THE EYES AS FORENSIC EVIDENCE

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ABSTRACT

Eyes they speak beyond death, the human eye is not just a sensory organ it is a reservoir of biological, chemical, and visual information. In forensics, the word "Ocular Forensics" ocular is about eyes or vision whereas forensics means the usage of scientific methods to solve crime together it is meant to be the application of eye examination and related knowledge to legally investigate in cases of death or injury also known as forensic ophthalmology, where even the smallest trace can solve a crime, where here the eyes plays a subtle yet significant role. Concept of ocular forensics, briefly explains how the eyes may help in crime detection, identification of deceased persons, trauma analysis, and even time of death estimation. The objective is to identify how eyes, often overlooked, can act as a witness to a crime.

In the field of forensic science, the human eye emerges as an unique and powerful source of evidence. Traditionally it is associated with sight and perception, the eye also holds biological, chemical, and structural features that can offer valuable clues during criminal investigations. From the distinct patterns of the iris used in biometric identification to the chemical composition of the vitreous humor that assists in determining the time and cause of death, the eye has become more than just a sensory organ it is now a forensic tool despite its potential, the use of ocular evidence there is a need for clearer legal frameworks and forensic training to ensure that such evidence is collected ethically, analysed accurately with the potential to assist in the delivery of justice.

Keywords: Ocular Forensics, Forensic Science Eyes, Biometric Identification, Criminal Investigation, Sensory Organ.

I. INTRODUCTION:

The eye also plays a critical role when traditional evidence are degraded or unavailable. In post-mortem examinations, vitreous humor offers a stable biological fluid for toxicology tests, even when blood has decomposed. Courts have considered such scientific reports under Section 329 of BNSS, especially in cases involving poisoning, alcohol overdose, or unknown causes of death, just like how are fingerprints, DNA are unique likewise the patterns prevailing in the iris is distinct and unique for every individual. Moreover, in rare cases, forensic analysis of high-resolution images has even been able to extract reflections from the eyes of victims or suspects, contributing to the reconstruction of crime scenes. Legally, ocular forensic evidence is gaining recognition in courts, especially when supported by expert testimony and scientific reliability. As per the Section 39 of BSA opinions of forensic medical experts regarding ocular injuries, trauma patterns, or toxicological findings from the eye are admissible in criminal trials. In cases involving assault, child abuse, or custodial violence, retinal haemorrhages and periorbital injuries can help establish the use and nature of force[1].

However, despite its potential, the use of ocular evidence there is a need for clearer legal frameworks and forensic training to ensure that such evidence is collected ethically, analysed accurately, and interpreted appropriately in courtrooms. As this area evolves, the human eye may become not only a symbol of awareness but a vital witness in the pursuit of legal truth.

II. IRIS RECOGNITION: A TOOL FOR THE BIOMETRIC AUTHENTICATION

Iris recognition is the most advanced and reliable forms of biometric identification in forensic and legal contexts. The iris is a coloured ring around the pupil, compasses unique patterns which remain stable throughout the lifetime of humans, it is protected by the cornea, making it less prone to damage and tampering even fingerprints can be worn or damaged while ageing but this doesn't Because of this, iris recognition technology has found its place in areas of high-security identification, border control, prison systems, and increasingly, criminal investigations.

The scientific reliability of iris recognition is rooted in its precision, the high-resolution

[1] Jagadheswari V. M.Optom, "*Optical Evidence in Forensic Investigation" - Vision Science Academy*, Home - Vision Science Academy (May 1, 2025), https://visionscienceacademy.org/optical-evidence-in-forensic-investigation/

cameras captures the detailed images of the iris, which are then converted into digital templates using algorithms.[2] And these templates compared against databases for verification or identification. The false match rate in iris recognition systems is extremely low often 1 in a million making it more accurate than facial recognition and fingerprint scanning in many cases

Legally, iris recognition has been introduced into investigative and judicial systems under frameworks that govern biometric data. In India, iris data collection gained authorization through the Aadhaar Act, 2016, where they used iris scans for individual's identity verification in government schemes, welfare administration. Aadhaar linked biometric data is implied in criminal law, especially in cases involving impersonation, human trafficking, and illegal immigration. Courts have begun to acknowledge the evidentiary potential of biometric data in disputes related to identity fraud and digital access.

