

## Demographic Profiling of Decapitation Injuries in Train Accidents at Raigarh (C.G.)

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### Abstract

**Background:** Accident in rail track is one of the important segment in death investigation. Among the rail track accidents, death due to decapitation is one of the complex segment. Decapitation or beheading is an imminently fatal entity. There are possibilities that decapitation in rail track might be either accidental or homicidal or suicidal. **Materials and Methods:** The present cross sectional retrospective study of death due to railway decapitation cases had been carried out in the Dept. of Forensic Medicine at Late Shri Lakhiram Agrawal Memorial Govt. Medical College, Raigarh, Chhattisgarh. In this study autopsy records of all railway track decapitation death cases, which were autopsied at K.G.H. mortuary, Raigarh during the period of 04 years (2015–2019) were included for research purpose. **Results and Observations:** In our study decapitation injuries were 1.07% of total autopsy and 18.18% of total train accident cases. Males were predominant over females. Victims of age group 21–50 were maximum in number i.e 70.83%. Accidental decapitation was found in most of the cases i.e. 66.67%. **Conclusion:** Decapitation in railway track fatalities are not uncommon. Decapitation injuries are mostly accidental in nature, but suicidal and homicidal death cases have also been reported, so the pattern of injuries in railway decapitation injuries should be assessed cautiously by autopsy surgeons and final opinion should be formed only after considering all circumstantial evidences

**Keywords:** Rail track; Death investigation; Decapitation; Accidental; Homicidal; Suicidal.

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### Introduction

Oxford dictionary had defined decapitation as “The action of cutting off the head of a person or animal”.<sup>1</sup> Decapitation or complete severance of the head from the body is a rare event in the civilian setting and is reported to account for approximately 0.1% of medico-legal autopsies.<sup>2</sup> Complete decapitation

without any further mutilation of the victim in homicides is relatively rare.<sup>3</sup> Decapitated bodies are predominantly associated with decapitation by wheels of trains or with post-mortem dismemberment following homicide.<sup>4</sup> Some methods of suicide may also result in decapitation, either as an intended outcome or as a result of some unforeseen complication of the method used.<sup>5</sup> Apart from railway mishaps decapitation injuries are also seen in homicides<sup>6</sup>. Decapitations have also been reported in vehicle assisted suicide as well as some cases of complete hanging.<sup>7,8</sup> In the cases of decapitation in railway accidents usual features are the local tissue destruction, usually with grease, rust or other dirt soiling of the damaged area.<sup>9</sup>

**Review of Books & Literatures:** Biswas (2012)<sup>10</sup> had mentioned maximum number of death due to railway accident in China and India due to wide network and unprotected crossings. Indian

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authoritative figures like Nagesh Kumar Rao (2010)<sup>11</sup>, Modi (2013)<sup>12</sup>, Umadethan (2016)<sup>13</sup> had mentioned about the incidents of decapitation injuries with respect to death cases in railway accidents. Byard and Gilberd (2004)<sup>14</sup> reported only 13 cases of suicide involving death by decapitation in an autopsy series of 16,589 in 17 years period. Tsokos *et al.* (2004)<sup>15</sup> reviewed 7681 autopsies in 7 years period and reported that only 10 cases of suicidal complete decapitation. Seikhetal (2008)<sup>16</sup> had found 9 cases of decapitation out of 1016 cases i.e. 88%. Satish NT *et al.* (2012)<sup>17</sup> had found 35 cases of decapitation out of 763 cases. Valsala K *et al.* (2017)<sup>18</sup> had mentioned 9.6% of death was due to decapitation injury. P. Ravi Kumar (2017)<sup>19</sup> had found, 20 cases of decapitation out of 300 medico-legal autopsies.

### ***Aims and Objectives***

1. Assessment of decapitation injuries in train accidents.
2. Differentiation of decapitation injuries in train accidents and other decapitation injuries involving road accidents and homicidal cases.
3. Frequency of cases based on age, sex etc.

### ***Justification for the study***

- a. Academic- Study of pattern of injuries in decapitation cases.
- b. Helping investigating agencies in correct identification as well as correlation with circumstantial findings.

### **Materials and Methods**

The present cross sectional retrospective study was conducted in the Department of Forensic Medicine & Toxicology at Late Shri Lakhiram Agrawal Memorial Govt. Medical College, Raigarh. All the post-mortem records of decapitation cases due to train accidents conducted at mortuary of KGH, Raigarh (CG) were considered for the research study. All cases other than train accidents and skeletonised cases were excluded from the study. People of all age groups from both sexes were included in the study. The study was conducted from 1<sup>st</sup> April 2015 to 31<sup>st</sup> March 2019 (Four Years). All the data were collected and subjected to statistical analysis.

