

# Management Outcome of Extradural Hematoma

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## ABSTRACT

**Objectives:** To determine the frequency, clinical presentation and surgical outcome of extradural hematoma in head injury patients admitted in tertiary care hospital.

**Material and Methods:** This descriptive study was conducted in neurosurgery department of Hayatabad Medical Complex, Peshawar from 1st February 2010 to 30<sup>th</sup> January 2012. A total of 367 patients of head injury, from both genders without age discrimination were included. EDHs caused by bleeding diatheses or vascular malformations, post surgical EDHs and those requiring conservative treatment were not included in the present study. Diagnosis of EDH was confirmed by CT scan brain. Patients' data was documented in a structured proforma and analyzed in SPSS version 17. Frequency and percentage was calculated for categorical variables. Mean  $\pm$  SD was calculated for age. Results were presented as graphs and tables.

**Results:** Total 367 patients were included out of which there were 238 (64.85%) males and 129 (35.14%) females. The mean age was  $31 \pm 1.3$  years SD. EDH was most common in the age range of 21 – 30 years (28%). Most of the patients 179 (48.77%) had Glasgow coma scale (GCS) in the range of 13 to 15. The commonest presentation was headache i.e. 242 patients (73.11%) and 210 patients (63.44%) had vomiting as presenting complaints. The most common location for EDH in the present study was temporo-parietal region i.e. 113 (30.79%) followed by frontal region i.e. 99 (26.97%). Glasgow outcome score was used to measure the outcome. Outcome was good in 229 patients but predominantly these patients were in GCS 14 – 15 on presentation. Death occurred in 29 (7.90%) patients and 3 (.817%) patients remained in vegetative state. These patients had very low GCS and coning or associated parenchymal or systemic injuries were already present before their operations.

**Key words:** Head injury, Extradural hematoma, Surgical management, Outcome.

**Abbreviations:** EDH = Extradural hematoma, GCS = Glasgowcoma scale.

## INTRODUCTION

Head trauma is the most common cause of mortality and morbidity in young people. Head injury is responsible for up to 50% of deaths among trauma patients and for a large portion of continuing care among survivors.<sup>1,2</sup>

Epidural hematoma (EDH) is a life threatening complication of severe traumatic brain injury (TBI). This can also occur in mild to moderate TBI.<sup>3,4</sup> EDH has got a variable clinical presentation in the acute situation.<sup>2,4,5</sup> EDH should be treated promptly and appropriately and if remains untreated, may lead to trans-

tentorial herniation with loss of consciousness, fits and focal neurologic deficits.<sup>1,5,6</sup>

EDH results from interruption of dural vessels, including branches of the middle meningeal arteries, veins, dural venous sinuses, and skull bone<sup>2,3,6</sup> vessels. CT scanning is the investigation of choice for the diagnosis of EDH. It appears as a biconvex or lens shaped hyperdense lesion. EDH is very much treatable and has got good prognoses in patients receiving timely treatment.<sup>5,7,8</sup>

The objective of this study was to determine the frequency, clinical presentation and surgical outcome

of extradural hematoma in patients with head injury, admitted in head injury department of Hyatabad Medical complex, Peshawar.

**MATERIAL AND METHODS**

This descriptive study was conducted in neurosurgery department of Hayatabad Medical Complex, Peshawar from 1st February 2010 to 30<sup>th</sup> January 2012. A total of 367 patients of head injury, from both genders without age discrimination were included. EDHs caused by bleeding diatheses or vascular malformations, post surgical EDHs and those requiring conservative treatment were not included in the present study. Diagnosis of EDH was confirmed by CT scan brain. Patients' data was documented in a structured proforma, including age, gender, mode of trauma, initial GCS, examination findings and CT scan findings. This proforma also included postoperative condition of the patients and outcome of management in terms of Glasgow Outcome Score (GOS). The data was analyzed by SPSS version 17. Frequency and percentage was calculated for categorical variables. Mean ± SD was calculated for age. Results were presented as graphs and tables.

**RESULTS**

We operated 367 patients for extradural hematoma out of which there were 238 (64.85%) males and 129 (35.14%) females. In this study the mean age was 31 ± 1.3 years SD. EDH was most common in the age range of 21 – 30 years (27.79%) Age wise distribution of EDH is shown in table 1.

**Table 1: Age Distribution.**

Age	Number of Patients	Percentage
Up to 11	44	11.98%
11 – 20	55	14.99 %
21 – 30	102	27.79 %
31 – 40	73	19.89 %
41 – 50	55	14.99 %
51 – 60	22	5.99 %
Above 60	16	4.36 %

Glasgow coma scale was used to assess the level

of consciousness. Most of the patients 179 (48.77%) had GCS in the range of 13 to 15.