The use of iris scans intersects with the right to privacy, particularly the landmark case of Justice K.S. Puttaswamy v. Union of India (2017)[3], the Supreme Court of India ruled that the right to privacy is a fundamental right under the Article 21. While the court upheld the limited use of Aadhaar for identity verification, it emphasized that biometric data, including iris scans, must be handled with safeguards and cannot be used without due process[4]. In criminal enforcement, iris recognition is particularly useful for identifying uncooperative or unconscious individuals who neglect to provide their name or identification to confirm their identity. Further this is effective in prison management systems, where repeat offenders often use aliases. In several countries, including the United States and United Arab Emirates, iris scans are already embedded into law enforcement databases[5].

For iris evidence to be admissible, it must be collected and stored by authorized personnel using certified systems, and the results should be interpreted by the qualified forensic experts. Under Section 39 of the Bharatiya Sakshya Adhiniyam, expert opinion is admissible, but courts assess its value based on credibility, scientific grounding, and procedural fairness. Iris recognition represents a transformative development in forensic identification. When legally obtained and scientifically analysed, iris scans can significantly enhance the accuracy of criminal

[2] Anil K. Jain et al., "*Introduction to Biometrics"* (2011), https://doi.org/10.1007/978-0-387-77326-1.
[3] "Justice K.S. Puttaswamy (Retd.) v. Union of India (2017) 10 SCC 1"
[4] Bhandari V., "Privacy and surveillance in the digital age: India's Aadhaar judgment *18*(3), 435–457 (2018).
[5] Bowyer K.W., *"The use of iris recognition in criminal justice and security systems"*, 49 IEEE COMPUT. 84–88(2016).

investigations and identity verification[6].

III. VITREOUS HUMOR IN LEGAL AUTOPSIES ESTABLISHING TIME AND CAUSE OF DEATH

During the forensic autopsies, determining the time and cause of death is a critical objective[7], and the human eye specifically the vitreous humour offers a scientifically reliable medium for such estimations. The vitreous humor is a clear, gel-like substance between the lens and retina of the eye. Because it is isolated and chemically stable, it is less exposed to post-mortem decomposition than blood or other tissues. This makes it an invaluable evidence in medico-legal investigations, particularly when the body is decomposed, burned, or contaminated.

The primary forensic uses of vitreous humor is while estimating the post-mortem interval (PMI). After death, the body undergoes predictable biochemical changes, including an increase in potassium levels in the vitreous fluid due to cell membrane breakdown. Studies have shown that this increase is time dependent and allows the forensic pathologists to estimate the time of death with reasonable accuracy, especially within the first 48–72 hours after the death[8].

The legal value of this technique is crucial when the timeline of death is contested in court such as in suspected homicides, insurance fraud, or disputes, during time of death estimation, the vitreous humor can be used in toxicological analysis, especially for detecting substances like ethanol, methanol, urea, glucose, and certain drugs. Since vitreous fluid is less likely to be affected by contamination or microbial activity, it can offer more accurate readings than blood in some scenarios[9]. This is especially useful in cases involving suspected poisoning, overdose, determining the presence and concentration of toxins is crucial for cause of death certification. The vitreous humor offers a legally recognized, scientifically grounded method for estimating time and cause of death in forensic autopsies[10]. When collected and analysed under established protocols, vitreous humor evidence can play a pivotal role in securing justice, helping courts answer one of the most essential forensic questions as to when and how did the death