### ***Photographs***



**Photograph 1:** Decapitation in railway accident (S.O.C)



**Photograph 2:** Railway decapitation injury with findings of grease and dirt over decapitated region of head and neck



**Photograph 3:** Railway decapitation with deposition of dirt and grease

## Results

**Table 1:** Incident statistics

Sl. No	Year	Total Autopsy Cases	Total Cases of death due to Railway Injury	Total Number of Decapitation cases in Railway
1	2015	473	22	3
2	2016	561	32	8
3	2017	514	28	4
4	2018	551	41	4
5	2019	145	11	5
Total		2244	132	24

The **Table 1** shows that decapitation injuries were 1.07% of total autopsy and 18.18% of total train accident cases.

**Table 2:** Police station and sex wise distribution of cases

Sl. No	Police Station	Number of Cases		Total
		Male	Female	
1	Chakradhar Nagar	05	01	06
2	City Kotwali	01	00	01
3	GRP-RIG	10	03	13
4	Jute Mill	01	00	01
5	Kotra Road	03	00	03
Total		20	04	24

Maximum number of cases were referred from G.R.P followed by Non G.R.P P.S. Males were predominant over females (**Table 2**).

**Table 3:** Profiling of Victim

Residence		Identity		Place of recovery of dead body		Disease	
R	U	K	Un	Railway Track in Railway Station	Railway Track other than Railway Station	Present	Absent
12	12	22	02	03	21	04	20

R= Rural, U= Urban, K= Known, Un= Unknown

**Table 4:** Age wise distribution

Sl. No.	Age Group	Number
1	0-10	0
2	11-20	1
3	21-30	6
4	31-40	5
5	41-50	6
6	51-60	4
7	61-70	1
8	71-80	1
9	81-90	0
10	91-10	0
Total		24

In maximum number of cases the identity of the victims was known. The dead bodies recovered from railway track other than railway track in railway station is quite high. Among total death cases about 1/5<sup>th</sup> (20%) deceased were suffering from disease (**Table 3**).

The **Table 4** shows that the victims of age group 21-50 were maximum in number i.e 70.83%.

**Table 5:** Distribution of cases according to manner of death

Sex	Suicide	Homicide	Accident	Pending	Total
Male	03	0	13	04	20
Female	00	0	03	01	04
Total	03	0	16	05	24

Accidental decapitation was maximum in number i.e. 66.67% (**Table 5**).

**Table 6:** Head injuries

Sl. No	Trait	Number of Cases
1	Injury over Head, Face and scalp (Abrasion, Bruise, Laceration)	15
2	Skull Fracture	08
3	Brain Hgs.	07
4	Crush injury	05

Injuries overhead, face and scalp (abrasion, bruise, laceration) were found in most of the cases followed by skull fracture, Brain hgs, crush injuries (**Table 6**).

**Table 7:** Injuries over other parts of the body

Sl. No	Trait	Number of Cases
1	Injuries (Abrasion, Bruise, Laceration etc.) over upper part of body (Chest, Abdomen, Back and Upper limbs)	16
2	Injuries (Abrasion, Bruise, Laceration etc.) over lower parts of the body (Ext. Genitalia, Buttocks, Thigh, Lower Limbs)	01
3	Amputation of Upper Limbs	09
4	Amputation of Lower Limbs	03
5	Crush injuries of Upper Limbs	05
6	Crush injuries of Lower Limbs	02
7	Crush injuries of internal organs	01
8	Injuries to Vital Organs	04
9	Fracture of bones other than Skull and Cervical Vertebrae	09

## Discussion

In the present study, the cases of decapitation on railway track found in both GRP as well as in Non GRP P. S., which matches with the study of Sheikh *et al.* (2008)<sup>16</sup> where fatalities in railway accident were also found in both GRP and non GRP P.S. Males were major victims in railway decapitation than females, which also matches with the findings of Satish NT *et al.* (2012).<sup>17</sup> In our study we found that accidental decapitation cases were maximum in number i.e. 66.67%, and this closely matches with the study of Bahadır Kumral *et al.* (2012).<sup>2</sup> The present study also shows that victims of age group 21–50 were maximum in number i.e 70.83% in railway decapitation cases, whereas the study of Wasnik RN (2010)<sup>20</sup> also confirms that maximum number of death in railway fatalities occurred in the age group of 20–49 years i.e. 69.34%.

## Conclusion

Decapitation injuries in railway fatalities are increasing in number. Apart from railway mishaps decapitation injuries also had been seen in homicides<sup>6</sup> where persons have been killed by decapitation or else their head have been severed after being killed. Decapitations have also been reported in vehicle assisted suicide as well as some cases of complete hanging.<sup>7,8</sup> So the complex scenario poses a great challenge to the forensic pathologist during discharge of his duty with perfection. Therefore meticulous autopsy with detailed assessment of all circumstantial findings is necessary to rule out any possibility of foul play.

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**Conflict of interest:** None declared.

**Ethical Approval:** The study was approved by institutional ethical committee.

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