Jus Corpus Law Journal

Open Access Law Journal – Copyright © 2022 – ISSN 2582-7820
Editor-in-Chief – Prof. (Dr.) Rishikesh Dave; Publisher – Ayush Pandey

Forensic Science- A Technology to Ease the Identification of Sexual Offences

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Received 25 November 2022; *Accepted* 05 December 2022; *Published* 14 December 2022

Sexual offences are social evils prevalent in society almost everywhere in the world. Those offences can be eve teasing or heinous and violent offences like Rape, or merciless sexual abuse in children murder. The victims have to bear the social stigma all their lives. The 'Damini rape case' was the most barbaric act society has witnessed. Post this uncivilized act, the government has made the laws more stringent for sexual offences. In the circumstances of the absence of effective evidence, forensic science through its tools has been aiding in the identification of the offenders. This article will try to explore to severely, examine the methods concerning the attainment and dealing with medical, and forensic proof of sexual offences in any respect degrees of research and study due methods of investigation of rape case which will have an insight into the efficiency, drawbacks in addition to citation of instances and set up the prominent and crucial part that medical and forensic proof has to play with inside the price of conviction Bharwada Bhoginbhai Hirjibhai v State of Gujarat[1] *and study case laws and provide recommendations and conclusion.*

Keywords*: sexual offences, forensic science, the role of forensic science in the investigation.*

[1] *Bharwada Bhoginbhai Hirjibhai v State of Gujarat* (1983) 3 SCC 217

INTRODUCTION

Defining the terms

Sexual offences are defined as any crime that involves a sexual act without the consent of the other person. It is an unconsented interference with the physical body of a person in an inappropriate manner by the other person in a sexual manner. Sexual offences can also be defined as an undesired or unwelcomed sexual activity either physical, psychological, or intellectual which leads to subduing of the will of the sufferer where a person feels to have been victimized coercively and which involves the infliction of pain. Sexual offences are also considered to have happened when teenagers or lower-age children are contacted for sexual activity by an adult either in person, through telephonic activity, or connecting by any technological medium like social websites or emails.

Sexual offences are identified to be criminal activity in almost all the traditions prevalent throughout the past. It is the infringement of the human right of the victim. In their violent form, these offences incur irremediable impairment of the mind and body of the sufferer. On one side it brings humility and indignation and on the other side, it is associated with a social stigma to the victim for a lifetime.

Evidence has always been crucial to any kind of investigations comprises of investigation Criminal investigations comprise of investigation of offence, probable facts of occurrence, collection of evidence, probing the accused, and various other methods involved in the investigation. The offence of the accused has to be established primarily through the evidence.

Forensic Sciences Forensic has its origin in a Latin word that means 'Forensis' which means 'in open court public'. A quantum leap of scientific techniques in the field of evidentiary investigation has stimulated a pivotal role in the field of Criminal case investigation and eventually in the administration of justice.

FORENSIC SCIENCE IN INVESTIGATION

Forensic science primarily includes investigation and accumulation of physical evidence present at the probable place of occurrence of the alleged incident, analysis of the medical examination of the victim's body either alive or deceased, and any other object associated with the crime or the victim. It involves a detailed examination of all the samples. Furthermore, the fingerprinting technique, blood sample investigation, DNA analysis, and analysis of injuries of the victim either alive or deceased are a part of Forensic examinations.

Forensic science has now become an indispensable part of the investigation and plays a dominant role in the maintenance of law and order in society. Forensic science is the application of the methods and techniques of the basic sciences to legal issues. Forensic science is a very broad field of study. It includes Crime Laboratory Scientists, sometimes called criminalists work with Forensic Scientists on Criminalist work with physical evidence collected at the scene of crimes. The examination of evidence incorporates the applicability of multiple fields of science including physics, computer science, genetics, chemistry, and more. The detailed schematics are then analyzed and effective conclusions about the credibility of evidence and offences are drawn.

AMENDED LEGAL PROVISIONS

Section 53A[2] was included by an amendment in 2005 and this section mandates the medical examination of the accused by a registered medical practitioner for any evidence of the offence. This section also includes that the medical practitioner should submit the inferences along with the substantive reasons for the same.

Post Nirbhaya case: Several reforms were introduced after the brutal and barbaric Nirbhya case.

