team, and the excavation site itself must be ensured. In situations where investigations are carried out at the request of the UN, peacekeepers provide security for the participants and the site. It is not uncommon (especially when investigations are carried out in remote regions) that, after the conclusion of investigations and the withdrawal of security, families and witnesses—especially those who have provided assistance to the investigation—are subjected to pressure and intimidation by perpetrators, who are often nearby.^{15,16}

Logistics: Before the forensic team begins its work, certain issues must be resolved, such as transportation to the excavation site, means of communication, provision of water, accommodation for team members, as well as the conditions under which the exhumed remains will be examined and stored before and after the examination. Additionally, it is necessary to ensure appropriate conditions for the storage of evidence collected during the investigation.¹⁵

In order to achieve the best possible results and save time and resources, it is always advisable to send a preliminary forensic mission to gain insight into the situation on the ground. During the duration of this mission, usually over a period of two to three weeks, the following activities will take place:^{17,18}

- Meeting with team members, collecting all available reports and documents about the event under investigation, and making logistical and security preparations in order to visit the site and determine the goals or tasks of the investigation.
- A visit to the area where the investigation will be conducted, during which interviews will be conducted with family members of the missing persons in order to collect the data necessary for the identification of the remains. It is essential to interview the people who directly carried out the burial, visit the burial site itself, and create a map-sketch of the site. Test trenches (probes) should be opened at the site to check whether there are any remains. Additionally, the necessary equipment for the upcoming work should be determined.
- Contact local experts to determine if they can participate in the investigation, verify their level of expertise and training, and make arrangements for future training, if needed.
- Preparation of a report on the current situation and recommendations for future action.

Once all of this is done, the authorities must determine whether a detailed forensic investigation is necessary to properly exhume and examine the remains, with as little damage as possible.¹⁹

Therefore, a preliminary forensic mission can only provide a small amount of data that can corroborate

or refute the data collected through testimony. For example, if, according to witnesses, 500 people were killed in one incident, the preliminary forensic investigation will determine whether there are burial sites. One or two graves will be opened to check whether they contain remains, whether the people were buried in civilian or military clothing, and based on this, the age and gender of the victims, injuries, etc. At this stage, this is sufficient, since later, during a detailed forensic investigation, the graves will be fully opened, and the remains will be examined and analyzed, which will take considerably more time and be done in a more exact manner.^{20,21}

It is important to remember that a detailed forensic mission is a complex operation that also includes appropriate elements of logic. This phase will depend largely on the condition of the remains.

For example:

A) Recent murders: most bodies do not yet show pronounced cadaveric changes, soft tissues are still present, and it is necessary to have an appropriate autopsy room with refrigerators for storing the remains.

B) Older cases: the bodies are completely skeletonized, so there are no particular risks.

To illustrate, for example, to exhume a mass grave containing 20 people killed about a month before burial (i.e., bodies with preserved soft tissues), a six-member expert team would need at least ten working days. Forensic investigation does not only involve exhuming and counting bodies. Forensic or forensic investigations of mass graves are complex operations carried out as part of or for the purposes of a legal investigation into an event that resulted in the death of a large number of people in the context of armed conflict or internal violence.

In addition, forensic investigations constitute a significant element in the process of identifying human remains. In practice, even in the work of international teams, there are known cases in which the legal aspect of the investigation was given priority over the humanitarian aspect, which significantly affected the process of identifying remains and clarifying the fate of missing persons in connection with armed

conflicts and situations of internal violence. By acting in this way, forensic experts, or rather, primarily the organizers and leaders of expert teams, fail to make adequate efforts to ensure that the families of the missing receive timely and appropriate information about the fate of their missing members.²²

It is important to remember that the International Committee of the Red Cross promoted the concept of the “right” of families to know the fate of their missing members as early as 2003. In addition to bringing to justice those responsible for the deaths of people in armed conflicts and situations of internal violence, this is also an important aspect of the approach to investigations.

