

THE POSITION AND SIGNIFICANCE OF FORENSIC ODONTOLOGY IN PROOFING CRIMINAL CASES

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ABSTRACT

Transformation system justice criminal modern demand use approach proof Which based knowledge knowledge (scientific evidence). One of the scientific disciplines Which develop in support proof case criminal is forensic odontology . The science This play a role in process identification individual through characteristics tooth And cavity mouth Which unique in nature every human . Although in a way scientific own level accuracy Which tall And has used widely in various country , utilization of forensic odontology in system justice Indonesian criminal law is still face various obstacle normative , institutional , and administrative . This research aims For analyze position of forensic odontology in system proof Indonesian criminal law , studying its significance in support search truth material , as well as evaluate challenge public policy and order manage law Which influence implementation . Research using legal methods normative with approach legislation , conceptual , and comparison . Results study show that forensic odontology own position as instrument proof scientific Which realized through information expert And instruction as regulated in the Criminal Procedure Code. However so , not yet existence regulations special , weak national database system , limitations source Power humans , and lack of inter- agency coordination be a factor that hinder optimization its utilization . By Because that , is necessary reform policy law Which oriented on strengthening order manage forensics national , standardization record medical teeth , and forensic technology integration in system justice Indonesian criminal law .

Keywords: Forensic Odontology , Criminal Evidence , Public Policy, Governance, Criminal Justice Reform.

1. INTRODUCTION

Indonesia is a country of law , which means all actions and decisions , both by the government or individual , must based on law applicable and regulated in The 1945 Constitution. (Tardjono, 2021) This means No There is power or the authority above law . Law as a norm functions arrange behavior or deeds human beings who may done or forbidden at a

time guided by for man For behave in life in society , so that created something order or regularity life in socialize. (Tardjono, 2021)

Laws are made For something noble goal , namely give service for public use creation order , security , justice and welfare. (Tardjono, 2021) However , in reality Still Lots happen deviation or violation on law , whether it is done in a way on purpose or No intentionally . One of them violation the is action criminal murder .(Batjo et al., 2024) Action criminal murder is problems that must be can answered , made clear and obvious by the doctor and especially investigator.(Odontologi et al., n.d.)

In the modern criminal justice system, evidence is a fundamental aspect determining the validity and strength of a legal case. (Hidayat, 2015) One rapidly developing field of science that contributes to the evidence base in criminal cases is forensic odontology. (Turnitin, 2025)Forensic odontology is a branch of forensic science that focuses on the analysis of teeth, oral structures, and odontological characteristics of individuals for identification and legal evidence purposes. (Krishan et al., 2015) In numerous cases, this method has proven effective in identifying victims and perpetrators, as well as providing additional clues in criminal investigations.

The importance of forensic odontology in the criminal justice system is growing with the advancement of forensic technology and the increasing complexity of crimes. In cases involving victims without clear identities, such as mass disasters, accidents, or homicides that leave the victim's body in a condition that is difficult to identify, odontological analysis can be a key solution in the identification process. (Odontologi et al., n.d.) Furthermore, forensic odontology is also used to link perpetrators to specific crimes through the analysis of bite marks on victims or other evidence.(Pramod et al., 2012)

However, despite its significant potential for legal evidence, forensic odontology still faces various challenges in its implementation in the Indonesian criminal justice system. One major challenge is the lack of regulations explicitly governing the use of forensic odontology as valid evidence. Furthermore, debate among academics and legal practitioners continues regarding the validity and reliability of this method, particularly in cases that rely heavily on subjective interpretations by forensic experts.

In the context of criminal law, evidence plays a crucial role in determining the material truth of a case. According to the Criminal Procedure Code (KUHP), valid evidence includes witness testimony, expert testimony, letters, clues, and the defendant's testimony. (Alamri, 2017)Forensic odontology can be categorized as part of expert testimony and clues, but its implementation still requires clearer legal standards. (Mason & Yusuf, 2024)Several cases in Indonesia and other countries have demonstrated that forensic odontology can provide strong evidence in criminal proceedings, but obstacles remain in its application due to a lack of understanding among law enforcement officials and judges regarding the significance of this science.(Monita & Wahyudhi, 2013)

Furthermore, in several international cases, the use of forensic odontology as evidence has sparked controversy, particularly in bite mark analysis, which is claimed to have a high error rate if not supported by rigorous scientific methods. (Saks et al., 2016) Therefore, this study will examine in depth the position and significance of forensic odontology in the Indonesian criminal justice system and examine the legal challenges that hinder its implementation.

