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# Investigation Process In India In Criminal CasesUsing Forensic Ballistics

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## ABSTRACT

When it comes to investigations involving weapons, forensic ballistics is indispensable in Indian criminal cases. The investigation process typically begins when law enforcement agencies collect evidence from the crime scene, such as bullets, shell casings, and firearms. These items are sent to forensic laboratories where ballistic experts analyze them to determine crucial information. This includes identifying the type of firearm used, matching bullets or cartridges to a specific weapon, and estimating the distance and angle from which the shot was fired. The examination also involves studying gunshot residue, trajectory analysis, and wound patterns to reconstruct the crime. This scientific evidence aids in establishing a link between the suspect, the weapon, and the crime scene, providing vital support for prosecution in court. Forensic ballistics in India is subject to stringent regulatory requirements meant to protect the reliability of evidence and maintain high criminal justice standards. The findings from ballistic investigations often serve as pivotal pieces of evidence, helping to solve complex cases involving armed crimes.

**Keywords**: Forensic evidence, criminal cases, India, Examination

## I. INTRODUCTION

Ballistics refers to the investigation and identification process that involves the methodical examination of the ammunition and firearms used in criminal acts. A firearm is a device by which a projectile or projectiles can be hurled with great force. It includes familiar hand weapons like revolver, pistol, rifle and shotgun but also the machine gun and an extensive variety of military artillery. The latter type of weapon is the concern of Ordinance experts. Moreover, the crimes committed with these weapons are not very common. Consequently, the kind of weapon used may be inferred from the victim's wound and state of health after a shooting. In fact, finding a weapon on the offenders' hands or at the crime scene may provide crucial information about the character of the perpetrator. Much information may be obtained even from the bullets or residue left behind. The combination of gunpowder and cordite in bullets causes burn markings on the skin of the injured or deceased victim.

Additionally, they leave a tiny residue on the criminal's palms and fingers. These burn markings may indicate the kind of weapon used, the distance from which the shot was fired, etc. The shell casing has markings from the bullet's impact. If the cartridge casings are found at the scene, these markings may be utilized to determine the gun's model and manufacturer. There are little ligatures and grooves on the barrel of every weapon. It should be noted that a revolver will shoot a round while keeping the shell casings within the barrel, whereas an automatic or semi-automatic weapon will eject them as it fires a cartridge. According to an opinion ballistic evidence now share the same footing as the fingerprint evidence[1].

Some firearm categories are formed below based on a number of factors, including the utilization of various weapon types in criminal cases:

**Shotgun:**

The shotgun is classified as a shoulder arm. All shotguns are smooth bore weapons, meaning that the barrel's cross section forms a perfect circle at all points. Because they shoot a single ball, slug, or charge made up of a large number of lead pellets (shots), they are referred to as shot guns. A shotgun may have one or two barrels. Shotguns include S.B.M.L., D.B.M.L., and S.B.B.L.

**Rifles:**

A single bullet is fired by all rifled guns. They can shoot powerful ammo and have a significantly longer barrel. The calibers of rifles define them. The exact measurement of the barrel's bore diameter between two opposing lands is called the caliber.

**Revolver:**

A revolver is a kind of rifled handgun that includes chambers for loading rounds in a rotating cylinder. There might be anywhere between four and seven chambers. The cylinder spins when the trigger is pulled, aligning one of the chambers with the barrel for fire. There are several calibers of revolvers available. Additionally, revolver sizes range from 0.38 to 0.455.

**Pistol:**

Handguns are rifled arms with a small barrel that may be shot with one hand. The revolver is essentially a pistol as well. However, it is referred regarded as a pistol-revolver because to its rotating cylinder. The magazine of a pistol is contained inside its grip. These come in every caliber between about 5 and 12 mm. With the characteristics covered below, the rifle barrel in a handgun is referred to as "Colt Type" and "Smith and Wesson type."

**Improvised Firearms:**

In addition to the conventional guns mentioned above, criminals in India often utilize improvised weapons these

[1] *Supra* note 14 at 406

days. They are usually referred to as "country made firearms" and go by a variety of names. The barrels often employ ordinary ammunition and are constructed from pipes intended for water lines. Cartridge shells that have been discarded are sometimes refilled and utilized. Regarding their overall composition and firing mechanics, each of these firearms is distinct from the others. Typically, country-made firearms have short barrels for easier hiding. They are chambered for several types of ammunition and often have smooth barrels.