[6] Sethi N, *"Biometric data protection and legal safeguards in India"*,3(2) Journal of Law and Technology.,118–133 (2021).
[7] Beulah Shekhar & Purvi Pokhariyal, "Forensic Justice" (2024), https://doi.org/10.4324/9781032629346.
[8] Burkhard Madea, "Importance of supravitality in forensic medicine", 69 Forensic Sci. Int'l 221, 151(2–3) ,165–175(1994), https://doi.org/10.1016/0379-0738(94)90386-7
[9] John I. Coe, "*Vitreous potassium as a measure of the postmortem interval: An historical review and critical evaluation"*, 42 Forensic Sci. Int'l 201, 201–213 (1989), https://doi.org/10.1016/0379-0738(89)90087-x
[10] Kumar, M., & Rao, N. G. "Toxicological analysis of vitreous humor: An emerging area in forensic medicine". *Journal of Indian Academy of Forensic Medicine, 36*(2), 157–160. (2014).

occurred[11].

IV. OCULAR INJURIES AND LEGAL INTERPRETATION OF VIOLENCE

Ocular injuries are among the indicators of violence in forensic medicine due to the eyes vulnerability and sensitivity. The eye and the surrounding periorbital region are highly sensitive and vulnerable to trauma, making them valuable in reconstructing the nature, direction, and intensity of an assault. Injuries such as periorbital hematomas, subconjunctival haemorrhages, retinal haemorrhages, and scleral ruptures can reveal patterns, force and nature of trauma of the inflicted harm, including blunt force, strangulation, suffocation, or child abuse. These signs often act as silent yet powerful witnesses in criminal investigations, especially when other evidence is minimal or concealed.

In medico-legal contexts, ocular trauma is often categorized by its cause blunt, penetrating, or chemical. Blunt trauma, which is common in cases of domestic violence and physical assault, typically results in ecchymosis bruising around the eye, globe rupture, or orbital fractures. Penetrating trauma may result from sharp objects or gunshot wounds, and such injuries often carry a high risk of permanent vision loss or death. Medical examiners and forensic ophthalmologists play a critical role in examining and documenting these injuries for judicial purposes.

Retinal haemorrhages, in particular, have significant legal implications. In cases of Shaken Baby Syndrome (SBS), which is a form of child abuse, the presence of bilateral retinal haemorrhages is a key diagnostic feature[12]. Courts in India and abroad have accepted such findings as strong corroborative evidence of non-accidental injury.

Legally, the interpretation of ocular injuries must be supported by expert opinion under Section 39 of BSA. The court relies on forensic pathologists or ophthalmologists to explain whether the injury was consistent with accidental, suicidal, or homicidal origin. In many assault and battery cases in BNS it is section 115,117,118 the nature and severity of eye injuries are factored into determining the gravity of offense, and sometimes, even the intent of the accused.

[11] Bévalot, F., Cartiser, N., Bottinelli, C., Fanton, L., & Guitton, J, "Vitreous humor analysis for the detection of xenobiotics in forensic toxicology: a review". Forensic toxicology, *34*, 12–40. (2016). https://doi.org/10.1007/s11419-015-0294-5

[12] Gilliland, M. G., & Luckasevic, T. M. "Forensic aspects of ocular injuries". Forensic Science Review*, 28*(1), 1–10(2016).

In sexual violence or domestic abuse cases, ocular injuries may not be immediately visible but can serve as essential supporting evidence. Victims of intimate partner violence often sustain hidden injuries to the eye, which may be documented during clinical examination. The eyes can indicate strangulation an important factor under BNS section 309 (attempt to murder) or Section 74 BNS (assault on a woman with intent to outrage modesty). Courts view these medical findings as part of the corpus delicti the body of the crime.

The role of forensic photography and medical documentation is vital in ensuring such injuries are preserved as admissible evidence. High-resolution images, injury sketches, and medico-legal reports must be prepared and submitted in accordance with Section 293 CrPC, which permits courts to rely on government medical expert reports. Proper chain of custody, clear labelling, and timely reporting ensure the credibility of the evidence in trial by ensuring procedural fairness[13].