**Table 2: Glasgow coma score on presentation.**

GCS score	No of Patients	Percentage
3 – 8	54	14.71%
9 – 12	134	36.51%
13 – 15	179	48.77%

The commonest presentation was headache i.e. 242 patients (73.11%) and 210 patients (63.44%) had vomiting as presenting complaints (Table 3).

**Table 3: Clinical Presentation.**

Clinical Presentation	No. of Patients	Percentage
Headache	261	71.11%
Vomiting	234	63.76%
Loss of consciousness	120	32.70%
Focal neurological deficit	99	26.97%
Other	78	21.25%

The most common location for EDH in the present study was temporo-parietal region i.e. 113 (30.79%). The various locations of EDH are shown in table 4.

**Table 4: Site of EDH.**

S. No.	Site of Hematoma	No. and Percentage
1.	Temporal-parietal	113 (30.79%)
2.	Frontal	99 (26.97%)
3.	Parietal	47 (12.80%)
4.	Posterior fossa	11 (2.99%)
5.	Occipital	11 (2.99%)

Outcome of surgery was measured using Glasgow outcome scale. Majority of our patients had good outcome after surgery especially those who presented in higher GCS (group 3). Amongst this group, 201 (54.76%) had good outcome score. While from class 1

(GCS = 3 – 8), Only 28 (7.62%) patients had good outcome. Death occurred in 29 (7.90%) patients and 3 (.817%) patients remained in vegetative state. These patients were belonging to class 1. Most of these patients had very low GCS and coning or associated parenchymal or systemic injuries were already present before their operations. Details of outcome are shown in table 5.

**Table 5:** Glasgow Outcome score after operative management.

Score	Outcome	Class 1 = GCS 3 – 8	Class 2 = GCS 9 – 12	Class 3 = GCS 14 – 15
5	Good	28 (7.62%)	72 (19.61%)	201 (54.76%)
4	Moderate disability	0	0	20 (5.45%)
3	Sever disability	0	14 (3.81%)	0
2	Vegetative state	3 (.817%)	0	0
1	Death	29 (7.90%)	0	0

## DISCUSSION

Head trauma is relatively more common in younger age groups. Among these people, those in their twenties and thirties are having<sup>3,7</sup> highest chances of sustaining head injuries. This is due to the fact that people work hard in this age group and remain susceptible to the road traffic accidents, industrial hazards and of course physical violence. In the current study, the commonest age group is 21 to 30. Naveed D also documented the same 9 results. Rehman L<sup>10</sup> showed that the commonest age group was 20 – 30 years in his analysis. However Khan MJ<sup>11</sup> in his study reported the common age group less than 12 years. Males are predominantly affected in the present study. The reason is that our society is male dominant and work load is mainly on male population. More over their job nature, higher risk of trauma and warfare injuries further make them to head injuries. Naveed D<sup>9</sup> findings are also in keeping with the present study. Same were the findings of Cheung PS<sup>12</sup> and KhanMJ<sup>11</sup> in their studies.

The predominant complaints in this study is headache 261 (71.11%) and vomiting 234 (63.76%). Headache in head injury patients is a serious condition and may be due to underlying raised intracranial pressure. Vomiting may also be because of raised intracranial pressure or brain stem injuries, disturbance of vestibulo-ocular system and swallowing of blood.<sup>9,10</sup> Naveed D et al<sup>9</sup> and Rehman L et al<sup>10</sup> findings are not much different than our study. The study conducted by Cheung PS et al<sup>12</sup> showed that headache and vomiting is the commonest clinical features.

Minor head trauma patients predominate the study population i.e. 179 (48.77%). Previous studies revealed<sup>10-12</sup> same pattern of GCS score.

Location of extradural hematoma is significant because the prognosis relies on location of EDH. Supratentorial extradural hematomas are more common than Posterior fossa extradural hematomas. The inci-

dence of posterior fossa extradural hematomas among intracranial extradural hematomas has been reported to be 4 – 7%<sup>14</sup> and all cases had occipital fracture. The commonest location of extradural hematoma is temporoparietal area in this study while in some studies, the most common location is frontal<sup>10</sup> region. Other studies<sup>9,13</sup> show that temporoparietal EDH is the commonest area. This is because the location varies from one study to other and does not follow any specific pattern. There are only 11 cases with posterior fossa extradural hematoma in the present study, comprising 2.99% of the patients. However, posterior fossa EDH is less common and this has been a consistent finding in various studies.

Glasgow outcome score has been used as tool for outcome measurement in the current study. Most of our patients 301 (82.01%) have good postoperative outcome. Moderate disability was noted in 20 (5.45%) and 29 (7.90%) patients died due to low GCS score i.e. 3 on presentation. Three (10%) patients had died in a study conducted by Rehman L.<sup>10</sup> Cheung PS<sup>12</sup> reported 10% mortality in his study.

## CONCLUSIONS

Extradural hematoma commonly occurs in younger age groups. Temporoparietal region is the commonest site for EDH. The outcome of operated extradural hematoma patients is good in those patients having higher GCS score.

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