**Ammunition:**

Cartridges made of projectiles, primer, propellants, and shells that are often seen in weapons are referred to as ammunition.[2]

## II. LEGAL PROVISIONS UNDER WHICH BALLISTIC EVIDENCE WASUSED/REFERRED

As a new method, ballistics has not yet been rigorously examined by the courts. Ballistics have only been adequately considered in a small number of cases. In *United States v. Mouzone***,** and *Commonwealth v. Pytou Heang*, court only mentioned about theNRC[3] report on ballistic imaging while taking the validity of the evidence for tool mark identification into consideration.[4]

The types of cases that and the legislations in which forensic ballistics played a significant role in solving crimes:

**The Indian Penal Code, 1860:**

Murder, attempted murder, criminal conspiracy, attempts to commit robbery or dacoity while armed with a deadly weapon, actions taken by multiple people in support of a common goal, sedition, unlawful assembly, culpable homicide that does not qualify as murder, theft in a residence, dishonest misappropriation of property owned by a deceased person at the time of death, house-trespassing after preparation for harm, assault or wrongful restraint, voluntarily causing harm and grievous harm by dangerous weapons and means, rioting, aiding and abetting, mischief, criminal intimidation, war against the state, war against the state conspiracy, planning to commit dacoity, causing evidence of an offense to vanish, providing false information to screen offenders, or impeding public servants from performing their duties

**The Arms Act, 1959:** Section 25: Penalties for certain offenses, Section 27: Penalties for the use of weapons, etc. Section 39: Weapons and ammunition import, transportation, and reexport licenses Section 3: Permit to purchase and possess guns and ammunition Section 7: Prohibition of obtaining, possessing, manufacturing, or selling banned weapons or ammunition Section 30: Penalties for violating a license or regulation

**Ranbir Penal Code, 1989:** Section 302- Murder**,** Section 304 Part I- Culpablehomicide not amounting to

[2] B.S. Nabar, *Forensic Science In Crime Investigation* 174 (Asia Law House, Hyderabad, 3rd edn., 2002)

[3] National Research Council, Committee to Assess the Feasibility, Accuracy and Technical Capability of a National Ballistics Database, Ballistic Imaging, 93 (The National Academies Press, Washington D.C. 2008) *available at*: *http://www.nap.edu/catalog/12162/ballistic- imaging* (Last visited on, October 2022)

[4] V.R. Dinkar, *Scientific Expert Evidence* 194 (Eastern Law House, Calcutta, 1st edn.,2013)at 275

murder

## III. CRIMINAL CASES IN WHICH BALLISTIC EVIDENCE WAS USED/REFERRED FOR RECORDING CONVICTION OR ACQUITTAL

### 1. Prem Kumar And Another v. State of Bihar (1995) 3SCC 228

**a) Background of the case:** In accordance with section 302 read with section 34 of the IPC, the Session Judge found Accused 1 and 2 guilty of killing T and trying to kill G and R. They were found guilty under section 307 of the IPC and sentenced to seven years of harsh imprisonment in addition to a life sentence under section 302 of the IPC. The High Court upheld A1 and A-2's conviction under section 302. However, A-1 and A-2's conviction under section 307 IPC was overturned. Thus, this appeal was favored by A-1 and A-2.

b) **Facts of the case:** The event was caused by animosity that existed between the appellant's family and the dead family. It was claimed that the dead had killed the brothers of accused 1 and A-2. The prosecution said that on the day of the incident, T, PW1, PW2, and PW8, together with two more people, boarded a bus to return to their separate locations after attending the hearing of the murder case involving the brothers of the current accused 1 and 2. A automobile pulled up behind the bus and stopped in front of it after it had been halted for some time. Then, A-2, A-6, and their coworkers exited the vehicle. The rest of the people were equipped with rifles, but A-6 were empty-handed. A vehicle pulled up and halted in front of the bus in the meantime. He got from the vehicle A-1 with a rifle and his fellow gun-wielding buddies. The accused and other co-conspirators began announcing that T should be dismembered since he was inside the bus. As soon as they heard this, the bus's occupants were terrified and began to run. At that moment, A-1 and A-2 entered the bus via the front door. When he saw A-1 and A-2 shooting indiscrimately at T, PW8, who had covered his face with the chaddar to conceal his identify, hurried to the bus's rear door. PW5 and PW6 were also hurt in the fire. By that point, PW8 had succeeded in disembarking from the bus along with several other passengers, and he hid in dense undergrowth close by. The accused and others shouted victory chants and ran away in their vehicle and jeep after learning of T's death.

c) **Typology of Forensic Evidence Used in the Case:** All the injuries werecaused by shots of **firearms** which also led to the death of T.