Mapping

Open-source investigations and the mapping of their findings are regularly used in the context of human rights as a means of protection and monitoring justice.²³ Mapping projects (such as the Atlas of Environmental Justice²⁴) or the Bitter Lands mass grave mapping project²⁵ often aim to address pressing societal challenges. Increasingly, principles and guidelines for good provenance and human rights governance are being developed in the context of other digital documentation efforts.^{3,26}

Additionally, the question of the validity of open-source mapping, where content is publicly available, may not apply in all contexts. This question is particularly pertinent in the context of mass graves, as they can be vulnerable crime scenes. For example, in ongoing criminal investigations, it becomes clear that it is best to keep the locations of such sites secret to avoid exposure, protect families of the missing, and prevent witnesses from being subjected to assault, abuse, or harassment.

Case Studies: Forensic Science in the Service of Justice in Eastern Europe

The application of forensic science in investigating mass killings and human rights violations has become a crucial tool in post-conflict societies across Eastern Europe. The following two cases illustrate how forensic methods have contributed to victim identification, fact-finding, and the pursuit of justice.

The Vukovar Case, Croatia (1991)

One of the most well-known examples is the mass grave discovered at Ovčara, near Vukovar, where over 200 prisoners of war and civilians were executed following the fall of the city in November 1991. After the war, in cooperation with the International Criminal Tribunal for the former Yugoslavia (ICTY), an extensive exhumation and forensic investigation was conducted. Forensic teams applied methods of forensic anthropology, ballistics, and DNA profiling to identify the victims and establish causes of death. This evidence proved crucial in the prosecution of those responsible and represents one of the earliest instances of the systematic use of forensic science in international criminal justice.^{27,28,29}

The Kosovo Case (1999 and aftermath)

Following the armed conflict in Kosovo (1998-1999), numerous mass graves, primarily of civilian victims, were uncovered. The International Commission on Missing Persons (ICMP), in collaboration with UNMIK and other organizations, launched a major effort to exhume and identify the remains. Forensic experts conducted large-scale DNA analyses, enabling the successful matching of human remains with the families of the missing. In addition to individual identification, these forensic investigations played a vital role in collecting evidence for legal proceedings and documenting patterns of international humanitarian law violations. Thus, forensic science served not only as a tool for justice but also for remembrance and reconciliation within the affected communities.^{30,31,32}

These cases demonstrate how theoretical and methodological frameworks of forensic science can be applied in practice, particularly in the context of transitional justice. They also highlight the importance of interdisciplinary cooperation among legal experts, anthropologists, biologists, and international institutions in establishing truth and accountability.

Conclusion

Forensic investigation of mass murders and human rights violations is a key aspect in the process of uncovering the truth and securing justice for victims and their families. Exhumations and the analysis

of human remains must be carefully organized, adhering to the highest professional and ethical standards to ensure the accuracy and reliability of the collected evidence. Moreover, such investigative actions often require a multidisciplinary approach involving forensic medical experts, anthropologists, archaeologists, legal professionals, and cooperation with both local authorities and international organizations. During the exhumation process, it is essential to consider not only the legal aspects but also the humanitarian ones, including the families' right to learn the fate of their loved ones. Focusing the investigation on the protection of human rights and ensuring timely and reliable information about the fate of the missing is a necessary step toward a responsible and just investigative process.

Conflict of interest: None

Source of funding: None

Ethical clearance: Not applicable as it is a systematic review without the involvement of human or animal subjects.