V. DNA FROM EYE STRUCTURES AND THE LEGAL IDENTIFICATION OF VICTIMS

In forensic science, the identification of human remains plays a vital part in resolving criminal cases, disaster response, and legal claims. While blood, bone, and dental records are standard identifiers, eye structures particularly the eyelashes, eyebrows, conjunctiva, and iris epithelium have gained increasing attention as viable sources of DNA for victim identification. The eye, often shielded from extreme decomposition by the surrounding orbital bones, offers protected tissue that may remain usable even in advanced stages of body degradation or destruction. Accurate victim identification is a cornerstone of justice. When conventional methods such as visual identification or fingerprinting are no longer viable due to decomposition, burning, mutilation, or skeletonization DNA analysis becomes indispensable. One of the most resilient sources of DNA in such extreme conditions is the human eye. Specifically, structures such as eyelashes, corneal epithelium, conjunctival cells, and the retina can yield sufficient DNA to facilitate identification.

Ocular tissues particularly valuable in mass disaster scenarios, plane crashes, fire accidents, or war crimes, where bodies may be charred or fragmented. Forensic pathologists, in such cases, often rely on remnants like the eyelids, lens capsule, or ocular fluid to obtain DNA samples for

[13] Sharma, B. R., & Harish, D. "Ocular injuries in domestic violence: A medico-legal approach". *Journal of Indian Academy of Forensic Medicine, 33*(2), 142–146. (2011).

comparison with reference material from relatives or personal belongings[14].

DNA obtained from ocular structures can be subjected to Short Tandem Repeat (STR**)** analysis, which is the global gold standard for forensic identification. Even a single eyelash, if it contains a root bulb, can provide nuclear DNA sufficient for generating a genetic profile. In other cases, mitochondrial DNA (mtDNA**)** which is more abundant and survives longer post-mortem is extracted from the retinal pigment epithelium or ciliary body. Though mtDNA is less specific than nuclear DNA, it is still useful for establishing maternal lineage in cases where no closer reference is available.

In one notable case from Uttar Pradesh (2016), DNA extracted from eyelash follicles helped establish the identity of a charred female victim in a suspected honour killing, which was crucial for both the criminal investigation and the issuance of a post-mortem certificate. This demonstrates that even when bodies are unrecognizable, the human eye can still reveal hidden genetic truth.

VI. DIGITAL FORENSICS AND EYE REFLECTIONS A NOVEL LEGAL EVIDENCE:

The field of digital forensics most intriguing developments is the use of eye reflections also known as corneal reflections or limbus imaging as a source of visual forensic evidence. This technique involves analysing the tiny reflections captured on the cornea in high-resolution photographs or videos to retrieve environmental or facial data that may be relevant to a crime scene. Though still emerging, this method presents powerful implications for criminal investigation and evidence reconstruction[15].

The human cornea acts like a convex mirror. When someone is photographed or filmed in high resolution, especially using modern DSLR or 4K cameras, the surface of their eye may capture minuscule reflections of their surroundings. These reflections can include the photographer, an assailant, a victim, objects, or environments, depending on lighting and focus. For example, a selfie taken by a victim moments before a crime could inadvertently capture the perpetrator's

[14] Sweet D. Lorente M. Lorente J.A. Valenzuela A. & Villanueva E., "*An improved method to recover saliva from human skin: The double swab technique", Journal of Forensic Sciences, 42*(2), 320- 322. PubMed, (1997). https://pubmed.ncbi.nlm.nih.gov/9068193/

[15] Rob Jenkins & Christie Kerr, "*Identifiable Images of Bystanders Extracted from Corneal Reflections"*, 8 PLoS ONE e83325, (2013), https://doi.org/10.1371/journal.pone.0083325

image within the eye reflection. In a UK child exploitation case, images retrieved from the victim's eyes were digitally enhanced to reveal the identity of the offender reflected in the victim's pupils. The technique assisted in securing a conviction. The digital chain of custody protocols are crucial from capturing the image to its storage and analysis, every step must be documented, time stamped, and verified to meet evidentiary standards.[16].