**d) Report Of The Experts Regarding The Case:** PW4 performed T's post-mortem examination and concluded that injury 2 was the wound of exit and injuries 1 and 3 mentioned above were wounds of entrance. T's death was brought on by shock and bleeding from a gunshot wound. After the post-mortem examination, 12 to 18 hours had passed since the death. In the normal run of nature, each injury alone was enough to result in death. The post-mortem examination report was in Ext. 3. Dr. K. Singh performed PW5's medical checkup. There was one lacerated laceration on the shoulder's left side. It was unable to investigate the depth. The skin around the wound was charred. Three shots were seen on the upper left part of the back on the X-ray plate. It was a straightforward incident brought on by a gun or rifle. The damage occurred within 12 hours. The medico-legal certificate was Ext. 2/1.

e) **Ground For Accepting The Forensic Evidence:** Despite the appellant's attorney's argument that neither the recovered cartridges nor any ballistic expert were sent to or examined, the court in this regard cited the court's observation in this regard as well as a Supreme Court ruling in Mohinder Singh v. State. According to the court's opinion, the remark made in the aforementioned instance is relevant in situations when the victim's weapon was in the courtroom and it was unclear if the injuries were inflicted by the weapon. The weapons used by A-1 and A-2, however, were never found in this instance. Therefore, under the circumstances, the prosecution was unable to claim that a specific, identifiable weapon was used to perpetrate the crime. In this instance, the ballistic expert had nothing to examine. As a result, the specific background mentioned above should be used to understand the remarks made in Mohinder Singh v. State. The appellant's attorney's argument lacked validity.

f) **Impact of Forensic Evidence** (**Conviction**)**:** The **conviction** of A-1 and A-2 was upheld as there was no merit in the case and the appeal was dismissed[5].

**2. Sukhwant Singh v. State of Punjab (1995) 3 SCC 367**

In connection with the murder of the deceased, the appellant was tried for a section 302 violation. Although the firearm and ammo were removed from the accused and empty cartridges were discovered on the scene, the prosecution failed to send the confiscated weapon and the retrieved empty cartridges to the ballistic expert. prosecution based solely on the evidence provided by the deceased's brother. The court decided that the ballistic expert's opinion is essential in cases involving firearm-related injuries where both the weapon and the crime cartridge were discovered during an investigation to connect an accused individual to the crime. In certain cases, failure to deliver the expert opinion before the trial court has a substantial effect on the creditworthiness of the prosecution's case. After meticulously analyzing the circumstances in the record, the court determined that it would not be safe to uphold the appellant's conviction based only on the testimony of PW3, the deceased's brother. Because the trial court's conviction and penalty could not be maintained, the appeal was granted, and the appellant was declared innocent.[6]

**3. Gajadhar Soni v. State of M.P. (04.12.1996 – MPHC) MANU/MP/0786/1996**

In accordance with section 302 of the IPC, the accused was found guilty of murder. In the present instance, the FSL report unequivocally declared that the moment at which the cannon last fired could not be determined with any degree of scientific precision. The accused's gun had discharged at some point, but it was impossible to pinpoint the precise moment when the event occurred. It was normal practice to not clean the barrels of firearms after each firing, and it's possible that the gun had already fired before the accused took it. Since the prosecution witness had not backed up the case, there was no proof that the accused had shot a pistol. Even the confiscation of the accused's pistol, for which he had a legal license, did not provide any confirmation. The accused's participation in the crime was not supported by the deceased's assertion in the dying declaration. As a result, the

[5] *Prem Kumar And Another v. State of Bihar* (1995) 3 SCC 228

[6] *Sukhwant Singh v. State of Punjab* (1995) 3 SCC 367

conviction was overturned, and the accused was found not guilty. The appeal was granted.[7]

**4. Jagdish Kumar and Ors. v. State of H.P. (15.05.1996 – HPHC)MANU/HP/0140/1996**

The trial court found the appellant guilty in accordance with section 302/34 IPC. Thus, this appeal. The respondent's wife was the target of the appellant's filthy and offensive remarks. The respondent made an effort to block their use of such words. The respondent/husband died from his wounds, and an autopsy was performed on his corpse after the appellant, who felt wronged by the respondent's meddling, requested one of his friends to shoot him with the goal of killing him. Held: Respondent was shot down after the appellant's friend begged him to do so in order to see the terrible outcome. The sealed package with the empty cartridge was kept and sent to a ballistic specialist. The appellant intended to murder the respondent. Additionally, the respondent's blood-stained clothing was discovered. The appeal was denied, and the conviction was maintained.[8]