References

1. Bass WM. Human Osteology. 3rd ed. Columbia: Missouri Archaeological Society; 1987.
2. Camps FE. Legal Medicine. London: Baillière Tindall; 1980.
3. American Association for the Advancement of Science (AAAS). Location-based data in crisis situations: Principles and guidelines. 2019. Available at: https://www.aaas.org/sites/default/files/2019-04/VGI%20Principles%20and%20Guidelines_FINAL.pdf
4. Stover E, Haglund WD, Samuels M. Exhumation of mass graves in Iraq: considerations for forensic investigations, humanitarian needs, and the demands of justice. *JAMA*. 2003;290(5):663–666. doi:10.1001/jama.290.5.663
5. Eliopoulos C. Human rights violations in Ukraine: the need for forensic investigations. *Lancet*. 2023;402(10404):772–773. doi:10.1016/S0140-6736(23)01959-1
6. Gordon I, Shapiro HA. Forensic Medicine: A Guide to Principles. Edinburgh: Churchill Livingstone; 1975.
7. Gorkić S. Medical Criminology. Belgrade: Ekonomska štampa; 1981.
8. Jokanović D, Mičić S, Pandurović S, Dožić V. The social character of forensic medicine in relation to responsibility for the protection of life and health. *Srpski arhiv za celokupno lekarstvo*. 1978;106(9):827–832.
9. Menez LL. The place of a forensic archaeologist at a crime scene involving a buried body. *Forensic Sci Int*. 2005;152(2–3):311–315. doi:10.1016/j.forsciint.2005.03.018
10. Virchow R. Forensic Medical Examination of the Dead (translation). Zagreb; 1919.
11. Milovanović M. Forensic Medicine. Belgrade–Zagreb: Naučna knjiga; 1965.
12. Pejaković S, Lukić M. Forensic Medicine. Belgrade: Poslovno-finansijski vodič; 1975.
13. Sauer NJ. Forensic Anthropology and Human Rights: Mass Graves and War Crimes Investigations. Springer; 2020. doi:10.1007/978-3-030-25951-8
14. Lukić D, et al. Forensic science in mass grave investigations: principles and practices. *Int J Legal Med*. 2021;135:1369–1381. doi:10.1007/s00414-021-02597-y
15. López G, et al. Security and logistical aspects of forensic investigations in post-conflict zones. *Forensic Sci Rev*. 2022;34(2):115–128.
16. United Nations Office on Drugs and Crime (UNODC). UN Guidelines on Forensic Investigations of Mass Graves in Post-conflict Regions. Vienna: UN; 2019.
17. Nino S. Challenges in exhuming mass graves in conflict areas: a review of methods and technologies. *J Forensic Sci*. 2021;66(5):1845–1853. doi:10.1111/1556-4029.14773
18. Fitzgerald L, Gardner B. Post-conflict forensic investigations: ethics, security, and the role of international organizations. *Hum Rights Q*. 2023;45(2):355–379. doi:10.1353/hrq.2023.0020
19. Harris L. International Law and Forensic Investigations of War Crimes. Cambridge: Cambridge University Press; 2019. doi:10.1017/9781108563312
20. Kostić J. The role of forensic investigations in the process of reconciliation in post-conflict societies. *Eur J Forensic Sci*. 2020;7(2):24–31.
21. Leclerc D, et al. Forensic evidence in mass graves: ethical issues and practical solutions. *Legal Med*. 2022;56:102049. doi:10.1016/j.legalmed.2022.102049
22. Harrison D. The importance of family rights in the context of missing persons and war crimes investigations. *Int Hum Rights Law J*. 2021;9(1):55–70.
23. Martinez-Alier J. Mapping ecological distribution conflicts: the EJAtlas. *Extract Ind Soc*. 2021;8(2):1–16. doi:10.1016/j.exis.2020.12.003

24. EJAtlas. Our mission. 2023. Available at: <https://ejatlas.org/backoffice/cms/en/our-mission/>
25. BIRN/Balkan Insight. Bitter Lands: Mass Grave Mapping Project. 2020. Available at: <https://massgravesmap.balkaninsight.com>
26. Dubberley S, Ivens G. Outlining a human-rights based approach to digital open-source investigations: A guide for human rights organizations and open-source researchers. Human Rights, Big Data and Technology Project. University of Essex; 2022.
27. International Criminal Tribunal for the former Yugoslavia (ICTY). Prosecutor v. Mrkšić, Radić, and Šljivančanin – Judgement (Case No. IT-95-13/1). The Hague: ICTY; 2007. Available at: <https://www.icty.org/en/case/mrksic>
28. Stover E, Peress G. The Graves: Srebrenica and Vukovar. Zurich: Scalo Publishers; 1998.
29. Wagner S. To Know Where He Lies: DNA Technology and the Search for Srebrenica's Missing. Berkeley: University of California Press; 2008. doi:10.1525/9780520942528
30. International Commission on Missing Persons (ICMP). Kosovo Case Work. Available at: <https://www.icmp.int/where-we-work/europe/kosovo/>
31. United Nations Interim Administration Mission in Kosovo (UNMIK). Report on forensic investigations in Kosovo: 1999–2000. 2001. Available at: <https://reliefweb.int/report/kosovo/unmik-report-forensic-investigations-kosovo-1999-2000>
32. Human Rights Watch. Under Orders: War Crimes in Kosovo. New York: HRW; 2001. Available at: <https://www.hrw.org/report/2001/10/26/under-orders-war-crimes-kosovo>.