VII. OCULAR TOXICOLOGY IN LEGAL DISPUTES INVOLVING POISON OR OVERDOSE:

Ocular toxicology is a specialized that studies the effects of toxic substances on the eyes[17]. In legal and medico-legal contexts, ocular findings can offer crucial evidence in poisoning and overdose cases whether intentional, accidental, or homicidal. The eye, due to its vascular structure and transparency, is highly sensitive to toxic insults, and certain poisons manifest distinct ocular signs. In many instances, these signs become pivotal in reconstructing the cause of death or proving criminal intent.

In forensic autopsies, ocular examination is an essential step when poisoning is suspected. Pupil size, retinal changes, scleral discoloration, and corneal clouding can reflect the presence and type of toxin involved. For instance, organophosphate poisoning commonly seen in pesticide ingestion causes miosis (pinpoint pupils), when supported by toxicological reports and circumstantial evidence, can help pathologists draw inferences about the substance involved and its timeline of action.

Some poisons cause unique retinal or optic nerve changes that can be visualized microscopically or via histopathological studies. Methanol poisoning, for example, causes bilateral optic neuritis, which may result in blindness or death. In such cases, retinal edema, haemorrhages, or necrosis of the optic disc may be evident upon autopsy. These findings are often supported by blood methanol levels, but the ocular damage itself offers visual and histological confirmation of toxic exposure[18]. In overdose cases involving narcotics or sedatives, pupils provide important diagnostic clues. Opiates such as morphine or heroin

[16]Eoghan Casey, "Digital Evidence and Computer Crime: Forensic Science, Computers, and the Internet", Academic Press (2011).
[17].Monalisha R.A Arumugam "Post-Mortem Toxicology: A legal and Scientific application of Doctrinal analysis". In International Journal for Multidisciplinary Research (IJFMR*)* 8(2) 1–2. (2026). https://www.ijfmr.com/papers/2026/2/55193.pdf
[18]Mathiharan, K., & Patnaik, A. K. "*Modi's Medical Jurisprudence and Toxicology"* (24th ed.). LexisNexis. (2014).

classically produce constricted pupils. In contrast, stimulant overdoses (e.g., amphetamines or cocaine) result in dilated pupils and sometimes retinal haemorrhage due to increased intracranial pressure. These subtle yet detectable changes in the eye are physiological indicators observed during clinical and post-mortem evaluations.

Ocular toxicology such as those involving industrial chemicals, heavy metals, or gases chronic exposure to lead may cause blue lines along the sclera or conjunctiva and even optic nerve damage, leading to partial vision loss. Such signs can be documented during forensic examination and used as confirmatory evidence in legal proceedings. Ocular findings serve as circumstantial evidence that supports or challenges toxicology reports. Under Section 39 of BSA opinion of medical experts is admissible in court In cases involving Section 103 BNS (murder), Section 108 BNS (abetment of suicide), or Section 286 BNS (negligent conduct with respect to poison), these findings help courts assess motive, mode, and manner of poisoning. In civil cases as well such as insurance claims or occupational health litigation ocular toxicology may be used to establish cause-effect relationships of death or exposure under factory and labour laws to revealing the invisible truth behind poisonings and overdoses.