**5. Raj Kumar v. State of Haryana (13.06.1996 – PNHC) MANU/PH/0916/1996**

Meetings The judge found the defendants guilty under the Arms Act's Sections 302 and 27. Thus, this appeal. Held, the doctor said throughout the trial that the deceased's wound, which was characterized as blackening in injury No. 1, required a minimum of three feet and a maximum of six feet between him and the attacker. Therefore, it is never possible to assume that a single shot fired from a 12-bore, single-barrel rifle 40 to 42 feet away caused the deceased's injuries. The ballistic expert was tasked with analyzing the gun that was found on the accused and the empty that were found on the scene. It was useless since it did not support the prosecution's case, even though it was stated that the pistol was operational and that the cartridge casings taken from the area were believed to have been shot from the gun. It was challenging to believe them as eyewitnesses to events since their additional proof was completely at odds with medical data. The testimonies of other witnesses contradicted one another, and the accused had no reason to murder the dead. As a result, the prosecution's case lacked convincing proof. As a result, the appellant's conviction was overturned, and he was exonerated of all accusations brought against him. The appeal was granted.[9]

**6. Bilal Ahmed Kaloo v. State of A.P. (1997) 7 SCC 431**

**a) Background of the case:** Under the 1987 Terrorist and Disruptive Activities (Prevention) Act, B was a party to a prosecution. Despite being exonerated of the TADA offenses by the designated court, he was found guilty of sedition under sections 124-A of the IPC and 25 of the Arms Act and given a life sentence in prison. He was also found guilty of a number of other lesser offenses, each of which carried a three-year rigorous prison sentence. The aforementioned convicted individual had filed this appeal under section 19 of the TADA.

**b) Facts of the case:** The appellant actively participated in A1-Jehad, a terrorist group founded with the ultimate

[7] *Gajadhar Soni v. State of M.P.* (04.12.1996 – MPHC) MANU/MP/0786/1996

[8] *Jagdish Kumar and Ors. v. State of H.P.* (15.05.1996 – HPHC) MANU/HP/0140/1996

[9] *Raj Kumar v. State of Haryana* (13.06.1996 – PNHC) MANU/PH/0916/1996

goal of freeing Kashmir from the Indian Union. In light of this, the appellant incited inter-communal animosity among Muslim youngsters in Hyderabad's historic district, encouraged them to engage in armed militancy training, and provided them with weapons and ammunition. He personally carried deadly weapons, such as live ammunition and a homemade pistol. The police closely monitored the appellant's movements throughout the time of the several bombings that took place in Hyderabad. Following his arrest and the recording of his confession, the police confiscated a pistol and two cartridges that he had produced. Following the conclusion of the inquiry, he was charged with offenses under sections 124A, 436, 153-A, and 505(2) of the Indian Penal Code, as well as sections 3(3), 4(3), and 5 of the TADA and section 25 of the Indian Arms Act, before the Hyderabad Designated Court.

c) **Typology of Forensic Evidence Used in the Case:** The report of the **ballistic expert** was used to examine the recovered weapon and the cartridges.

d) **Report Of The Experts Regarding The Case:** The ballistic expert (Assistant Director of FSL) conducted scientific test on the articles and reported that the seized articles were in perfect working condition. Particulars of the weapon given in the seizure memo tallied with the weapon on examination by the ballistic expert.

e) **Ground For Accepting The Forensic Evidence:** Allegations of tampering with those articles were not made at any stage of the case neither there was any challenge to the seizure memo and the same tallied with the weapon on examination by the ballistic expert. The identity of the weapon thus stood established beyond any reasonable doubt. Therefore the court was in agreement that the appellant was in possession of arms and ammunitions in violation of law and he was thus liable to be convicted under section 25(1-B)(a) of the ArmsAct. The sentence awarded by the trial court (RI for 3 years) in the circumstances of the cases needed no interference.

f) **Impact of Forensic Evidence** (**Conviction):** The appeal was partly allowed by setting aside the conviction and sentence passes on the appellant for offences under sections 124A, 153-A and 505(2) of IPC. But the **conviction** and sentence passed on him under section 25(1-B)(a) of the Arms Act was confirmed[10]

## IV. CONCLUSION

Forensic ballistics investigations in India are thorough and methodical processes that are essential to resolving firearm-related crimes. Ballistic evidence, such as guns, ammunition, and cartridge boxes, are first gathered from crime scenes then meticulously recorded and stored to prevent contamination. Then, using cutting-edge methods like comparison microscopy, which helps link discharged bullets or cartridge casings to a particular handgun, the forensic specialists examine the tangible evidence. In order to provide important information about the circumstances of the crime, ballistics specialists additionally look at the trajectory, shooting distance, and gunpowder residue. These analysis' conclusions are essential for determining the weapon used, piecing together the events, and connecting suspects to the crime. Forensic ballistics is essential to the Indian criminal justice system because of its methodical methodology and legal scrutiny, which enable courts to decide guilt or

[10] *Bilal Ahmed Kaloo v. State of A.P.* (1997) 7 SCC 431

innocence based on scientific evidence.

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