2. LITERATURE REVIEW

Theory and Concept of Criminal Evidence Law

Based on theory law proof, according to Munir Fuady, that law proof must determine with firm to shoulders Who burden burden of producing evidence must be placed. (Wahyudi, 2025) This is because on the shoulder Who burden proof laid down by law, will determine in a way direct How end from a legal process in court, for example in case civil law in which the parties You're welcome No can prove the matter. (JASMINE, 2014)

Forensic Odontology in the Criminal Justice System

Odontology forensics is branch medical very wide and developed teeth rapidly. (Nur et al., 2025) Odontology forensics used in various fields, including investigation crime, identification corpse, and enforcement law. Odontology forensics own a very important role in settlement dispute criminal medical, especially in matter victim identification, determination reason death, and proof in cases action crimes involving action medical. (Pendharkar, 2024)

3. METHODS

This Study, the author apply method study law normative, which is also known as study law doctrinal approach This look at law as the system of norms that has been set in regulation legislation (law in book) and as a set the rules that become guidelines for public in determine behavior that is considered in accordance or appropriate. Although law often associated with rule written in legislation, in in practice, the law can also understood as something that is realized in action real in society (law in action). The concept of law in book refers to the ideal and expected law can walk in accordance with established norms.

4. RESULTS AND DISCUSSION

Position of Forensic Odontology in System Proof Indonesian Criminal Code

In a way normative, forensic odontology Not yet mentioned in a way explicit in the Criminal Procedure Code. However Thus, the results the examination can entered to in the description category expert And instructions. With thus, if burden proof placed on the shoulder plaintiff and plaintiff No can prove the case, the plaintiff will considered lost case although party defendant Not yet of course you can too prove it. On the other hand, if burden proof placed on the shoulder defendant and it turns out defendant No can prove it, the party the defendant will be the one lost case although party plaintiff Not yet of course you can too prove it. Therefore that, in determine to shoulders Who burden proof must placed, law must be

Enough careful and fair and in its implementation . In addition that , the judge must also Enough wise .

Strength tool proof to decision court in finish case criminal law is very important for Who only one who finishes matters criminal .(Rusyadi, 2016) Strength tool the evidence is very helpful to investigators in investigate something case criminal Because without existence tool evidence , a case No Can completed in a way short . On the contrary with existence strength tool evidence , then the investigators will inspect case criminal the in a way detailed and as clear as possible .

In Article 184 of the Criminal Procedure Code (KUHAP) valid evidence is :

- a) Information witness ;
- b) Information expert ;
- c) Letter;
- d) Instruction ;
- e) Information defendant

As has put forward that base prosecution for prosecutor prosecutor general must based on tools valid evidence as arranged in Article 184 of the Criminal Procedure Code , Likewise the judges in cut off case criminal must based on Article 184 of the Code Criminal Procedure Law . Tools established evidence in Article 184 of the Criminal Procedure Code the must truly in accordance with fact , meaning No There is engineering .(Makalew et al., 2021)

Position This show that actual Indonesian law has give room for utilization of forensic odontology . However , because No there is arrangement Which more detailed , its implementation Still very depends on interpretation apparatus enforcer law . From legal certainty perspective , conditions This potential cause inconsistency in practice justice . In one side judge can accept the results forensic odontology examination as tool proof Which strong , but on the other hand other can also put it aside if considered No fulfil standard certain .

Significance of Forensic Odontology in System Justice Modern

Significance of forensic odontology can analyzed through three dimensions main . First , the dimensions identification . Teeth is network body Which own resilience most tall to extreme temperatures as well process decomposition . Second , the dimension proof . Bite pattern analysis can give instruction about involvement somebody in something action criminal . Third , the dimension protection of human rights humans . The use of scientific methods Which accurate can reduce the risk of error identification Which potential harm victim and defendant .

In investigation crime , odontology forensics can used For identify victims, perpetrators , or goods evidence . Odontology forensics can also used For determine reason death or wounds . In identification corpse , odontology forensics can used For identify corpse that is not known or who has experience mutilation . In enforcement law , odontology forensics can used For support case law , such as case accident Then cross , case violence , or case fraud . For can operate its function with okay , doctor teeth that work in the field odontology forensics need

own awareness law . Awareness law odontology forensics is understanding and application principles law in field odontology forensics .(Afari, 1999)

Due to disclosure case crimes , especially those related with body and soul No always can resolved by science law itself . This due to object his crime is body or body human beings who are studies in the field knowledge medicine , and for interest investigation as well as proof causes death , field knowledge the law really needs it expertise in the field medicine . In prove truth material to guilty and not guilty defendant in give belief to the judge, only with method proof scientific based on skill discipline the science that is called with Knowledge Medical Justice or Forensics .

Group sciences forensics This known including science physics forensics , science chemistry forensics , science toxicology , science psychology forensics , science medical forensics , and one of them knowledge medical tooth forensics This including knowledge new in knowledge medical judiciary .(Mason & Yusuf, 2024) Knowledge medical tooth forensics This own a number of What is the name in accordance with sources obtained namely : Forensic Dentistry , Odontology forensics , etc. Uses is can do or determine identity (identification) of a person from : (1) Used items bite ; (2) Teeth . Odontology forensics is something applied science knowledge knowledge about tooth For solve problem crime For interest court . One of the aspect room its scope is its role in help task function service medical forensics in handling cases that require identification with means tooth .