[2] Code of Criminal Procedure 1973, s 53A

Anti-Rape Act, in the amended act new inclusions of offences, was made. Addition of Sections 326A[3] and B cowl the problem of Acid attack. The modified act has made it a specific offence, punishable with a punishment of 10 years. Section 354A of the Indian penal Code (IPC)[4] provides for Sexual harassment and punishment for the same. Insertion of Section 354B of the Indian Penal Code[5] covers the offence of compelling a lady to get rid of her clothes. Insertion of Section 354C of the Indian Penal Code (IPC)[6] covers the offence of Voyeurism i.e. looking at a lady while she is engaged in a few personal acts consisting of sexual acts or while her elements are exposed. Insertion of Section 354D of the Indian Penal Code[7] covers the offence of stalking.

The definition of rape has been modified after the alleged barbaric incident of the Rape of an intern of physiotherapy Nirbhaya. The Amendment Act has made the inclusion of certain purviews for the constitution of the offence of rape which includes unconsented penetration of mouth, urethra, vagina, anus with the penis or different items with the aid of using each person and unconsented software of mouth to vagina, urethra, and anus. Addition of Section 376(2)(c) of the Indian penal Code[8] provides for the punishment of the offence of Rape done by employees of the armed forces.

Inclusion of Section 376A of the Indian Penal Code[9] states for the sexual homicide offence results in loss of life or a vegetative state. Mass rape cases are dealt with in Section 376D of the Indian Penal Code (IPC)[10] deals. Repeating offenders will incur imprisonment or loss of life. Employment of a trafficked individual also can entice penal provision. Additionally been clarified that penetration to any level and absence of bodily resistance or any type of different resistance is immaterial for reporting the offence of rape is immaterial. The age of presence of consensus elevated from 16 years to eighteen years

[3] Indian Penal Code 1860, s 326A
[4] Indian Penal Code 1860, s 354A
[5] Indian Penal Code 1860, s 354B
[6] Indian Penal Code 1860, s 354C
[7] Indian Penal Code 1860, s 354D
[8] Indian Penal Code 1860, s 376(2)(c)
[9] Indian Penal Code 1860, s 376A
[10] Indian Penal Code 1860, s 376D

SIGNIFICANT ROLE OF FORENSIC SCIENCE IN SEXUAL OFFENCES

Criminal offences of a sexual character include rape, which is regarded as one of the most terrible crimes. The duty of conducting a criminal investigation into rape offences is difficult for the agencies. Doctors or medical professionals are essential to crime investigation. The victim's medical examination has a time restriction in cases of suspected rape. If the incident's evidence is gathered or studied more than 24 hours after it occurred, it will be impossible to testify to it properly. For the efficient administration of justice, forensic science is tasked with conducting a comprehensive assessment of the evidence gathered throughout the inquiry. Particularly in cases when additional evidence, like witnesses from the murder site, is lacking, a careful examination of the medical and forensic findings is required. In these situations, the forensic and medical records speak for both the crime and the perpetrator. Therefore, this is very important in identifying and determining who the alleged accused is.

Within twenty-four hours following the occurrence, the victim and the accused should both undergo medical examinations. Failure to act in time will cast doubt on the veracity of the evidence, and injuries sustained over time will begin to mend. Medical examination only includes the victim's physical examination, including the collection of semen, the severity of any injuries sustained as a result of the victim's physical resistance to the incident, particularly those to their private parts, or those that were purposefully inflicted by the accused, the collection of blood samples, the examination of the victim's genital areas, and the victim and accused ages. A major and essential role is played in rape cases by forensic examination, which covers a wide range of topics. The foundation of forensic examination is the in-depth analysis of the sample gathered during any inquiry.

1) **Physical objects at the scene of the incident**: When physical things are found at the scene of the alleged occurrence, forensic science has a crucial role to play. Physical items could include hairs, blood stains, fibers, and any broken items that might have occurred during the victim's battle for rescue, as well as other items that could be extremely important in the course of the inquiry. The forensic analysis of the gathered items can be utilized to procedurally identify the

existence or likeness of the accused. The victim in *Mohd. Bashrat v State of J&K*[11] was a juvenile girl, while the accused was 22 years old. The inaccuracy of the forensic and medical reports cannot exonerate the accused of guilt. The victim's evidence may be used to support the physical evidence of the blood-stained ground and other evidence recovered at the scene, and the accused was found guilty.

2) **Forensic Semen Analysis**: The identification and determination of the accused depend greatly on the results of the forensic analysis of the spermatozoa from samples collected from the victim and the accused. The offender was identified in the case of the *State of Himachal Pradesh v Anil Kumar* by the study of the victim's semen. Even 24 hours after the occurrence, the spermatozoa are still thought to be present. But as time goes on, the evidence loses some of its validity. Therefore, it is required that the same be collected within a certain time frame of the claimed incidence. Semen samples from the victim's body and those from the accused are compared, resulting in the confirmation of the evidence.