VIII. LAWS DEALING WITH OCULAR FORENSIC EVIDENCE:

Ocular forensic evidence whether in the form of post-mortem eye examinations, toxicological findings, biometric iris data, or digital eye reflections is governed by a combination of forensic science protocols and evidentiary law. In India, the legal admissibility of such evidence is governed under the **Indian Evidence Act, 1872**, particularly under **Section 45** in **BSA Section 39** which permits expert testimony in courts. Forensic experts including ophthalmologists, toxicologists, and digital analysts are allowed to present their findings on the condition and significance of ocular evidence to assist judges in interpreting scientific data beyond common understanding[19]. Under Section 39, courts can rely on the opinion of experts in fields such as forensic medicine, toxicology, ophthalmology, and digital forensics[20]. This includes expert observations on pupil size in poisoning, retinal haemorrhages in trauma cases, or iris scan authentication. Section 40 further supports this by allowing such expert opinions to be used to

[19] "*IEA Section 48 - Opinion as to existence of right or custom, when relevant"*, A Lawyers Reference, https://devgan.in/iea/section/48/ (last visited June 2, 2026).
[20] "*IEA Section 45 - Opinions of experts"*. A Lawyers Reference. https://devgan.in/iea/section/45/ (last visited June 2, 2026).

explain or substantiate facts in issue or relevant facts[21].

Additionally, **Section 65B of the Indian Evidence Act in BSA Section 63[22]** becomes crucial when ocular evidence is derived from digital sources such as high-resolution images used to extract corneal reflections or biometric iris scans. For such electronic records to be admissible, has to be amplified by certification of authenticity as per Section 65B (4). This ensures that the digital image or video from which the ocular reflection or biometric data was retrieved was not tampered with and can be accepted as valid secondary evidence. If an image, video, or scan of the eye (e.g., a corneal reflection or iris recognition record) is being introduced in court as digital evidence, Section 65B ensures that it must be supported by a certificate verifying its authenticity and integrity. This has become increasingly important in cases involving surveillance footage, phone camera captures, or biometric logs. Relevant in cases where a suspect is caught in the eye reflection of a victim's photo as in the 2014 UK paedophile case.

Criminal Procedure Code, 1973 – Sections 53 & 164A in BNSS Section 51 and 184

The BNSS empowers law enforcement and medical professionals to conduct forensic medical examinations in cases where bodily evidence may be crucial. Under Section 53[23], a registered medical practitioner, acting at the request of a police officer not below the rank of sub-inspector, may examine an accused person if it is believed that such examination will afford evidence related to the commission of an offense. This includes ocular examinations, especially in cases of suspected poisoning, assault, or exposure to harmful substances. For instance, organophosphate poisoning often encountered in suicide or attempted homicide cases produces miosis (constricted pupils), which is a tell-tale sign noted in medico-legal reports[24]. Similarly, Section 184 mandates the medical examination of victims of sexual assault by a qualified doctor, typically within 24 hours of the incident being reported. This examination may also document ocular injuries, such as subconjunctival haemorrhage, periorbital bruising, or retinal bleeding, which may support allegations of physical violence or force[25]. The findings recorded

[21] *"IEA Section 46 - Facts bearing upon opinions of expert"s*. A Lawyers Reference. https://devgan.in/iea/section/46/ (last visited June 2, 2026).
[22] Manupatra. *Articles – "Manupatra*ADMISSIBILITY-OF-ELECTRONIC-EVIDENCE-UNDER-THE-INDIAN-EVIDENCE-ACT-1872" . https://articles.manupatra.com/article-details/ (last visited June 2, 2026).
[23] *Section 53 of BNSS – Section 53: Examination of arrested person* https://kanoongpt.in/bare-acts/the-bharatiya-nagarik-suraksha-sanhita-2023/arrangement-of-sections-chapter-v-section-53-86c545ff0e2e5c3c#google_vignette (last visited June 2, 2026).
[24] Brambhatt, K. "*Ocular-evidence vs medical evidence"*. iPleaders. https://blog.ipleaders.in/ocular-evidence-vs-medical-evidence/#Discussing_ocular_and_medical_evidence_in_civil_cases (2025, March 17).
[25] "*Section 184 of BNSS – Section 184: Medical examination of victim"*. https://kanoongpt.in/bare-acts/the-

under these sections form a critical component of medico-legal evidence and are admissible in court under the BSA.