Task main from doctor tooth forensics is do identification to body individuals who have damaged , experiencing decomposition , or Already No in condition intact . (Mishra et al., 2014)Examination results tooth will handed over to police or the requesting authority to expert or doctor tooth For do identification forensics tooth .(Afandi D., 2019) Objective mainly in harmony with function main judicial process criminal that is look for truth as far as possible done by humans with still maintain and respect right from suspect and right from a defendant .(Asiva Noor Rachmayani, 2015) Existence odontology forensics very much important , because There is parts matter proof that is not can conducted by investigators specifically investigator Police and inspection odontology forensics This as completeness from visum et repertum .(Afandi D., 2019)

Legal Challenges in the Implementation of Forensic Odontology

Identity individual own implications law , especially in case death consequence action criminal , where the victim's identity must be set For needs investigation law . Various method identification used , including visual identification , identification goods personal , fingerprint fingers , characteristics teeth , and DNA. From various method said , DNA method , fingerprint fingers , and odontology own level validity tall individual . Teeth have a high endurance test Because stand until temperature tall even though or the victim is found sink to the bottom sea . Teeth from corpse mainly is tooth teeth that are still can identified Because covered by the cheekbones . This is Because contain more A little network organic . Teeth are part body the hardest man , so inspection tooth For identification body is accurate and easy way carried out . The identification process through tooth This called in method odontology forensics , with review more detailed characteristics tooth especially tooth teeth on profile every individual .(Tambunan, 2014)

Odontology forensics is something method confirmation identity somebody through a process that includes collection record medical , examination teeth , and analysis proof in the form of teeth found . In situation this , role doctor tooth in identify tooth very much important . Identification techniques This own comparable accuracy with fingerprints fingers and have Lots used since before AD . In fact , teeth and bones is network very hard and durable to change environment , can withhold temperature tall until around 900 °C, and relatively stand to damage during storage , so that technique This Possible useful in a number of situation and maybe more effective compared to fingerprints finger . Because it is attached close to the bone jaw , small the possibility will lost . In situation certain teeth often is the only one the remainder that can be used For identify someone . Therefore that , teeth used as tool identification forensics . One of the its implementation is estimate estimation age somebody .

Accuracy from results odontology forensics very much height , mechanism profiling matching on patients or the victim can become tool strong evidence in court . Odontologist forensics entitled give corner view his knowledge to doctor forensics For made into material consideration in visum et repertum . With its use visum et repertum as tool evidence in court Because matter said , evidence will become very strong and technological Keep going develop so that find footsteps especially those related to with law action criminal . As for the obstacles in inspection odontology forensics that is Limited Antemortem Dental Data: No all individual own notes or data regarding condition his teeth before died (antemortem), so that complicates the identification process .

A number of factor affecting awareness law to odontology forensics in Indonesia, one of them :

- 1) Knowledge Odontology Forensics : In -depth knowledge about odontology forensics is very important . The more tall knowledge somebody about field this , then the more high level of awareness to role odontology forensics in the legal process . Knowledge This can obtained through formal education , training , and mass media.
- 2) Understanding About the Law: Understanding good law also plays a role important in increase awareness law in the field of odontology forensics . Understanding This Can obtained through education , training , or experience direct.
- 3) Perception about Odontology Forensics : Perception public about odontology forensics can influence level awareness law they . Perception positive to field This can increase awareness about importance odontology forensics in legal process.
- 4) Involvement in Field Odontology Forensics : Involvement direct in field this , okay through education , training , and practice , can increase awareness law somebody about importance odontology forensics.

5. CONCLUSION AND LIMITATION

Forensic odontology is instrument proof scientific Which own strategic position in system justice criminal modern . Its existence support search truth material , improve quality proof , and strengthen protection of human rights man in process justice . However Thus , the effectiveness its implementation Still constrained by weakness regulations , limitations order manage data, low capacity institutional , and lack of integration public policy . By Because that , reform law And order manage forensics national become need urge For realize system justice criminal Which modern , transparent , and based knowledge knowledge.