3) **Age of the prosecutor and the accused**: The accurate age of the victim and accused might be significant in determining the gravity of the offence and how justice is to be administered. Science and medical science were used to accurately determine the victim's age. To determine the victim's age, where there are no birth certificates or other forms of age documentation. In situations when the ages of the accused or victim cannot be determined in any way, forensic science may be applied. In *Laxman Dan v State of Rajasthan*[12],

4) Examining the victim's clothing: The clothing items that the victim wore are another important piece of evidence. To identify the accused, it is possible to track down and closely study the likelihood of any stains on the accused's blood, sperm, hair, etc. In the case of the State of *Maharashtra v Chandraparkash Kewalchand*[13], the specimen of vaginal examination did not detect the presence of the accused's semen, but its presence on the victim's clothing was

[11] *Mohd. Bashrat v State of J&K* (2009) Cri LJ 3626
[12] *Laxman Dan v State of Rajasthan* (2001) CriLJ 4501
[13] *State of Maharashtra v Chandraprakash kewalchand* (1990) SCR (1) 115

unmistakable proof that the crime had been committed. Such proofs might relate to the certainty of the prosecutor's testimony and can be supported by relevant events and situations.

5) Inflicting bodily and genital injuries: There is a chance that someone will get hurt when trying to save someone from the offender's grasp. On the chest, waist, thighs, back, etc., these might be bruises, markings, or scratches. Resistance patterns can be examined, and the presence of any suspected person's sample in the wounds might be utilized to procedurally identify the culprit. In the case of *Rafiq v State of Uttar Pradesh* (1981)[14] the Supreme Court ruled that the absence of injury marks does not always indicate that the sexual act was performed with the permission of the female. In addition, it is important to recognize that the collection of all of this evidence is essential and that collecting one or more of these samples is insufficient**.**

To guarantee a thorough investigation leading to conclusive evidence, the foregoing samples should ideally be collected within 24 hours after the occurrence. Additionally, there is a chance that certain evidence, like an oral swab series, will disappear after 24 hours. The Supreme Court stated in *S P Kohli v High Court of Punjab & Haryana*[15] that the SMEGA test had limited meaning after 24 hours following the claimed incident.

CORRELATION OF FORENSIC EVIDENCE AND THE EVIDENCE OF PROSECUTRIX

The applicability of forensic science of DNA analysis was first administered in England *Enderby case* [1984] to trace the offender. In this case, two girls were raped and murdered by the accused. The tracing and identification of the accused were made through DNA analysis. DNA (De-oxy Ribo Nucleic Acid) is distinct for every human being. Therefore, DNA testing is the most reliable technique. DNA analysis gives a definitive approach towards the investigation of criminal offences. The medical examination evidence, circumstantial evidence, and Forensic evidence all can be corroborated to determine the offence. The absence of any one of these could lead to a miscarriage of justice. Forensic examination testifies to the time and occurrence of the incident.

[14] *Rafiq v State of Uttar Pradesh* (1981) SCR (1) 402
[15] *SP Kohli v State of Punjab* (1979) SCR (1) 722

The responsibility of forensic examiners is high as they would provide conclusive submissions on the case specifically where DNA analysis is present. Even the forensic examination of blood stains and saliva of the victim and accused can justify the offence. In some instances, an innocent can be implicated when the victim is deceased. Forensic science can come to the aid of the innocent with their scientific findings on any evidence available and can trace the lineage to the accused through the same. Lineage testing can also be employed to find the clan or race of the accused where all other evidence was absent or destroyed. Forensic analysis is the definitive technique where the accused is deceased and the other samples are destroyed. There is a probability of traceability through forensic analysis. As given within the instances of *State Of Punjab v Gurmeet Singh*[16] while clinical proof is not decisive, it performs a vital corroborative function to ensure the occurrence of the offence and show the act in addition to hinting a hyperlink to the accused.

LEGAL PRECEDENTS

Shimla Rape case [2014][17]

Facts: A trace of semen was found from the vaginal discharge of a young girl who was raped and murdered. The sample had both the chromosomes X and Y. Y-STR technique was for the extraction of Y-chromosomes from the sample. Innumerable DNA samples were collected from the locality nearby where the alleged incident was reported to have occurred and the dead body of the accused. The offender could not be traced irrespective of all endeavours for DNA testing. Therefore Lineage testing was first employed in India during the investigation of this case. Lineage testing is the procedure of analysis of a lineage of clan or race of an accused. A collection of samples of 100 men was conducted. The proliferation of the sample led to the identification of the profile of the accused.

