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Original Research Article

# Incidence, etiology and location of extradural hematoma in surgically managed patients

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ABSTRACT

**Background:** One of the major public health issues worldwide is traumatic brain injury. EDH is most commonly located in the temporoparietal region. Proper and timely management of these patients improves the outcome.
**Aims:** To interpret the incidence, etiology and location of EDH in surgically managed patients.
**Settings and Design:** Surgically operated EDH patients were epidemiologically analysed as per the age, gender, mechanism of injury, GCS at admission, site of hematoma and associated intracranial injuries.
**Materials and Methods**: Epidemiological analysis of thirty operated EDH patients was done.
**Statistical analysis**: Statistical evaluation was done .
**Results:** EDH was more common (76.67%) among males than females (23.33%). Mostly patients (50%) were in the age group of 21-41 years. Road traffic accident was the most common (50%) mode of trauma leading to EDH occurrence. Temporoparietal EDH was the most common (36.66%) location on CT scan. Most common (70%) associated intracranial injury observed was the skull fractures.
**Conclusion**: EDH is a serious complication of head injury. Early diagnosis and proper management is required. EDH is more common in men. Careful interpretation of CT scan head is important to get information about the location EDH and other associated injuries before proceeding for surgical evacuation.



## 1. Introduction

Traumatic brain injury (TBI) is one of the major public health issues worldwide. Extradural hematoma (EDH) is a collection of blood between the inner table of skull and duramater and occurs in 1% - 5% of TBI.

EDH is most commonly located in the temporoparietal region. EDH is mostly of arterial origin. In one third of the patients venous bleeding or oozing from the fractured skull bones can also lead to EDH.[1]

In classical presentation of EDH there occurs a brief loss of consciousness (LOC) and then it is followed by a lucid interval of several hours. After this obtundation with focal neurologic signs occurs.

Male gender, age group of 20-30 years, road traffic accidents, falls and physical assaults are high risk factors for traumatic EDH.[2,3]

For the prevention of death or neurological morbidity in EDH patients usually a quick surgical evacuation is required.[4]

## 2. Materials and Methods

An epidemiological analysis of 30 patients operated upon for acute traumatic EDH over a period of one year was done. Age, gender, mechanism of injury, GCS at admission, site of

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hematoma and associated intracranial injuries were noted.

### 2.1. Inclusion criteria

EDH cases requiring surgical intervention.

### 2.2. Exclusion criteria

Conservatively managed EDH patients were excluded.

After taking informed consent, patients were operated under general anesthesia. The shape and size of skin incision was as per the site of the haematoma.

Craniotomy was done in all the cases. All clots were removed carefully. Small adherent clots were left. Dural hitches were taken and bone flap was kept back in all the cases and then wound closure was done in layers.

The statistical analysis was done with the software SPSS 16.0 for windows.

## 3. Results

EDH was more common (76.67%) among males than females (23.33%) in our study.

Most of the patients (50%) were in the age group of 21-41 years [Table 1].

**Table 1:** Age Incidence

| Age Group (Years) | Frequency | Percentage (%) |
|---|---|---|
| 0 – 20 | 10 | 33.3 |
| 21 – 41 | 15 | 50 |
| 42 – 62 | 5 | 16.7 |

RTA was the most common (50%) cause leading to EDH occurrence in our study, followed by fall in 46.66% and assault in 3.33%.

60% of the patients had a GCS of 13-15, 16.66% had GCS of 9-12 and 23.33% had GCS of ≤ 8 at the time of admission.

Temporoparietal EDH was the most common (36.66%) location on CT scan in our study followed by frontal region (26.66%) [Figure 1].

Right side EDH (53.33%) was more common than left side EDH (46.66%) on CT scan findings.

Other associated intracranial injuries observed were skull fractures in 70% of cases, followed by contusions in 20% of cases, acute subdural hematomas in 10% of cases and pneumocephalus in 6.66% of cases [Table 2].

**Table 2:** Associated Intracranial injuries

| Associated Intracranial injuries | Frequency | Percentage (%) |
|---|---|---|
| Acute SDH | 3 | 10 |
| Skull fractures | 21 | 70 |
| Contusions | 6 | 20 |
| Pneumocephalus | 2 | 6.66 |

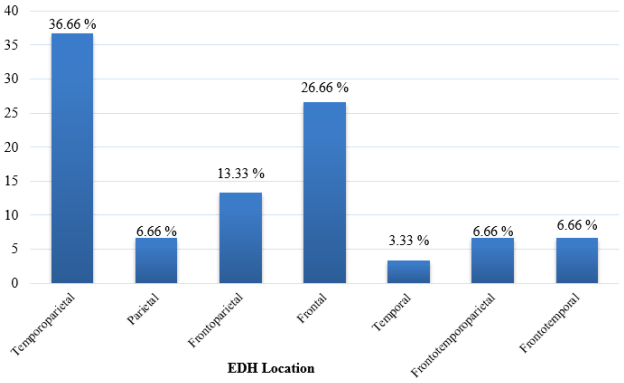


**Fig. 1:** Location of EDH

## 4. Discussion

76.67% of patients in this study were males. In a study by Knuckey et al, male to female ratio was 3.4:1.[5] Similar findings were seen in other studies.[2,3]

Fights and accidents are common among males, so incidence of EDH is more among males.

Most of the patients (50%) were in the age group of 21-41 years in our study. Similar findings were seen in studies by Özkan et al and Araujo et al respectively.[6,7] People in younger age group have increased risk for head injuries and EDH occurrence. Also in older age, the meninges are usually adherent which decreases the incidence of extradural hematomas in them.

RTA was the most common (50%) cause leading to EDH occurrence in our study. Similar findings were seen in studies by Rehman et al and Phoebe et al in which RTA was the commonest mode of trauma leading to EDH occurrence in 63% and 56% of cases respectively.[8,9]

Falls lead to 46.66% of EDH cases in our study. In another study by, falls constituted 30% of the cases.[9]

In our study, 60% had GCS of 13-15 at admission. So, most of the patients had a mild to moderate head injury in our study at the time of admission. These findings were also seen in studies by Mezue et al and Yurt et al respectively.[2,10]

In our study, EDH most commonly (36.66%) occurred in the Temporoparietal region followed by frontal region in 26.66%, frontoparietal in 13.33%, parietal in 6.6%, frontotemporoparietal in 6.66%, frontotemporal in 6.66% and temporal in 3.33% of cases respectively on CT scan findings. Temporoparietal was the most common location noted in other studies also.[2,3,6,7]

EDH was more common on the right side (53.33%) on CT scan findings than the left side (46.66%) in our study.

Other associated intracranial injuries observed in our study were skull fractures in 70% of cases, followed by contusions in 20% of cases, acute subdural hematomas in 10% of cases and pneumocephalus in 6.66% of cases. In a study by Chowdhury et al,74.09% of patients had skull

fractures.[3]

## 5. Conclusions

EDH is one of the most serious complications of head injury.

Early diagnosis and proper management is required.

EDH is more common in men.

Most common cause being road traffic accidents, so wearing of helmets is must while riding two wheelers.

Careful interpretation of CT scan head is important to get information about the location EDH and other associated injuries before proceeding for surgical evacuation.

Urgent surgical intervention whenever indicated, improves the outcome of patients.

## 6. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

## 7. Source of Funding

None.

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