6. REFERENCES

- Afandi D. (2019). Visum et Repertum pada Korban Hidup. *Jurnal Ilmu Kedokteran*, 3(2), 79–84.
- Afari, S. (1999). Peran odontologi forensik sebagai salah satu sarana pemeriksaan identifikasi jenazah tak dikenal. In *Jurnal i-lib UGM* (hal. 195–199). <http://i-lib.ugm.ac.id/jurnal/download.php?dataId=4282>
- Alamri, H. (2017). Kedudukan keterangan ahli sebagai alat bukti menurut Kitab Undang-Undang Hukum Acara Pidana. *Lex Privatum*, 5(1), 31–38.
- Asiva Noor Rachmayani. (2015). *Sistem Peradilan Pidana*.
- Batjo, F., Abdulajid, S., & Rumkel, N. (2024). Kajian Kriminologi terhadap Pelaku Kejahatan Pembunuhan di Kabupaten Pulau Taliabu Maluku Utara (Studi Sosial Taliabu Barat). *Ranah Research : Journal of Multidisciplinary Research and Development*, 6(2), 257–268. <https://doi.org/10.38035/rrj.v6i2.813>
- Hidayat, M. (2015). Pembaruan Hukum Terhadap Lembaga Praperadilan Melalui Putusan Pengadilan. *Yuridika*, 30(3), 413. <https://doi.org/10.20473/ydk.v30i3.1953>
- JASMINE, K. (2014). Kedudukan Alat Bukti Dalam Hukum Acara Perdata Sebagai Implementasi Kepastian Hukum. *Penambahan Natrium Benzoat Dan Kalium Sorbat (Antiinversi) Dan Kecepatan Pengadukan Sebagai Upaya Penghambatan Reaksi Inversi Pada Nira Tebu*, 6(2), 207–216.
- Krishan, K., Kanchan, T., & Garg, A. K. (2015). Dental Evidence in Forensic Identification – An Overview, Methodology and Present Status. *The Open Dentistry Journal*, 9(1), 250–256. <https://doi.org/10.2174/1874210601509010250>
- Makalew, M. I., Watulingas, R. R., & Pangemanan, D. R. (2021). Substansi Barang Bukti Dalam Hukum Pembuktian Pada Peradilan Pidana. *Lex Privatum*, IX(8), 100–109.
- Mason, G., & Yusuf, H. (2024). Physics and Geology as a crime solving science. *Criminology*, 2162–2175. <https://jicnusantera.com/index.php/jicn>
- Mishra, S. K., Mahajan, H., Sakorikar, R., & Jain, A. (2014). Role of prosthodontist in forensic odontology. A literature review. *Journal of forensic dental sciences*, 6(3), 154–159. <https://doi.org/10.4103/0975-1475.137045>
- Monita, Y., & Wahyudhi, D. (2013). Peranan Dokter Forensik Dalam Pembuktian Perkara Pidana. *Jurnal Ilmu Hukum* , 6(7), 127–141.

- Nur, A., Tri, S., Auerkari, E. I., & Suhartono, A. W. (2025). *Perkembangan Teknologi Digital dalam Kedokteran Gigi Forensik*. 14, 95–108.
- Odontologi, A., Forensik, P. O., Pembunuhan, I. K., & Penelitian, J. (n.d.). *KESADARAN HUKUM ODONTOLOGI FORENSIK*.
- Pendharkar, S. S. (2024). Forensic odontology: A new dimension in dentistry. *International Dental Journal of Student's Research*, 12(1), 3–6. <https://doi.org/10.18231/j.idjsr.2024.002>
- Pramod, J., Marya, A., & Sharma, V. (2012). Role of forensic odontologist in post mortem person identification. *Dental Research Journal*, 9(5), 522. <https://doi.org/10.4103/1735-3327.104868>
- Rusyadi, I. (2016). Kekuatan Alat Bukti Dalam Persidangan Perkara Pidana. *Jurnal Hukum PRIORIS*, 5(2), 128–134. <https://doi.org/10.25105/prio.v5i2.558>
- Saks, M. J., Albright, T., Bohan, T. L., Bierer, B. E., Bowers, C. M., Bush, M. A., Bush, P. J., Casadevall, A., Cole, S. A., Denton, M. B., Diamond, S. S., Dioso-Villa, R., Epstein, J., Faigman, D., Faigman, L., Fienberg, S. E., Garrett, B. L., Giannelli, P. C., Greely, H. T., ... Zumwalt, R. E. (2016). Forensic bite mark identification: weak foundations, exaggerated claims. *Journal of Law and the Biosciences*, 3(3), 538–575. <https://doi.org/10.1093/jlb/lsw045>
- Tambunan, L. (2014). *Jurnal Hukum*. 3(September), 24.
- Tardjono, H. (2021). Urgensi Etika Profesi Hukum Sebagai Upaya Penegakan Hukum Yang Berkeadilan Di Indonesia. *Jurnal Kepastian Hukum dan Keadilan*, 2(2), 51. <https://doi.org/10.32502/khdk.v2i2.3462>
- Turnitin, I. (2025). *Peran forensik di berbagai disiplin ilmu*.
- Wahyudi, I. (2025). *Implementasi Hukum Terhadap Kedudukan Alat Bukti Dalam Hukum Acara Perdata*. 07(02), 11380–11386.