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Review Article

Deaths in railways and role of forensic medicine

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ABSTRACT

Deaths in the railway premises, tracks, train and other railway related properties are often accidental, suicidal and may at times homicidal in nature. To identify the cause of death and timely disbursement of justice to victims and their aggrieved families is the primary motive of the police, forensic services and the judicial system. The establishment of the Railway Protection Force (RPF) and Government railway police (GRP) is for the protection of railway property and handling crime happening in it. Involvement of local police, forensic.

There is a sharp decline in crime happening in railway properties in India (RPF shows a great decline in the number of cases since 2018 (1094684) to 2019 (949695). Government railway police (GRP) also reported Cases (Registered by GRP (IPC+SLL) which show sharp decline in crime since 2018 (107092) in 2019 (99381) but still there is great scope of integrating the existing law enforcing agencies along with forensic medicine in reducing the crime further in railways.

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1. Introduction

Railway accidents and death within the premises of railway has a huge and vast dimension. It includes suicide on the tracks, injuries and death while boarding and deboarding the trains, stampedes and other homicidal intent crimes happening on railway property.

The Railway Protection Force (RPF) since the day of its inception in 1957 on the August 29th by the act of the parliament called as Railway Protection Force Act 1957 is working hard tirelessly for the safety of the railway and the railway property area.¹ This act is being amended from time to time, especially to mention is the amendment done in 1987 which gave the directions about rankings, describes the structure and duties in RPF officials.² The amendment done in 2003 also known as RPF amendment act 2003 the word “Railway Property” is being substituted by *Railway*

*Property, Passenger Area And Passenger.*³ this lead wide coverage in the framework of RPF.

The crime and death are the railways is never ending phenomenon so the RPF had to work day and night without break for the safety and security of railways, its goods and passengers. The crime reported by RPF shows a great decline in the number of cases since 2018 (1094684) to 2019 (949695). Government railway police (GRP) also reported Cases (Registered by GRP (IPC+SLL) which show sharp decline in crime since 2018 (107092) in 2019 (99381) which is a great achievement.⁴ It indicates that all the administrative and protective measures are working effectively and efficiently. Railway accidents contribute a lot in accident statistics in NCRB data (National Crime Records Bureau, it was 13018 (11968 deaths and 1127 injuries).⁵ The suicide by jumping from train/vehicle was 634 and by coming deliberately under the running vehicle / train was 2626 (NCRB 2020).⁶

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It seems the railway forces along with the forensic medicine and forensic sciences have a lot of work to do daily basis and also there is a large scope to improve the services in reducing the crime and accident on railway properties.

India as a developing nation and railway being the backbone of the economy is performing far better than the other developing nations. There is a strong and urgent need of strengthening of forensic medicine and other allied branches to tackle the crime and further boosting the railway safety and security.

2. Discussion

Forensic Medicine and other forensic science branches are being integral part of the Indian Judicial System in aiding smooth and efficient disbursement of justice.⁷ The work starts from ground level (in violence, injury, sexual assault, death etc.) by securing the crime scene to the collection of evidence (injury noting, description) and maintaining the evidence in proper chain and also finding out the cause of death if any.⁸

Death on railway property needs proper evaluation and also time bound investigation so that the smooth functioning of railway traffic is being maintained.

2.1. Bernard Knight has classified the railway accidents into three groups:⁹

1. *Train Accidents*: Accidents to trains and rolling stock on or affecting passenger lines, and failures of rolling stock, track, and structures.
2. *Movement Accidents*: Accidents to people caused by the movement of railway vehicles, excluding those due to train accidents.
3. *Non-Movement Accidents*: Accidents to people on railway premises, but not connected with the movement of railway vehicles.

Death due to train accidents is usually huge in number and in that the main focus remains on recovering the bodies their segregation and identification. The situation demands most of the time like disaster management, including all other resources to carry out rescue operations.