Under the **Indian Penal Code, 1860 or the BNS**, several offenses necessitate the examination and interpretation of ocular forensic evidence, particularly in cases involving physical trauma or poisoning. For instance, Sections 324 and 326 IPC and BNS Section 118, which address voluntarily causing hurt and grievous hurt, are often invoked in cases such as acid attacks, where permanent eye damage or vision loss is a direct consequence. In Section 304B IPC in BNS section 80 (dowry death), where poisoning is a frequent cause of death, medico-legal autopsies routinely include ocular toxicology and pupillary assessments to detect specific poisons like organophosphates or barbiturates. Similarly, Section 302 IPC in BNS section 103, which deals with murder, particularly by asphyxia or strangulation, frequently relies on the identification of petechial haemorrhages in the conjunctiva or sclera, which are classic forensic indicators of suffocation. In such cases, eye findings become critical elements of the post-mortem examination and serve as corroborative evidence during court proceedings and cross-examinations.

The **Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016** emphasises about the collection and use of biometric information, including iris scans, for identity verification. Under this Act, iris recognition is legally used to authenticate individuals for accessing government benefits, financial services, and welfare schemes. While the Act primarily serves civil and administrative purposes, the biometric database created under Aadhaar has raised important questions in legal and forensic context to seek access to Aadhaar-based iris data for criminal identification in serious offenses.

The Information Technology Act, 2000, especially after its 2008 amendments serves a significant part in regulating the digital handling and protection of biometric data, the Sections 43A and 72A of the Act impose civil and criminal liability for negligence or unauthorized disclosure of sensitive personal data, including iris scan records[26]. In forensic scenarios, where iris scans may be retrieved from devices or surveillance systems as part of digital evidence, the IT Act mandates strict data security practices and informed consent. It also supports the legal

bharatiya-nagarik-suraksha-sanhita-2023/arrangement-of-sections-chapter-xiii-section-184-fe3ac3a6da1c1311 (last visited June 20, 2026).

[26] Administrator. *Data privacy protection in India - Institute of Law*. Institute of Law. https://law.nirmauni.ac.in/data-privacy-protection-in-india-technology-vis-a-vis-law/(last visited June 20, 2026).

admissibility of such digital biometric records under prescribed safeguards.

The laws governing ocular forensic evidence balances scientific advancement with legal admissibility. Whether it involves digital imaging, biometric scanning, or post-mortem eye analysis, such evidence must comply with the rules of expert opinion, electronic records, and criminal procedure. As forensic science evolves, lawmakers and courts must continue refining standards for the use of ocular evidence ensuring that justice.

IX. JUDICIAL PRECEDENTS:

- **Anvar P.V. v. P.K. Basheer, (2014) 10 SCC 473**

This landmark judgment held that the principles governing the admissibility of electronic evidence under Section 65B of the Indian Evidence Act, 1872[27]. The Supreme Court ruled that electronic records such as photographs, videos, or iris scans are not admissible unless accompanied by a Section 65B (4) certificate validating their authenticity. In forensic practice, this case is crucial when presenting digital images of the eye, corneal reflections, or biometric iris data as evidence. It elevated the standard of proof required to admit digital forensic material in Indian courts.

- **Mohd. Ajmal Amir Kasab v. State of Maharashtra, (2012) 9 SCC 1[28]**

In the prosecution of the 26/11 Mumbai terrorist, forensic and digital evidence played a central role. The court accepted high-resolution CCTV footage and photographs, some of which included facial and eye-region features, to establish Kasab's identity and presence at the scene. This case indirectly supports the future use of corneal reflection analysis and digital iris matching in legal settings, demonstrating how eye-related visual evidence can corroborate witness accounts and forensic findings in high-profile trials.