[16] *State of Punjab v Gurmeet Singh* (1996) SCC (2) 384

[17] Gagandeep Singh Dhillon, 'Gudiya rape case: The brutal murder that shook Himachal Pradesh' (*The Indian Express*, 29April 2021) <https://indianexpress.com/article/india/gudiya-rape-case> accessed 15 November 2022

Held: The Clan of the offender's woodcutter was identified and traced. Further investigations testified to his commission of the offence. He was sentenced to life imprisonment.

Enderby case [1984]

Facts: This case is considered to have brought dawn on the forensic screening of the DNA for Criminal investigations. In the instant case, two girls were raped and strangulated to death in Narborough in a span of three years.

Absence of concrete evidence, a native Buckman was arrested and sampling was done. In the tenure investigation of the instant case, the DNA genetic analysis was discovered. The technique was applied to Buckman samples for investigation. The examination of DNA blood samples negated the involvement of Buckman in the incident. Then mass screening of 5511 men was made to identify the accused. The offender, Colin Pitchfork escaped the testing by doctoring the passport of his workmate and sending him for testing instead. The conversation between the accused with his workmate was reported by one of the persons present in the pub. Police arrested Colin and samples were matched in genetic screening.

Held: The innocent Buckman was set free. The accused was sentenced to 30 years of imprisonment.

Nirbhya case [2012][18]

Facts: Nirbhya case was the horrific, barbaric, and cold-blooded atrocity committed against women. During the investigation of the identification of the accused, forensic science played a part. The culprits brutally raped Nirbhya and subjected her body to cruel abuse. She collapsed due to the deadly injuries she sustained. The Nirbhya case stunned the globe as the innocent girl was exposed to the horrible acts of raping and inflicting severe lethal injuries. The automobile was identified using techniques and technology derived from forensic science. The blood sample, clothing, tissues, sperm, iron rods, and further evidence were confiscated from the car.

[18] *Mukesh v State (NCT of Delhi)* (2017) 6 SCC 1

DNA analysis of sperm and blood samples, as well as odontology, proved all of the defendants and their complicity in the crime.

Held: The death penalty was imposed on the defendants due to their barbaric actions. The court thought that the death penalty was the only appropriate retribution for such a diabolical crime. One defendant was a minor; he was transferred to a correctional facility.

RECOMMENDATIONS AND CONCLUSION

Currently, forensic science is a vital aspect of investigations and the administration of justice. Forensic Science is utilized in many types of cases, including civil, sexual, and criminal, regardless of the gravity of the offence. For rape offences, the science of forensic nature and clinical testimony involves determining the evidence and analyzing the situation to establish the accused's connection to the crime. The implications of the same are of the utmost significance. This technology provides a beneficial resource to the police's medical techniques for gathering evidence, with the use of advanced technology and methodology, and therefore maintains high quality and precision within the findings.

Medical and Forensic Science Evidence reveals the best place for delivering justice to the victim. If the innocent are wrongly implicated, science might additionally prevent wrongful prosecution. Forensic analysis is a critical examination of the amassed evidence of the commission of the crime. An upsurge in reported sexual offences necessitates vigilant oversight by the authorities. More hotline lines should be developed so that victims may be rescued in an emergency. Precautions for the preservation of physical evidence should be required. Awareness and education of minor children about the heinous crime, as well as developing in them the confidence to disclose and discuss any reported event, can protect the innocent from the heinous crime. Fear of societal shame has prevented many rural women from reporting crimes committed against them. Authorities reaching out to these victims might prevent additional harassment. The Ministry of Health and Family Welfare's 2018 Forensic Medical Examination Guidelines for Sexual Assault Cases and the Central Forensic Science Laboratory's 2018 Guidelines for Forensic Medical Examination in Sexual Assault Cases seek to establish

universally accepted standards for the collection, preservation, and application of forensic evidence in such cases.

Concurrently, it acknowledges the urgent need to fix the grossly inadequate infrastructure and human resources in the field of forensic investigation. In this business, the numerous laws established by the government must be followed and enforced. To have a complete understanding of forensic investigations, it is necessary to recognize and eliminate cognitive bias in law enforcement. In a culture plagued by intersectional inequalities in which the least privileged find it incredibly difficult to pin accusations on the more privileged offender, it is vital to reorganize forensic testing in India to account for this prejudice and the risk of tampered evidence. The use of the "Sexual Assault Evidence Kit, Uniform Protocol and Manual" or a comparable instrument, sensitivity training for doctors responsible for collecting evidence and the police, enhancements to localized evidence storage facilities, and the elimination of victim stigma are surface-level solutions to improve the efficient use of forensic science.