Investigation in death due to movement accidents is very tedious job on the part forensic pathologist/ autopsy surgeon in determining the cause of death. Various presentations that can be of death on railway track,¹⁰

1. Fall from moving train
2. Suicide on the railway track
3. The accident of a person (s) while crossing the railway crossing/ track
4. Accident with another crossing vehicle (other than train)

Presentation at the crime scene could be of a wide variety including

1. The deceased may be thrown off
2. Body parts may be dismembered and widely spread.
3. Only the neck of deceased run over by the train on the track
4. The deceased's body dragged by engine or rolling stock.

Depending upon the nature of the accident, crime scene can be localized or widely spread. It is a Herculean task to secure the crime scene and collect the evidence, apart from this there is an impending demand to keep the railway traffic moving. The role of the investigating officer, workers of the forensic field unit are immense and meticulous especially in collecting the body parts, searching and collecting the evidence.¹¹

Death due to Non-movement accidents are a variety of causes including

1. Death in train coaches.
2. Death on platforms.
3. Death in waiting rooms.
4. Dead on track. (not by moving train)
5. Death on other railway property.

A person may die in railway coaches may be different natural and unnatural causes. Natural cause could be heart failure, diabetes mellitus, asthma, stroke etc. whereas unnatural causes may include murder, suicide, accidents, poisoning etc. Death on the platforms, staircases and overhead bridges could be as a result of a stampede, poisoning or any remote homicidal or accidental act.¹²

Lot of incidences happens during rush hour in local passenger trains or express train during festivals, rallies, processions, exams etc. Most common injury during stampede is chest injury that may lead to traumatic asphyxia and death. Injuries during boarding and disembarking of the train can cause amputation of the legs, trunk that can further lead to death.¹³ There are also incidents of death and injuries to the passengers travelling on the roofs of the trains and accidentally touching the overhead transmission wire (25000 volts) leading to burn injuries, instantaneous death or severe morbidity. These deaths need careful and detailed study at the autopsy table to find the cause of death.¹⁴ Though all practical operations manual are in place in all the forces and all the learned investigator and trained forensic field unit officials know their work properly, but there is still the need of filling in the communication gap at the interagency or departmental level.¹⁵

In the digital communication and data sharing world we need fast and secure data sharing at an inter agency level

1. Photograph of body and body parts.
2. Photograph of any weapon used.
3. Other evidences helping in autopsy.

Photographs and other available evidences that can help in establishing the cause of death should be shared with

mortuary staff at most of the time the autopsy surgeons are clueless about the crime scene and this deficiency often leads to harder and time consuming.

Autopsy of cases in which stampede is the cause of death surgeon should look for signs of flail chest, pneumothorax, head injury etc. Poisoning and drug related cases should be properly examined and analyzed, including blood alcohol level.

Autopsy surgeons also need especial training in dealing with cases related to death railway accidents (especially due to engine and rolling stock dismembering and mutilating the body). Proper time and trained staff are needed in mortuary while assisting the autopsy. Dragged bodies need especial skill and time devotion in determining the cause, time, and possibly the nature of death. Though it is a tough task, but especially dedicated facility is required. Other specialties like pathology, microbiology, toxicology etc. should be engaged depending upon the case.

3. Recommendation

1. Regular psychological evaluation of railway staff should be made mandatory (especially train drivers) as mental wellbeing is very critical to avert accident and derailment.
2. Train drivers should be subjected to regular checkup for vision, diabetes, hypertension, cardiac diseases etc. as these diseases may lower the decision making capacity of the train drivers.
3. Proper monitoring of railway tracks, crossings (underpass or over bridge should be constructed as required) done to prevent accidents and suicide on the tracks
4. Stampedes at platforms, stairs, and overhead bridges should be avoided. This may need proper monitoring, repair and application technology if required.
5. The Inter - agency workshop should be done to make everyone well verse with RPF needs and remedies.
6. Seminar and lecture should be organized and exchange of information and knowledge should take place.
7. Forensic medicine and forensic science lecture should be organized for inquiry officers' as they are first responders to the crime scene to make them well verse with body and evidence handling.

4. Source of Funding

None.

5. Conflict of Interest


None.

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