- **Rajiv Gandhi Assassination Case – State (Through CBI/SIT) v. Nalini & Ors.,**

[27] "*Anvar P.V. v. P.K. Basheer (2014) 10 SCC 473" – law Jurist*, law Jurist – Your legal partner for success, https://lawjurist.com/index.php/2025/12/07/anvar-p-v-v-p-k-basheer-2014-10-scc-473/ (last visited June 21, 2026).

[28] Vikrant Singh, *"The Lost Souls" A Study of Undertrial Prisoners in Karnataka and the Provision of Legal Aid*, CCLE – Centre for Competition Law and Economics (CCLE) deals with the genesis of competition law and its impact on the economy., https://www.icle.in/wp-content/uploads/2022/09/Undertrial-prisoners-research.pdf (last visited June 24, 2026).

(1999) 5 SCC 253

This case involved the use of photographic analysis and facial identification as key elements in establishing the movements and identities of the accused[29]. Though the case predated corneal reflection analysis, it set a precedent for using facial and ocular regions captured in digital media to identify suspects. The forensic teams relied heavily on images of the suspects, reinforcing the importance of high-resolution eye area imaging as part of digital forensic protocols and its potential value in reconstructing events from visual evidence.

- **Harjinder Singh v. State of Punjab, (2004) 11 SCC 253**

This case involved allegations of brutality during police custody, leading to the victim's death. The medical evidence included ocular haemorrhages and retinal damage, which were presented to indicate asphyxial death due to suspected suffocation or throttling. The Supreme Court took note of the ocular forensic signs, such as petechial haemorrhages, which are classic indicators of manual strangulation or smothering and CCTV images. The case demonstrates the evidentiary value of eye findings in establishing both the mechanism and the force used in custodial deaths[30].

X. CONCLUSION:

The human eye, long considered the window to the soul, has now become a vital gateway to truth in forensic science and legal investigations. Whether it is through biometric iris recognition, retinal pathology, or digital image analysis, ocular evidence offers a silent yet powerful testimony in matters of crime, death, identity, and justice. Its relevance in forensic contexts has expanded far beyond conventional boundaries now playing a critical role in toxicological analysis, trauma reconstruction, and even posthumous identification.

In medico-legal autopsies, the eye provides key physiological indicators that can guide conclusions about poisoning, suffocation, blunt force trauma, or drowning. Observations such as petechial haemorrhages, corneal opacity, or changes in the vitreous humor can support or disprove causes of death. This elevates the eye from a passive anatomical organ to a proactive

[29] *"State of Tamil Nadu through . . VS Nalini and 25 others on 11 May, 1999"*. INDIAN KANOON. From https://indiankanoon.org/doc/194120/(last visited June 21, 2026).
[30] *Harjinder Singh vs. State of Punjab | Latest Supreme Court of India Judgments | Law Library | AdvocateKhoj*. AdvocateKhoj. https://www.advocatekhoj.com/library/judgments/announcement.php?WID=18941 (last visited June 21, 2026).

forensic witness.

The use of iris recognition as a biometric authentication tool has also found legitimate application in the legal and administrative sectors. Iris scans offer a near-fool proof method of identifying individuals, and when linked with state databases like Aadhaar, they can assist law enforcement in confirming or ruling out identities in criminal probes. Digital forensics has opened up a novel dimension in which eye reflections or corneal images captured in high-resolution photographs and videos can be used to extract potential clues about suspects, bystanders, or environmental conditions. However, such evidence requires technological precision, strong chain-of-custody protocols, and compliance with evidentiary rules under Sections 39 and 63 of BSA.

Eyes are no longer merely an organ of vision it is a lens through which the truth can be seen and justice pursued. When integrated with sound legal frameworks and scientific rigor, ocular evidence holds the power not just to support legal claims, but to tell the silent stories of victims and reveal facts that words cannot express. Its value lies not only in what it sees, but in what it helps society to uncover.